Higher Education for the Future;
“Accelerating and Strengthening Innovation”
Overview of papers on Higher Education for the Future as presented during the Online, Open and Flexible Higher Education Conference in Milton Keynes, October 2017

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EADTU, October 2017


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Foreword

The EADTU Online, Open and Flexible Higher Education Conference (OOFHEC2017) was also this year bringing together key players in the transformation of higher education in the 21st century.

Within the scope this year of “Higher Education for the Future; Accelerating and Strengthening Innovation” we covered intensified and deeper transformation of teaching and learning in higher education, based on e-learning and online education. New modes of teaching and learning create new opportunities for enhancing the quality of the learning experience for on campus students, for reaching out to new target groups off campus and for offering freely accessible open education through the internet (OERs, MOOCs).

These can be categorised as follows:

1) blended and online degree education will allow higher quality degree education for larger student groups, who will even belong to smaller communities and enjoy intensive education, linked to research and innovation;

2) flexible continuous education and continuous professional development online, including new types of short learning programmes, will prepare students for innovation and entrepreneurship in business; and

3) online open education through OERs and MOOCs will enrich citizens in order to participate better to society at large.

The conference was well attended by representatives from more than a 100 universities from 30 different countries all over the world and with participation of higher education institutional policymakers, governmental bodies involved in innovating HE, deans and directors, educational innovators, university staff and umbrella organisations in higher education. All with a passion for research, improving teaching, learning and support services and driven by innovating education.

The Online, Open and Flexible Higher Education Conference 2017 - Proceedings
Presenters outline their work under the following main themes:

1. Strategies for the future of continuous professional development
2. Open education and widening participation
3. Research and innovation for new modes of teaching and learning
4. HE for a divers future
5. Engaging students for learning at all stages of life
6. Policies for change in Higher Education
7. Quality assurance and accreditation of online and blended higher education
This also formed the perfect framework for launching the European MOOC Consortium (EMC) during the conference. EMC represents organisations taking a lead in MOOCs in Europe. The founding partners (FutureLearn, France Université Numérique, OpenupEd, Miríada X and EduOpen) represent most of the MOOC development work in Europe in terms of learners and number of MOOCs, by offering together almost 1000 MOOCs. Together, they represent a large network of 250 higher education institutions (HEIs) and companies working in a variety of European languages, including English, French, Spanish and Italian. Main objective of EMC is to strengthen the credibility of massive open online courses (MOOCs) as a learning approach in higher education. EMC will take a leading role in developing the discourse relating to MOOCs and other innovative developments in online learning in Europe.

EADTU and our host the Open University UK thank all contributors for making this event so interesting and inspiring and thank all participants for their active involvement.

We hope to meet you all next year at the OOFHEC2018 in Aarhus, Denmark.

With regards

George Ubachs
Managing Director EADTU
Keynote speakers

We thank our keynote speakers for their inspiring contributions to the OOFHEC2017 Conference.

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Chief Executive of FutureLearn, UK

Kathleen Schiusmans
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A Holistic View on Academic Wide Data through Learning Analytics Dashboards

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Abstract
We live in an era of ever developing technology which has led to a massive increase in the amount of data available. Every move, click, and swipe of a card creates a virtual image of our lives in the form of a personal mosaic. Through sophisticated methods applied on these data, companies are now able to predict whether their products will appeal to people and target their advertising and market with maximum profit. In the competitive and globalized environment of education, institutions have to attract, assess and guide their students. In Greece, the Hellenic Open University (HOU) offers its courses in an open and distance learning mode. In contrast to a traditional university where most of the interaction and teaching is taking place on a face-to-face basis, at HOU the learning process is mainly facilitated via multimodal technological pathways and systems. It is important to homogenize and integrate the data collected from these systems in order to utilize it by gaining knowledge and building on it. To accomplish this, we use a learning analytics methodology to analyze the data and automatically create a detailed and holistic image of student performance, tutor effectiveness, and administration efficiency. This is then visualized through learning dashboards which convey important information so that each party can take necessary action and help the institution to improve its standing in the competitive educational environment. We aim to use the information within the systems where it is derived, since this makes the process more user friendly and accessible to all those involved.

Keywords: educational data mining, teaching and learning analytics, learning dashboards, distance learning, higher education, student and tutor assessment

1. Introduction
We live in an era of ever developing technology which has led to a massive increase in the amount of data available. There is virtually no part of our daily lives for which data is not collected, ranging from simple activities such as buying things in the supermarket and logging in to social media, to more complicated issues like oversea citizen voter registration list completion and healthcare records for follow up visits of patients in the health system. With every move, click and swipe of a card we are creating a virtual image of our lives in the form of a personal mosaic, containing our likes and dislikes, our beliefs, trusts and faiths, and possibly
every minute hidden pattern of our social behavior which can be used to benefit society, businesses and individuals alike (Siegel, 2016). Even though significant improvements have been made based on this deluge of data, as far as social services and benefits are concerned, the most remarkable impact has been witnessed in the world of business and commerce where companies are no longer groping in the dark searching for ways to market their potential customers. Through sophisticated methods such as brain scanning (Lindstrom, 2010) they are now able to predict whether something will appeal to people rather than using hindsight. Obviously, this is a huge financial benefit for the companies as they can now target their advertising and market with maximum profit.

The above practices have been applied to educational fields revolutionizing the way in which educational institutions assess and guide their students (Oblinger, 2012). Furthermore, institutions are now able to provide evidence of accountability and efficiency based on the adequate allocation of public funding and their ranking in relation to other institutions. This is mostly but not solely applicable to higher education which is a much more competitive and globalized environment especially these days when more and more universities have to attract students in a similar way to which a business might attract customers. In Greece, higher education is predominately free and government funded up to the undergraduate level of study, even though there are some institutions that are privately owned. In addition, there is the Hellenic Open University (HOU) which is subsidized by the Government but students have to contribute towards their tuition fees. This is not a conventional university, since most of the students are mature people and the courses are offered in a distance learning mode of delivery. Moreover, it is an open university as far as student entry for undergraduate courses is concerned, since there are no standard qualification requirements, meaning that the students are of different educational levels which in itself poses a difficulty with regards the curriculum construction or the course offerings. Combining all these unique characteristics of the HOU, it is evident that data collection and how the data is utilized is of a different kind but perhaps more necessary than in a conventional University.

However, the process of gathering the data is significantly facilitated by the very nature of the institution. In contrast to a traditional university where most of the interaction and teaching is done on a face to face basis, at HOU this is mainly achieved via multimodal technological pathways. From the student application stage until graduation every activity both students and tutors engage in as well as administration personnel, is somehow logged into some sort of operational information systems supporting the daily tasks of the university. Examples of such systems in HOU include the student application database, the student information system, the learning management system, the digital material repository, the synchronous communication platform, and the learning and teaching assessment platform. When a student for example begins a module, s/he is given access to the relevant resources within the learning management system, namely the syllabus, the study plan, the discussion fora, the teaching material, homework, projects, quizzes and various other learning resources and activities. Homework is submitted by the student through the system, graded and assessed by an instructor, and returned with constructive feedback. There are non-compulsory tutorials where face to face interaction takes place and a certain number of synchronized teleconferenced meetings where students and tutors are able to discuss progress and obstacles encountered in the learning process. Finally, and perhaps most importantly, there is an assessment process whereby anonymous evaluation of the tutors, the coordinator of a module, the administration, their perceived satisfaction of the course material and the educational methods is performed by all possible parties.

From the above we can see that the data is collected through many different pathways and systems, and as such, it is important to homogenize and integrate it in order to utilize it by gaining knowledge and insight and
constructively building on it. To accomplish this important goal in our methodology, we use a learning analytics methodology to analyze the data in order to automatically create both a detailed and holistic image of student performance and progress, tutor effectiveness, and administration efficiency which in combination reflects on the university as a whole. This is then visualized through the support of learning analytics dashboards (LADs) which convey important information back to the students, tutors, coordinators and the administration, so that each party can take necessary action and better fulfill their potential and help the institution to improve its standing in the competitive educational environment. This is not a new concept, however what we endeavor to achieve is an improvement over existing practices. That is to say we aim to use the information within the systems where it is derived instead of taking the extra risk and the effort of migrating the data, as this practice is neither efficient and effective, nor within the norms of privacy laws for the protection of individual data. Also by using systems readily available and integrated into the existing platforms that support teaching and learning makes the process more user friendly and easily accessible to all those involved.

The rest of this paper is organized as follows: Section 2 gives a brief background insight of some previous related work. Section 3 presents all the necessary information related to the case study at hand, the university environment, the program of study and the specific processes and systems along with the corresponding data created in such an environment. Section 4 focuses on the methodology followed for the analysis of the data, describes in detail the data set and the tools utilized for their processing, as well as the internals of the selected tools, that will facilitate the extraction of patterns and knowledge and will help in communicating the derived results to the end users. Section 5 demonstrates and discusses the results of the analysis by reflecting on the things that need to be taken into consideration so that the teaching and learning will become more focused and fulfilling for the stakeholders. Finally section 6 concludes this work and presents some future ideas.

2. Related work

In the following we summarize the most recent and relevant research studies related to educational data analysis for better understanding the learning progress of students in order to support timely interventions. A large number of researchers have used data from students’ interactions by downloading logs from LMSs in order to apply data mining methodologies to find patterns of students’ activity. Various algorithms and techniques are used for pattern extraction, such as classification, clustering, link analysis, etc., as a step in a process that consists of a number of phases including data extraction, selection, transformation, mining, evaluation and interpretation of patterns in the discovered knowledge (Romero et al., 2008; García & Romero., 2011). By adopting the same process, known as educational data mining (EDM) or learning analytics (LA), Romero et al. (2013) aimed to improve the prediction of students’ final performance based on their participation in an on-line discussion forum. They concluded that the use of data from a specific period of the course, has the potential to warn instructors about students at risk. However, the task undertaken by the instructors to gather and extract data from students' online discussions is described as difficult and time-consuming. Konstantinidis and Grafton (2013) refer to a framework based on Excel macros and the Visual Basic programming language, for downloading, analyzing, and visualizing Moodle’s log files, while a year before, Dierenfeld and Merceron (2012) utilized Excel Pilot tables for these purposes. The restrictions of the offline functionality underline and diminish the usability and broad acceptance of the method applied.

In the integrated education environment of HOU, individual efforts to avoid students drop outs, to predict performance and to track and evaluate student participation, have been applied in more than a decade now [Xenos et al., 2002; Kotsiantis et al., 2004; Pierrakeas et al., 2004; Karaiskakis et al., 2008]. Koulocheri and
Xenos (2013) extracted social networking data from the discussion forums of an HOU undergraduate module, and presented the correlations between social networking and formal grades by using an external Social Network Analysis (SNA) tool. A year later, Lotsari et al. (2014) presented a learning analytics methodology for student profiling based on Moodle’s forum discussions by using R and Weka as the data mining and analysis software environments. With text mining and social network analysis techniques, along with classification and clustering techniques, the students’ participation and the group of terms that were mostly discussed in the online forum were visualized. They concluded that students’ final mark is not heavily correlated to their participation on the discussion forum. Kagklis et al. (2015) used text mining and social network analysis techniques to analyze data of online Moodle’s forum at an HOU postgraduate course and adopted sentiment analysis to determine messages’ polarity. They examined the association between the participation of students in the forum and the messages polarity with the final grades. They have found that only the polarity of the students’ messages proved marginally related with their performance while forum participation is not an important factor for students' final performance as well. Recently, (Kagklis et al., 2016; Kagklis et al., 2017) gathered data from different sources (demographic data, previous student education related data and logging data, posts to forums, assignments, grades, etc.) and applied text mining techniques to improve the learning experience of students, the instructional experience of tutors, and the institutional strategic view of the HOU. In the study of Gkontzis et. al. (submitted manuscript, 2017b), researchers’ downloaded discussion fora logs of an HOU course and proposed a framework consisting of the Mongodb NoSQL system and the R software, to identify students’ emotions in on-line Moodle’s discussions. They determined the subjective value of student texts and characterized the emotional state of messages.

The timely spotting of learning performance issues as an extension of real-time monitoring and visualization of educational data, pushed researchers and higher education institutions to explore and design their own LADs (Bienkowski et al., 2012). By adding dashboards as an interface for immediate visualization of analysis results, Purdue University has created a learning indication for students to be warned on time for negative deviations from their learning goals. As a result, university identified students’ potential problems from the second week of the course and improved students' attention (Dietz-Uhler & Hurn, 2013). Dimopoulos et al. (2013) and Petropoulou et al. (2014) present an LA moodle assessment tool, called Learning Analytics Enhanced Rubric (LAe-R). LAe-R allows an instructor to add a mixture of marking criteria and grading levels associated with traditional performance metrics, learning and interaction indicators. Researchers’ conclusions highlighted the advanced assessment features and specialized customization options, which were appreciated by instructors. Liu et al. (2015) present a tool named Moodle Engagement Analytics Plugin (MEAP), to provide information about students’ progress against a range of indicators. By enhancing the utility and impact of MEAP, they improved data visualizations and the quality of tutors’ interventions. However, the researchers through their overview conclude that despite the recent developments on LADs, LA tools and applications are still at a starting point. Measurements and measuring engagement was proposed in (Richards, 2011). Similarly, Yool et al. (2014) evaluated numerous popular educational dashboards and recognized the lack of resources and the need for further research on LADs domain. In addition, Conde et al. (2015) in their qualitative analysis of Moodle’ LA tools, highlight the necessity of adding LAD to the platform of Moodle for instructors simplicity in tracking students’ progress. Furthermore, Molenaar and Knoop van Campen (2016) in their experimental study, concluded about the necessity for advanced efforts to support instructors on how to use learning analytics. A LAD, named LISSA, that aims to support the collaboration and interaction between tutor and student was designed, developed and evaluated in (Charleer et al., 2016). In HOU, Gkontzis et al. (submitted manuscript, 2017a) investigated LADs in the Moodle platform to support instructors by effectively identifying students' interactions. They
emphasized on the simplicity of the LADs as well as on their effectiveness on timely feedback to stakeholders. An overview of LADs along with opportunities for future research was given in (Verbert et al., 2014) while a remarkable literature review of the state-of-the art of research on LADs is given in (Schwendimann et al., 2017).

3. A Case Study from the Hellenic Open University

The Hellenic Open University (HOU) was officially established in 1997 and is the only University in Greece that exclusively offers distance education programs. Since its establishment, the HOU has evolved and has been attracting more and more students of all ages, from different cities in the Greek territory, and of a variety of profession and financial status, that have shown great interest in studying through a distance learning program. HOU consists of four Schools, offering undergraduate and graduate courses to adult students. HOU uses a modular system, where each program consists of modules comprising its basic functioning unit. The students in a module are allocated to groups (having approximately 30 participants), and a tutor-counselor is assigned to each group to oversee the learning process. For every module, there exists a coordinator tutor-counselor, that organizes and monitors the education process, gives directions to other tutors and finally evaluate them according to their activity, efficiency, and effectiveness. Students have to submit 4 – 6 written assignments throughout the 10-month academic year period and participate in a compulsory sit exam at the end of the academic year. Furthermore, each module includes 4 – 6 not compulsory face-to-face group counselling meetings that take place as close to students residence as possible or at a convenient location nearby. See www.eap.gr for a presentation of the undergraduate and the graduate studies and courses’ structure in HOU.

Communication and interaction between tutors and students is mainly held through the Learning Management System (LMS) study.eap.gr. There is also available the institutional repository apothesis.eap.gr that gives access to the digital educational content (printed course material, audio and video material, CD-ROMs/software, etc.) specially customized for distance learning, while the web conferencing platform centra.eap.gr is mainly used for synchronous teleconferencing between students and tutors, and offers the opportunity for an interactive virtual classroom experience, in addition to the face-to-face counselling group sessions.

The Student Information System of HOU contains information maintained by the Registrar’s Office, concerning the students’ demographic records, the organization of modules into groups, the time, date and place of the counselling group sessions for each module, written assignments and final exams grades, students’ transcripts, etc. The LMS of HOU is based on Moodle (Modular Object-Oriented Dynamic Learning) platform (moodle.org) and it has been offering services to the entire population of students and tutors since the academic year 2013-14. Through this platform, students have the ability to submit their written assignments, work reports and answered questionnaires related to their academic studies, while tutors are able to give feedback, annotate and grade their students’ assignments or work reports. In addition, through an automated management process, work spaces for asynchronous discussions at module level, discussion groups and online fora of students and tutors are available. The service is configured properly to keep pace with the academic calendar of modules and to provide students and tutors with direct access to the activities of the current week. Nowadays, study.eap.gr serves approximately 250 courses, 1900 tutors and 36000 active students.
3.1 The “Computer Sciences” undergraduate program
The undergraduate program in “Computer Sciences” (PLI) aims at offering to its students the opportunity to develop their knowledge and skills in specialised fields related to both Theoretical and Applied Computer Science. To successfully complete the program, students have to succeed in 12 modules, where 9 of them are compulsory and the rest can be chosen from a number of available optional modules, including the elaboration on a project in software or hardware that serves the role of a Bachelor Thesis.

3.2 The “Principles of Software Engineering “ module
The “Principles of Software Engineering “ (PLI11) is a first year compulsory module of PLI, that covers subjects from Software Engineering, Operating Systems, and Database Systems. For the successful fulfilment of the module, students have to complete 4 written assignments during the academic year, and succeed in a final written examination.

All written assignments are submitted by students through Moodle platform, where tutors return comments, graded and annotated assignments to them. Three on-line quizzes are also available, for students’ self-evaluation and practice, along with numerous learning materials in different formats (doc, pdf, ppt, html), folders and external links. For asynchronous discussions and collaboration among students and tutors, numerous discussion groups (fora) are available; a main forum available for all participants of the module, and a forum for each group of students, as well a dedicated forum for the Database Systems Project.

4. Learning Analytics Dashboards in Moodle
The purpose of our work is to exploit a very large amount of valuable educational data provided by the HOU data ecosystem. Log files and activity reports, forum posts, participation in counselling group sessions, written assignments and final exams’ grades, can give feedback about students’ activity, attention, active participation and engagement.

Moodle records all users’ actions such as login/logout data, number of assessments completed, and activity in discussion boards in a database. The simplest representation of an action is a log record in the database in a predefined schema. This reporting tool seem to be lagging behind in the visualization of log records, so alternative tools (dashboards) were developed to allow the graphical visualization of several aspects related to students and tutors accesses in virtual learning disciplines, thus helping tutors to better follow teaching and learning process, as well as to visually identify lagging behind or at-risk students, or to better understand how the different educational resources are being used. These dashboards are external plugins that were contributed by the Moodle community and extend the services offered by the learning environment. We focus on Learning Analytics Dashboards (LADs) that aim at visualizing students’ activities and facilitate students and tutors to have a quick and direct view of their performance, and in turn, to assist them to make the right decisions to improve their educational process.

In this work we concentrate on three LADs: (i) the Forum Graph Report (Chan, 2017) that depict the interactions between students and tutors in a forum activity in a course, (ii) the Course Dedication block (Talavera, 2017) that can be used by tutors to see the students’ estimated dedication time to a course, and (iii) the Analytics Graphs block (Schmitt, 2017), a descriptive tool that provides graphs which facilitate the identification of students’ profile. In the next section, we present and discuss in detail the results obtained by the application of these three tools on the HOU data. For our research, we utilize data extracted from Moodle, and in particular for the PLI11 module, of the academic year 2015-16. There were 316 students in total, divided into 17 groups, along with 17 tutors, one for each group. It is worthy to mention that all participants’ complete activity was recorded in a 387000 records log file. In the sequel we present our
findings when applying the selected learning analytics tools, as well as the way the findings were visualized in dashboards within Moodle. These information, combined with students’ administrative data, can give a holistic view of student performance and tutor effectiveness, and provide knowledge to empower students learning and tutors teaching experience, as well as enrich educational process and elevate the level of academic excellence.

5. Experimental Evaluation of Tools and Discussion of Results
In this section we present the outcomes of the evaluation of certain learning analytics plugins applied to our case study. Our aim is to highlight the promising characteristics of these tools in order to facilitate module coordinators, tutors and students to monitor the educational and learning process. Information is visualized through dashboards in Moodle, and numerous screenshots are given. To preserve anonymity, all data that could be used to identify students and tutors’ personal information have been erased or scrubbed and/or replaced by a randomly generated id.

5.1 Graph linkage to monitor tutors’ and students’ participation in fora
An indicator for students and tutors’ activity and engagement in the module is their participation to course fora. In addition to the forum where the portal administrator (usually the module coordination or a tutor that assist him/her) posts announcements and news, mainly concerning the organization of the module, a change of the schedule of a face-to-face group counselling meeting, etc., there are four other forums, with certain purposes and groups of participants: (i) The Tutors’ Forum, available only for the tutors of the module, (ii) the Module’s Forum, available for all students and tutors of the module, (iii) the Groups’ Forum, available only for the students and the tutor of each group, and (iv) the Oracle/MySQL Forum available for all users but dedicated on posts dealing with a homework related to database design and implementation issues.

To visualize the activity and the interactions between students and tutors, we utilize the Forum Graph reports. For every forum of the course, a directed graph is created. Nodes represent participants, annotated with different colors for tutors and students, while edges represent the interaction among the participants. The size of each node depends on the number of messages the participant posted (discussions initiated and replies sent), while the thickness of an edge indicates the number of replies and the arrow defines who was replying. User is able to drag the nodes to make the graph more readable. Moreover, there is an option for the participants’ full names to be displayed or not (to preserve anonymity, we have hidden and replaced them by random strings where is needed).

In Figure 1 we see the Tutors’ Forum graph. Every node corresponds to a tutor of the module. The five most active tutors are reported, according to the number of discussions initiated (D) and the number of responses sent (R). By placing the cursor on a node, a tooltip shows the participant full name, the number of discussions and number of responses. For example, tutor ST12 have created 1 post and have responded to 11 posts (12 posts in total). By clicking on the node, a window pops-up showing the log with the complete activity of the participant in the forum.
Easy to be recognized, the most active tutors in the Tutors forum are XV73 (with 46D & 27R), ST12 (with 1D & 11R), GV11 (with 3D & 8R), YA10 (with 2D & 8R), and AM10 (with 2D & 8R). Looking at the graph, the module coordinator of the module may have a direct view of tutors activity, congratulate the most active ones and warn the ones with low or minor participation.

In Figure 2 we see the Module Forum graph (on the left) and the Oracle/MySQL forum graph (on the right), where the nodes coloured orange correspond to tutors and those coloured blue correspond to students. The purpose of the Module forum is for the students to collaborate, to post questions about their difficulties and misunderstandings, and tutors to respond to them, by providing help and support. As shown in the graph, the most active participant is tutor XV73 (with 36R) and students ED11 (with 3D & 8R), AG11 (with 2D & 8R), AA09 (with 5D & 4R), and OS09 (with 2D & 7R). Participation to the Oracle/MySQL forum also shows the efficiency of tutors to play a central role and the engagement of students. Tutors ZE17 (with 17R), XV73 (with 16R), and ST12 (with 16R) are the ones that reply the most and give feedback to the students, while TA07 (with 1D & 6R) and GG07 (with 3D & 4R) are the most active students that pose questions and participate into discussions.
An interesting view can be obtained from the Groups forum graph, presented in Figure 3. This is actually a forest where each graph corresponds to a group forums' activity, if exists. Here, tutors' nodes are the blue ones and students' nodes are the orange ones. A tutor can see the participation and the engagement of his/her students while the module coordinator can see both the efficiency of the tutors as well as the participation of students. The most active tutors are OV38 (with 32D & 6R), AV34 (with 16D & 18R), GV33 (with 17D & 16R), RV33 (with 17D & 16R) and XA32 (with 13D & 19R). The ranking of tutors according to the total number of posts in the forum may be misleading. A tutor should not only create a lot of discussions (like OV32) but also to respond to students' posts. OV32 has few responses, in contrast to e.g., AV34 having less discussions but a large number of replies to students' posts. The module coordinator may use the overall performance of tutors depicted in forum graphs as a measure for evaluating them.

5.2 Course Dedication to measure engagement

Another tool that indicates students’ and tutors’ participation and activity in the module is the Course Dedication plugin. This can be used by tutors to see the students’ estimated dedication time to a module. Dedication time is estimated by the number of clicks, the number of sessions and the sessions’ duration that have been recorded to Moodle's log entries. The tool offers information about the dedication time in a module, both for a group of participants and for each student individually. All data can be downloaded in an excel file, a facility that offers further data exploitation.

In Figure 4 we give a standard view of information given by the plugin, where total course dedication and connections per day for each student is reported. The report was configured for a time period covering the whole academic year (i.e., 304 days elapsed time), and for a maximum 60 minutes time limit between clicks. The total dedication was 13646 hours and 10 minutes and the average dedication time was 34 hours and 38 minutes. More interesting results could be found after downloading data in a xls file and working on it offline.
The most dedicated student has spent 15485 minutes on the course, with 0.68 connections per day. There were 7 students with more than 10000 minutes dedication time and 0.80 connections per day on average, while 27 students hadn’t spent even an hour on the platform. For the group PAT1, for example, the average dedication time was 1518.64 minutes, 6379 was the maximum dedication time while 5 students had less than two hours spent on the platform. In the early stages of the module, a few weeks after it started, the tutor-counselor of this group could easily identify the students having not sufficient activity on the platform, provide extra support and contact them in order to encourage them to keep on.

Course dedication data can provide a useful assistance for the coordinator of the module to evaluate the tutors. An active tutor is expected to have high participation and activity on the platform. In our case study, for the 17 tutors of the module the average dedication time was 6043.41 minutes, and the average connections was 0.43 per day. The most dedicated tutor was XV73 (20807 minutes, with 0.78 connections), followed by AV34 (11714 minutes, with 0.93 connections) and ST12 (11136 minutes, with 0.62 connections). However, there was a tutor with less than 1000 minutes dedication time and another one with only 0.17 connections per day. See Figure 5 for the dedication and connections for all tutors of the module.

---

### Table: Students Dedication Information

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
<th>Dedication Time</th>
<th>Connections per Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alice</td>
<td>PAT1</td>
<td>15485 minutes</td>
<td>0.68</td>
</tr>
<tr>
<td>Bob</td>
<td>PAT1</td>
<td>1518.64 minutes</td>
<td>0.68</td>
</tr>
<tr>
<td>Carol</td>
<td>PAT1</td>
<td>6379 minutes</td>
<td>0.80</td>
</tr>
<tr>
<td>David</td>
<td>PAT1</td>
<td>5 hours</td>
<td>0.80</td>
</tr>
<tr>
<td>Elise</td>
<td>PAT1</td>
<td>2 hours</td>
<td>0.1</td>
</tr>
<tr>
<td>Frank</td>
<td>PAT1</td>
<td>1 hour</td>
<td>0.1</td>
</tr>
<tr>
<td>Group1</td>
<td>PAT1</td>
<td>10000 minutes</td>
<td>0.80</td>
</tr>
</tbody>
</table>

Figure 4. Students dedication information. The total source dedication and connections per day for each student is reported.

5.3 Analytics Graphs for Course Content and Activity Distribution

Forum Graphs and Course Dedication plugins can give a flavour for the participation of students and tutors. In this direction, another plugin, the Analytics Graphs block, can be used not only to facilitate the identification of students’ and tutors’ activity, but also, in a sense, to evaluate the educational material (files, quizzes, assignments, etc.) of the course, in order for a tutor to make the right decisions and enhance the teaching process. Graphs refer to the students of the course in total, or of a group of them. By clicking on a graph element, the tutor can immediately communicate with a student or a group of students, according to
their engagement, by sending an email to them, or discover the students that have accessed a certain educational resource. The Analytics Graph block could be suitably used in the first weeks of a course to increase student study engagement and consequently to reduce dropout rates.

In Figure 6 we can see a Grades Chart, for a number of assignments of our case study. When clicking on a boxplot, a new window pops-up giving more information about the number of students with grades into the 25th, the 50th, and the 75th percentile. The tutor can then communicate with each group of students, directly, by clicking on the corresponding link, provide them with feedback, assess, and encourage them to remain on target. Providing grades and feedback on students’ work is critical for increasing their participation, engaging them with the learning environment as well as with the learning material.

![Grades Chart](image)

*Figure 6. The grades distribution of a certain group of students, for selected assignments*

An example of content access graph is given in Figure 7. The chart contains the online quizzes of the course. Similar graphs can be obtained for the syllabus of the module, the fora, the assignments, and the educational material (Figure 8). Worthy to mention here is that obtaining a content access graph is time consuming in case of courses containing a large number of resources making up the educational material of the course (for example, it took more than two hours to retrieve the graph of Figure 8).

![Content Access Chart](image)

*Figure 7. The distribution of quizzes access, for the students of the thematic unit in total*

Clicking on the bar of the content access graphs, creates a listing of students by name and allow the tutor to send a massive message to them. Prior to an important deadline, a tutor can use this chart to control which students have not looked at a given assignment or quiz and remind them of the upcoming deadline. Moreover, a tutor can use the chart to contact the students who have not visited a forum or never accessed
a certain educational material (text or video). In a course with a linear, chronological set up of activities and resources, the content access chart can address the students that are engaging with the material and those who are lagging behind for tutoring.

![Distribution of access to contents](image)

**Figure 8.** The distribution of access to files of the course, for the students of the module in total

Examples of Assignment and Quiz Submission Charts are shown in Figure 9. Submission Charts can be useful in a course with many assignments and/or quizzes, gradually placed in the learning process, in order for the tutor to have an understanding of students’ participation, and to influence them to stay on track.

![Assignment submission](image)

![Quiz submission](image)

**Figure 9.** Assignment Submission Graph (on the left) and Quiz Submission Graph (on the right), for the students of the module in total
User Activity charts are shown in Figure 10. The left one shows the number of active students during the day while the second one shows the number of students’ activities. Clicking on a bar of the chart, a pop-up window shows the names of students along with their activities in the specific time of the day. These charts provide the tutor with a view of the more active and productive hours during a day and can time-schedule, for example, a teleconference session, late in the evening rather than early in the morning, when the majority of the students to be able to attend.

![User Activity charts](image)

Figure 10. The distribution of active students (on the left) and students’ activities (on the right) to daily hours

In Figure 11 we give an example of a Hits Distribution Chart. When the tutor clicks a student name, a pop-up window appears containing tabs with various information. The tutor can compose and send a new message to the student, or have an overview of the messages sent to the student before. Moreover, pie charts containing information about the student’s access of course contents, assignments and quizzes submissions, as well as forum participation are also readily available (see an example in Figure 12). By clicking these pie charts, the tutor can list the applicable data and in this way all charts can be printed or exported.

![Hits Distribution Chart](image)

Figure 11. The Hits Distribution Chart of a sample of students of a certain group of the module
The Hits Distribution Chart is useful when the resources are evenly distributed in every week of the course, and are made available to the student on a weekly basis. It can monitor the students who are engaged with the content of the course and facilitate the tutor to point out students that possibly will or have dropped out.

6. Conclusion

In this paper, we envision to provide a holistic framework for analyzing educational data by applying a learning analytics approach to support tutor supervision and reflection, student interaction and learning, evaluation of educational resources, etc., and try to help on presenting the induced information back to the stakeholders in real time, so that they can proactively engage in correctional actions. To this aim, we make use of certain features provided by a number of carefully selected Learning Analytics Dashboards in a Moodle ecosystem to shed light on the interactions among a coordinator, the tutors and the students of a module, so that we can assist the role of the module coordinator in supervising, gauging and evaluating the development of the teaching and learning processes in a distance learning setting. The selected tools were evaluated for a module of an undergraduate program of HOU by setting certain interesting questions for students and tutors and by showing how these LADs can be used to provide direct answers and assist them to make the right decisions. The analysis of the experimental data indicates that there is a broad range of possible behaviors and activities spanning the large spectrum of hard working tutors to extremely motivated and influencing students that need to be considered further along with the educational outcomes that each one of these entity groups produces with respect to the mean performance and academic achievement of a student group in a section. In a future study, we plan to go beyond the analysis of the observed behavior to unearthing association and correlation patterns related to how well certain entities and behaviors serve the fulfillment of the educational goals set ahead of time from the leaders of a program or the faculty of a school.

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A learning design methodology for developing short learning programmes in further and continuing education

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Abstract

Over the past 5 years, teaching staff at the School of Continuing Education, VIA University College, Denmark, has been designing digitally supported teaching within diploma programmes and tailor-made courses in the fields of health, education, social sciences and management. More and more of these programmes and courses are designed as blended learning and are characterised by a short time cycle of design, delivery and completion of the programmes. Despite a recent addition of learning design expertise to the organisation, there is a predominant tendency in design processes to focus on the technical setup, the content/curriculum and the participants, and very little on the role of the teachers. The teachers’ role is challenged by a number of issues in relation to the growing use of blended and online learning, e.g. the task of facilitating the learning processes of the participants in new ways throughout the course or program; a higher degree of exposure as the teacher often becomes the sole point of contact in online environments; communication skills needed to facilitate dialogue and collaboration in an online environment; etc. Furthermore, involvement of teaching staff in co-creation of new learning designs require skills which many lecturers do not have when they enter the design team for the first time, among others skills to articulate their pedagogical principles and technological imagination.

Over time, we in our roles as learning designers in the School of Continuing Education have developed, tested and refined a technique for user involvement in the design work, and teachers now work with our professional learning designer and course producer on redesigning courses or creating new module or courses. In these collaborative design processes, we have identified a number of challenges, which will be dealt with in our paper.

Keywords: learning design, blended learning, collaborative design, role of the teacher, continuing education, short programs, tailor-made courses

1. Introduction and research questions

Vignette: Teachers A and B are going to redesign the module on "Practical methods in Social Science", which they have often taught together. The institution's learning designer has invited them to a workshop, where jointly they will set goals for the development and redesign of the module. The module will be used in an online course with a blended learning approach. Excitedly, the lecturers are discussing new reading material to use in their lectures. Likewise, they are impressed about how well video can act as a channel for communication between teacher and students. As the learning
designer asks them to make a storyboard displaying their redesign, the teachers make a written presentation of their own work and the teaching activities from an overall structured approach, while the student's process and work is not included in the description of the design.

The teachers express their frustration with the fact that they are asked to reduce the number of teaching hours spent with the students. It is their belief, that only through activities in the classroom and through face-to-face interaction with students, can they observe perception taking place. The learning designer's presentation of good practice — examples from other digital learning designs are received with some skepticism, as "this is not how I work with my students".

The situation described in the vignette is a condensed example based on the authors’ experience from their work as learning designers in a university of applied sciences. The vignette illustrates very well some of the dilemmas facing both the teachers and the learning designers. The teachers’ actions in the design process are clearly centred around the role and work of the teacher, and their ideas about the new design are heavily influenced by their existing teaching practice and by the logics of their face-to-face courses. Technology is added to what they already do, rather than used in a process of redesign and redefining the activities in the teaching and learning processes.

From the authors’ point of view, this is done without much reflection on the potentials of the technology in re-thinking the course structure and learning activities from face-to-face into a digitally mediated form. Not even when re-thinking new ways of learning and digitalisation is on the agenda. We found that some teachers lack the experience and knowledge of educational use of technology to be able to spot its potential in re-designing their course. Furthermore, the vignette also illustrates that as a learning designer it can be difficult to inspire the team of participants and involve them in participatory design, as the methods and techniques available might not be sufficient. Of central interest is, however, how we can accommodate all of these challenges in our roles as learning designers; how can we best facilitate the teachers in their work with re-thinking and re-designing their teaching?

In this paper, the authors present and discuss challenges and potentials related to the application of user involving techniques in learning design in an organisational setting. Research within learning design and integration of technology in teaching shows that there is a need for supporting teachers in the domain of designing for digitally mediated teaching (Buus, 2015; Khalid & Buus, submitted). Based on experience from 5 years’ work with furthering the use of blended and online learning in the School of Continuing Education, the authors present a specific learning design method and the challenges it addresses. In the matter of developing digitally mediated teaching, there seems to be a gap in the qualifications of teachers. This may need to be solved through experience rather than through education. Previously, it seemed that the ones who could be involved in the development of blended learning were those teachers who had prior experience and knowledge of technology as well as of content matter and of teaching. In our work with learning design workshops we have aimed at incorporating knowledge about the technological dimension into the process of design and re-design (as well as the content and pedagogical dimensions), in order to include more teachers in this work. However, we still find this to be a challenge when it comes to imagining what the role of the teacher will be in a digitally mediated teaching and learning design. Based on experience with the involvement of lecturers and other staff (like program coordinators) in the process of re-designing teaching and learning activities, a number of issues pertaining to both the professional capacity and the organisational frame is discussed. In this paper, we bring in our professional view on how organisations can improve the opportunities for teaching staff to participate fully as professionals in collaborative design or re-
design of digitally mediated teaching. Through a professional unit for learning design and production of e-learning in the School of Continuing Education we are aiming for a situation where the teachers themselves should not necessarily hold expertise in digital production.

Finally, the authors suggest a way forward in addressing both organizational and professional issues.

The main question addressed in this paper is:

- In an organisational learning design methodology, how can one combine the levels of activity: strategic level; tactical level and operational level; in such a way that teachers’ design work is facilitated, regardless of their previous experience?

Over time, experience has given insight into challenges which need consideration each time new teachers engage in a learning design process. Among the challenges identified are these:

- How to involve teachers in design when they have no or very little experience with online or blended learning?
- How to establish a professional framework around the design work, which allows all participants to contribute with their particular expertise?
- How to design for learning in short programmes?
- How to support the teaching professionals in adopting the role of online facilitator as part of their professional teaching identity?

2. Defining an understanding of learning design

Learning design can be defined as the methodology that enables teachers or designers to make more informed decisions in designing learning activities and interventions, which are pedagogically informed and make effective use of appropriate resources and technologies. A key principle of learning design is making the design process more explicit and shareable. Learning design as an area of research and development combines gathering empirical evidence to understand the design process and the development of a range of learning design resources, tools and activities (Conole, 2013; Georgsen & Løvstad, 2014).

Maina et al (2015)) state in their introduction to “The Art & Science of Learning Design” (Maina et al, 2015) that learning has the role of changing the conditions of the human in different ways through education. In this field, the teachers are the experts within each of their professional domains. However, teachers often face a lack of knowledge when designing for learning and especially for digitally mediated learning and teaching. Learning design can also be seen as facilitation and “a description of the teaching-learning process that takes place in a unit of learning” (Koper, 2006, p. 13), where interaction, joint progress, structure, co-creation, collaboration, and knowledge sharing will be important elements. In Koper’s terminology, the “unit of learning” can be a course, a single lecture or a series of learning activities. Taking Koper’s approach further and inspired by Conole (2007), we would say that a learning design:

- is comprised of certain learning objectives,
- builds upon a sequential structure or have a certain flow,
- builds on a combination of multiple learning activities,
- and a number of resources and learning supports are related to the design.
The relations between learning designs and learning activities can be seen in a structure of nested hierarchies, and in this representation a learning design consists of several learning activities (Maina et al, 2015). Learning design as a methodology enables teachers to create or co-create, design or re-design, and most importantly to share effective pedagogically thoughtful designs and practices. In the early stages, research within e-learning had a strong focus on content and structure. In learning design we see a move away from focus on delivering content to students towards a higher degree of awareness of designing for learning activities (Conole, 2007).

One perspective on learning design are the following three ideas from Britain (2004). The first idea a belief that people learn better when they are actively involved in something. The second idea is that using an approach like learning design provides an opportunity for more structured teaching activities based on a learning workflow. This can help more effective learning take place. As a third idea, Britain (2004) states that when using learning designs, there is a possibility to reuse or share the learning designs among teachers. Working with learning designs bring a focus to the learning activities, which - as also stressed by Dohn (2010) - is important. From Britain’s (2004) and Dohn’s (2010) perspective learning design provides a framework for deep and creative reflection as part of the design process and furthermore on the structure of the activities in the teaching.

Conole (2013), on the other hand, defines learning design as:

“A methodology for enabling teachers/designers to make more informed decisions on how they go about designing learning activities and interventions, which is pedagogically informed and makes effective use of appropriate resources and technologies. This includes the design of resources and individual learning activities right up to curriculum-level design. A key principle is to help make the design process more explicit and shareable. Learning design as an area of research and development includes both gathering empirical evidence to understand the design process, as well as the development of a range of learning design resources, tools and activities.”

(Conole, 2013, p. 8)

Also Conole (2013) refers to activities as especially important. She also makes clear that learning design is about facilitating the process, and the possibility of making learning designs shareable and explicit. From the perspective of Conole (2013), awareness is on the pedagogical aspects, which are to be considered when working with learning design, and the documentation of how the process evolves becomes important, as to be able to modify and adjust along the way.

Learning design is a creative process based on the design of new practices, activities, resources and tools, which will underpin particular learning objectives in a given educational context (Mor & Craft, 2012). Working with learning design should be qualified by 4 aspects: 1) knowledge within the subject matter, which teachers bring in, 2) knowledge based on pedagogical theory, where both the teacher and the learning designer have a big impact, 3) a minimum of technological know-how is important as a teacher, but here the learning designer could supplement and possibly also a professional producer could be invited into the process, and last but not least, is it important with 4) experience within the field of practice, which the teacher also brings into the design process. Furthermore, learning design should also generate innovation in these different areas. Participants should benefit from it based on the time they invest in participation, and related to their efforts and aims (Maina et al, 2015; Mor & Craft, 2012).
As we have seen above, there are many different terms and aspects involved in defining learning design (Maina et al, 2015), but taking an overall perspective there seems to be two main approaches identifying learning design; either as a product (Koper, 2006) or a process (Conole, 2013). The general concept of learning design can be said to build on activities, collaboration and workflow, combined with awareness within the four areas specified by Mor and Craft (2012) above.

A well-known discussion within the research field of learning design concerns the terminology ‘design for learning’ versus ‘learning design’. Researchers such as Goodyear & Dimitriadis (2013) and Beetham & Sharpe (2007) argue for the ‘design for learning’ terminology. This is to say that ‘design for learning’ relates to a process, whereas ‘learning design’ from their point of view is more in line with a product. The authors stress that “one can design for learning, but not design learning”, and that the teacher can’t determine what is learned (Goodyear & Dimitriadis, 2013).

Goodyear and Dimitriadis (2013) argue like this:

“There is a gap between a) that which has been designed; and b) the activities in which people engage (through which they learn). This means that one can then try to analyse the relations between (a) and (b). [And]... it is very rare for (a) to determine (b).”

( Goodyear & Dimitriadis, 2013, p. 2)

From our research and a literature review (Khalid & Buus, submitted) mapping the barriers of ICT integration into teaching practices, it becomes clear that teachers need facilitation by professional learning designers to be able to build a bridge between technology and pedagogical issues, which teachers face in the re-design process (Buus, 2015; Khalid & Buus, submitted). Often teachers need to re-tune their mind-set around their changed role in the new learning design. They need to see and think of themselves as having certain technical skills, as well as pedagogical ones. An interesting aspect, though, is to what degree the technical dimension is important in order to obtain a qualified digitally mediated learning design. What may be an issue, when dealing with learning designs in a blended learning context, is the fact that teachers are often left behind or even dis-empowered in their potential to do re-design and integrate digitally mediated learning activities into their teaching (Maina et al, 2015).

Learning designers are not domain experts within the teachers’ field of knowledge, but usually have a pedagogical background combined with knowledge about technologies supporting teaching and learning activities. An important issues in this approach is the dialogue and collaboration between the involved teacher, the learning designer and the course producer, when co-creating digital teaching material and activities. Therefore, there is a need to look into how we can involve teachers in the design work so they can be creative, because they often turn out to have no or limited experience with online or blended learning and how to design digital learning activities. Taking this into consideration, it becomes important to find ways to facilitate - or scaffold - teachers in this process, which can be done in many different ways within the framework of learning design (Maina et al, 2015). Figure 1 below illustrates the process of scaffolding both the teacher by the learning designer (during the design process) and that of the teacher scaffolding the learner in the students’ learning process (Buus, 2015).
In the model as well as in the approach to learning design, teaching and learning activities rather than technology are the key foci. This approach requires a focus on the critical professional knowledge of the teacher, which needs to be put into play when designing the digitally mediated teaching activities (Buus, 2015). Research show that organisations often neglect the importance of scaffolding teachers when they design digitally mediated teaching, and rather often assume that teachers have the required skills and knowledge within the technological domain as well as sufficient time on their hands for the digital production.

When digitally mediated education or courses are designed and developed, the focus is on education and learning, materials, working methods for teaching and learning, IT infrastructure and tools, as well as the different competencies of the participants; those already held and those being gained from participating in the design work. Also, participation in the development process is key to the teachers' motivation, ownership and skills development. In our experience, the competences and key skill identified as needed for teachers is the ability to use their imagination to anticipate the outcome of the learning activity. They need to engage themselves in a design thinking approach, have a clear teaching philosophy, and be deliberate about which learning objectives the learning activities should support.

3. Collaborative e-Learning Design method (CoED)

In the capacity as learning designers, the authors of this paper have been responsible for supporting teaching staff in developing online and blended learning. For this purpose, we have used a methodological learning design approach called the Collaborative e-Learning Design method (CoED) (Georgsen & Nyvang, 2007; Ryberg, Buus, Nyvang, Georgsen, & Davidsen, 2015). Different variations of the original method have evolved, but basically the CoED method provides a set of guidelines for conducting collaborative design workshops aimed at producing digital learning designs in the format of whole courses, one or more modules, or other educational activities. Based on an iterative and learning-oriented approach to designing for
learning, the method allows for different levels of detail in terms of the resulting design. The method also draws on Wenger’s social theory of learning (Wenger, 1998) with its focus on social practices and development. Taking Wenger’s (1998) approach to social learning, one of the core processes in learning is negotiation of meaning, where negotiation is defined as a process of participation and reification. When looking from this perspective, design for learning in an organizational setting or in a team of designers brings out communicative participation and ways to develop tangible outcomes. An important part of the CoED method is the negotiation and collaboration on establishing a shared pedagogical vision among the participants, and being able to discuss different values and to make a shared representation of these in a very flexible, yet structured manner.

Teaching staff from the School of Continuing Education often develop learning designs for ordinary program modules within a short time frame. The time-span for the activities can be very diverse, as it can be a specially designed course with a 1-week duration or it might be a 12 weeks course. This type of short programmes need a focused and well-described content, which is often seen to challenge the teachers in the development process. In this regard the authors have been conducting workshops inspired by the CoED method with emphasis on team based design work. The workshop methodology consists of four phases, illustrated in an example below:

- Phase 1: Idea and development of the design (vision) - what is the basic idea / what should be designed?
- Phase 2: Description of activities in the form of roles, working methods, arenas, learning goals (who, what, where, why?)
- Phase 3: Production of materials and design of learning platform
- Phase 4: Implementation of design (including test and adjustment)

A common challenge is to engage participants from different target groups, and to facilitate their engagement in dialogue and negotiation to get a broader variety of perspectives on the learning design process. More specifically, to engage participants in fruitful design work including integration of technology in their teaching and learning approach, many times proved difficult due to the lack of relevant experience of the participants. It became a particular aim to find ways to overcome this issue. Before going further into the lessons learned, we will present the case and the organisational framework in the following section.

4. Blended learning in further education

Back in 2013, in the School of Continuing Education, a project on was initiated on the strategic level aiming to increase the occurrence of blended learning and online education in the educational portfolio. Although a number of employees previously had been included in similar initiatives, there was a lack of significant success stories in the field of online and blended learning. As part of the strategy, an ambition was formulated that the school should play a stronger role in the market for technology-supported diploma and academic courses, a position which so far was held predominantly with traditional face-to-face courses and programmes.

In 2013, the development begun in the school of a method for design and construction of blended learning in. The goal was to meet the needs for adjusting existing programs and modules to incorporate a greater degree of online and blended learning, while simultaneously adapting this to the particular demands of continuing education with rapid development, a large number of short term courses, tailored products for parts of the market, etc. At the same time, the ambition was to develop a way of working which combines
design and production of new learning designs with professional development for the teaching staff. The efforts were supported from the end of 2013 with the appointment of a project employee, whose task was to assist the teachers in design and production of digital materials, adjustment of the learning management system, etc. Through the years of 2013 and 2014, experience was gained through development of a number of modules and digital teaching and learning materials, and this experience points to a number of organizational opportunities and challenges, which will dealt with in this paper. After 2014, there has been further investment made in this way of working, and up until today, the school still aims to invest in capacity building within this area (Georgsen & Løvstad, 2014).

The approach taken in this project aimed at developing a customised design, meaning trying to meet as many as possible of the specific needs and requirements of the users in the design solution. In the organisation which the School of Continuing Education is part of, the usual approach towards IT supported teaching and learning is a standard solution designed to fit the needs of the vast majority of the bachelor programmes in the university college. The same learning management system (LMS) is in use in all programs. The design of this system has been adjusted by and is generally supported by the central IT-unit, and all students and teaching staff have a personal account and email account connected to this system. The LMS is mainly used for distribution of information, teaching schedules and materials, for assignments, and for communication between teachers and students. In all of the study programmes the system has the same design, functionality and user interface, and as such can be labelled a ‘standard system’ in the organisation. This is a common situation in many educational institutions, and has the advantages of stability, professional support/help desk, and good integration with other standard tools in the institution. In the field of further and continuing education, however, the conditions are different in a number of ways from those in bachelor or master programs. The most significant differences are:

- The extent and duration of the course or program. In short courses it is important that the use of IT does not take up unnecessary time or requires too much attention
- The need for user-oriented design is bigger in further education, as the groups of participants, the contents, the ways of teaching and studying often vary greatly across different courses
- The need for user-orientation means that the organization should hold capacity to design and support a variety of solutions/designs for learning support
- Participants in further education and workplace learning usually connect and communicate with the lecturers they meet, rather than with the organization itself. This means that teaching staff, in addition to being professional teaching and content experts, also need to have sufficient IT-proficiency to assist learners with the most urgent IT-problems they may encounter

Thus, use of online and blended learning in further education and workplace learning put demands on the organisation to produce adjustments of existing designs and in some cases to develop new designs, often in short time. In order to maintain the position of the teaching staff as pedagogic and content experts, it is also important to focus on ways of integrating the pedagogical knowledge of the teachers into the design work. In this project, a user-oriented methodology for learning design was tested.

Based on the efforts experienced and despite the participants’ interest, goodwill and experience with pedagogical IT tools, it is still a difficult and comprehensive task to design, develop and offer blended learning. The challenges are both individual and organizational; they concern resources and competencies; and there is a clear correlation between some of the challenges experienced by the teachers and the organizational and managerial priorities the area is experienced to have. Experience has shown that
increased use of online and blended learning as well as generally increased IT use in existing educational practices requires a clear strategic priority and capacity building in the organization.

5. Data collection during the project

This paper is based on data collected during the last 4 - 5 years in projects dealing with digital learning designs. Different projects, similar to the one described in section 4, have been initiated in this period of time. Our data is collected in and after design workshops, they are observation data from closely followed design processes, and finally there are a number of both individual and group based interviews. Furthermore, in Spring 2014, a study was conducted into the use of the institutional LMS as a kind of baseline evidence.

During this period of time (2013 – 2016), approximately 25 design processes have been completed, and design workshops have been organised with teachers, coordinators and learning designers as participants. The project had the main purpose of re-design existing course modules from face to face-teaching to learning designs with more digital materials and more on line and blended teaching and learning-activities. Some design processes focused on the development of blended learning and re-design of selected lectures and learning activities into an online format. The design of new modules, which are purely online or blended from the outset, has taken place to a certain degree only.

The aim of the study of LMS-use was to establish a picture of the ways lecturers utilised the functionality offered in the LMS. For that purpose, around 90 course sites in the LMS platform were evaluated. 70 of these were randomly selected to represent the typical use of LMS, and 20 were chosen to represent more advanced use (based on a selection of lecturers known to be more innovative and advanced that average). The evaluation showed that although the group of more advanced lecturers did use a wider variety of digital materials and tools which were not integrated into the LMS, there were some common traits across the entire population in the study: Only a limited number of functions in the LMS were commonly used, most commonly the LMS was used for distribution of materials, information from lecturer to students, and handling of assignments from students. It seems an plausible conclusion that the template for course websites was highly directive for lecturers’ use, and as such also a limitation on their imagination (except for a few innovative front runners).

To conclude the data collection after the first phase of the project (after app. 1 year’s work) a round of interviews were conducted with the participants in the workshops. The main findings from these interviews support the above conclusion that the input received for designs has great impact, and that stimulating the technological imagination of the workshop participants is no trivial task. In the following, we present some of the findings from the group of interviews conducted.

First and foremost, participants describe their experience with the workshops with of degree of ambivalence. Most have found it enriching to participate, and also necessary for their ability to take steps to further develop the educational programs they are involved in. At the same time, most teachers have experienced the design workshops to be longer than necessary. The teachers thus describe that they do not (think they) have the time to enter into what they call a long-term design process - at the same time they express that it has been inspiring to participate and that after the process they include more digital aspects into their teaching.

Furthermore, some teachers also made statements about the importance of students entering a 'controlled' teaching and learning environment, which show us that teachers need to be in control, and letting go of the
control can be an issue to them. The question of control has different aspects, however. For example, some prefer to do things themselves e.g. produce digital learning object and materials, although they did not currently have the skills to it. Also the fear of handing over control to students was an issue, as some teachers feel they cannot keep in touch with what the students learn.

In interviews, the participants express difficulty with gaining from the collaborative element in the method. Several participants emphasize that they themselves know what they want, they are experienced teachers, etc., and thus they diminish the relevance of e.g. discussing their teaching philosophy. At the same time, several participants state that the workshops have given inspiration to their own development through discussions with colleagues and by seeing what others have done, so this again shows there is an ambivalence in what is gained from the learning design workshops.

In the discussion of the prerequisites for the participating teachers to increase their use of IT in education, it is pointed out from all sides that the need for support and, in general, functioning technological solutions is great. Based on out early experience, it seems that the teachers desire to deliver quality education and their need to be in charge results in a cautious approach to innovation of teaching with ICT. That quality in teaching is challenged by the use of ICT is reported both as an experience and as a point of view. To ensure quality, participants describe several different strategies: Use as little ICT as possible; be absolutely sure that the technology is stable and support is available when needed; only use IT solutions and tools you can be in charge of yourself.

It is perceived as important for the ownership of the participants that each workshop will result in some concrete products, whether these are finished teaching materials or documentation of steps in the process like posters with story boards or similar things. Templates or tools for presenting ideas and documenting decisions are thus important both to enhance the experience of ownership and to make it possible to communicate more about the specific designs. Finally, we found that participants in the workshop were strongly inspired by what was presented to them. This was especially true where participants did not have a project planned before reaching the first workshop and when the participants have limited experience with pedagogical IT applications.

In the first workshop, the learning designers used video for inspiration and from the interviews it appears that the inspirational video-based material had great impact on what ideas the participants themselves were able to formulate in their designs.

Following this first phase, another round of design activities was conducted with 9 participants and 6 different design projects. Most of these were one-person projects, meaning that the main collaboration was between one individual lecturers and the learning designer. As in the first phase, lecturers were supported in both the design process and with the production of teaching materials, etc.

The first two phases of the project were characterized by a bottom up-approach, where the interests and ideas of the participating lecturers set the ambitions. This was followed by a call for projects, which needed approval from managers as well as close collaboration with the learning designer in the department. This call fostered projects which were characterised by individual support and facilitation of each of the projects. In total around 60 participants have participated in design workshops and projects. Throughout the entire period, the department has supported this initiative with resources, both development time for the lecturers, facilitation from a learning designer, and professional support for the production of digital materials. Despite a number of staff replacements, there has been a constant focus on facilitation of teachers
in their design work. However, it seems that the organisational capacity has still not found the appropriate level. In the following section we will discuss this further.

6. **What have we learned and how to proceed?**

From the experiences described in this paper, different challenges have been identified in relation to involving teachers in learning design processes: Limited IT-knowledge and experience; lack of technological imagination, lack of confidence when trying out new designs; and the need for a clear organizational framing of the design work are some of the more dominant ones.

To analyse and understand our findings, we have used a model describing levels of organisational development towards handling development of e-learning (Christensen et al 2014). The model describes an organizational didactic framework, naming three levels of importance: A strategic, a tactical and an operational level. The model illustrates how the three levels are interconnected and shape the conditions for pedagogical development of learning designs with blended and online learning.

The framework has three purposes:

- To describe the resources which need to be prioritized in order to realize a strategy within the area of blended learning;
- To clarify the link between the priorities in the organization;
- To describe the framework that the organization and its management need to make for development to take place.

The model is described by the authors in two variations; a hierarchical and a dynamic version (see figure 2 below).

![Figure 2: The hierarchic and the dynamic version of the model](image)

The hierarchical model is the starting point when deciding on the establishment of new education concepts, and describes a linear series of decisions, while the dynamic model becomes relevant when a educational model or concept has become a new practice. The study conducted by Christensen et al show that when it comes to development and provision of learning activities, it is not possible to succeed with an e-learning program without quality assurance of the tactical level. This includes providing ongoing and adequate
support on the tactical level primarily in terms of resource allocation, reliable technologies, technology support and a supportive day-to-day management. Therefore, the hierarchical approach is crucial in establishing new practices.

A key point of the hierarchical model is that the strategic level must be the basis for the other levels, and these relate to this one. Once a new teaching practice has been established, knowledge and experience about and in support of this practice will be produced at all three levels. The three levels will then all be part of a relational and dynamic relationship that is reflected in the dynamic model. The dynamic model illustrates how mutual influence between the three levels will be achieved over time. An important point is that, although decisions on both the strategic and tactical levels are prerequisites for the capacity to develop and implement new learning practices at the operational level, an impact of the new learning designs needs to be demonstrated. Depending on the strategic goals, the impact may show itself on as educational, audience-related, economical, etc. If this does not succeed over time, strategic and tactical support will be declining.

The hierarchical and relational dimensions show interdependence between management involvement and innovation developed through and in the teaching practices. Since new ways of teaching and learning are constantly developed, an educational institution should provide space for experiments which can be assessed before making a major strategic effort. When formulating and implementing an organizational learning design methodology, it is furthermore important to ensure:

- that efforts are directed towards known and communicated goals
- that resource allocation is ongoing for the effort
- that the effort becomes sustainable, understood as beneficial in terms of the formulated goals
- that the organization continuously develops both its practice and its ambition level in line with the increasing amount of experience and knowledge

The time to shift the understanding of the organization from a hierarchical to a dynamic one (as illustrated in the two versions of the model) is identified through the answers to key questions at each different level in the model (see figure 3 below).

![Figure 3: The central questions to ask at the three levels (Christensen et al, 2014)](image-url)
in the case we have presented here, the organisation seems to be making progress in capacity towards supporting teachers at the operational level. Considering the experience gained from the strategic effort done so far, we argue that the organization School of Continuing Education is in the process of deciding on new educational concepts. These concepts are not yet an established practice. Therefore, the hierarchical model still will be the most sustainable approach for understanding the organizational change in Continuing education, while a dynamic organisation is not yet achieved in this area.

At the tactical level, the organisation has now established a unit for Learning Design which is becoming a center of knowledge and a contact point for staff involved in developing new ways of digitally supported teaching and learning. The learning designer and producer in this unit is gaining influence on the continuing effort in the department, and may become a key step in establishing one or more professional learning communities (PLC). PLCs may, in the point of view of the authors, be a way of strengthening the operational level as well as a way to combine the three levels.

In professional learning communities and practice-oriented professional development, knowledge, networks and experience in its own is not sufficient in building a learning culture.

One crucial issue is the interaction of these elements. Such interaction is both dependent on and contributing to a reflexive practice. A reflexive practice can be regarded as an interaction between different forms of reflection: partly the immediate reflection that accompanies the action, and the subsequent reflection on the action (reflection-in-action and reflection-on-action, (Schön, 1983)). Hargreaves & Fullan (2012) use the term 'reflection-about-action', which refers to reflecting on the terms and conditions which contribute to practice and furthermore to what may be changed in the framework to support the desired practice.

In the current case with a community of teachers, a PLC should support the experimental approach taken to development of one’s own teaching practice, both individually and collaboratively. In the broader community of the organization, it is necessary to make this a naturally occurring way of working, and to support it with e.g. earmarked working hour, logistics, knowledge and other resources. This is also an important point in the work of Christensen et al, 2014. Hargreaves & Fullan (2012) emphasize that there are no quick solutions. On the contrary, it is a long move and cultural change to change the organisational culture.

Since the beginning of the 1990s, the concept of professional learning communities (PLC) has had a double-sided story in e.g. American school development, where PLCs have been organized in many different forms both internally in schools and between schools, districts, states. Often the assessment of such communities is far more positive among managers and decision-makers than among the teachers, and they have been criticized of stiffening in technical, dazzling maneuvers, for example with a close focus on tests. So there is a dilemma in this, as professional collaboration necessarily needs to be set up, promoted and challenged (by managers, teachers or others), while at the same time, professional autonomy among teachers is crucial to the quality and effect of the collaboration. Hargreaves & Fullan (2012) speak about a difficult balance between 'pushing' and 'attracting'; thus making it attractive and inspiring, but also normatively expected, to participate in the professional collaboration - rather than enforcing it through bureaucratic procedures with expectations of uncritical implementation (Hargreaves & Fullan, 2012, p. 131). If professional excellence is the goal, methods should not be 'implemented' but needs to be tested, examined, interpreted, adapted and changed by the teachers themselves in a social learning context. Again, this is about the balance between freedom and responsibility - between the obligation to relate to 'best practice' and the autonomy to develop
‘next practice’ (Hargreaves & Fullan, 2012, p. 50), but also about the strategic, tactical and operational
dynamic relations (Christensen et al, 2014).

7. Conclusions
In this paper, we have drawn attention to the importance of combining the levels of activity and
decisionmaking in a learning design methodology in a way which will facilitate the teachers’ design work as
well as make an effort in developing an organisational framework for the design work and collaborative
experiments. We point to the concepts of professional learning communities (PLC) and communities of
practice (COP), where professional learning designers and producers collaborate and facilitate the design
processes in joint collaboration with the PLCs or COPs. Such a cultural change will have to take into
consideration key questions at both the strategic, tactical and operational level in the organisation to achieve
a dynamic organisation characterized by a learning culture.

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A Quality Assurance Strategy for E-Learning Institutions in GCC Countries

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Abstract
The academic programs introduced in the Gulf Co-operation Council (GCC) countries in recent decades have been designed mostly in line with the conventional educational model practiced in North America and Europe. However, in view of the coming into existence of open and distance education degree/diploma programs offered by some institutions in the GCC countries, several pieces of conventional wisdom related to quality assurance and accreditation may be challenged. It would be interesting, therefore, to examine and discuss the implications of the new space created by the E-learning institutions on the landscape of higher education for quality assurance strategy.

The study addresses the following research question.
RQ1. What are the dimensions of quality assurance strategy perceived by senior academics and administrators in the context of GCC countries and how valid and reliable are these dimensions? In order to tackle this question empirically, a survey was conducted in the UAE, Kuwait and Saudi Arabia. The target population for the study included all senior academics and administrators who participated directly or indirectly in E-learning.

The findings of the survey, viewed in conjunction with the available literature focusing on E-learning suggest that accreditation, accountability, assessment and benchmarking are distinct but inter-related processes in quality assurance. Accreditation for all kinds of programs including E-learning in the GCC countries continues to be a uniquely governmental process ensuring standardization, stability and conformity to certain pre-determined standards. However, in the emerging scenario characterized inter alia by the proliferation of open education courses, the decision makers have to design a strategy to foster innovation, uniqueness and diversity in the educational system of their countries.

Keywords: e-learning, quality assurance strategy, GCC countries, accreditation

1. Introduction
There has been a rising tide of interest in E-learning in recent years mainly due to the availability of useful E-learning technologies and emerging needs for flexible education. In fact, the use of the Internet in the program delivery system has been increasing considerably all over the world (Chang, 1999; Smith and Duus, 2000; Cornuel, 2006; Friedman, 2017 and Gulati, 2008). It is widely believed that institutions of higher learning have to adopt Internet-based learning formats in order to grow and stay profitable (Huynh, et. al., 2003; Lee et.al.,2004, Docebo, 2017).

Evidence from various parts of the world suggests that online programs and courses have been proliferating with considerable speed. Recently, MIT launched the oft-quoted Massive Open Online Courses (MOOCs). Other well-known US institutions offering online courses include Duke University, Colorado State University, University of Baltimore, New York University, University of Florida, University of Maryland, the Massachusetts Institute of Technology, Ohio University, Penn State University, Stanford University, University of Wisconsin, and the University of Tennessee. Some well-established online universities appearing on the landscape of higher education include UK’s Open University, Capella University, Nova South-eastern University and University of Phoenix (Eastman and Swift 2000, OLC, 2015 and 2016). The Commonwealth of Learning, Canada has also supported programs organized by open universities in India, Pakistan and Bangladesh. Some countries of the Middle East and North Africa such as Egypt, UAE, Saudi Arabia, Jordan, Palestine, Oman, Syria, Kuwait, Bahrain, Tunisia and Lebanon, among others, have also witnessed emergence of E-learning programs.
2. Statement of Problem
The academic programs introduced in the six-member Gulf Co-operation Council (GCC) countries in recent decades have been designed mostly in line with the conventional educational models practiced in North America and Europe. However, in view of the coming into existence of E-learning and distance education degree/diploma programs offered by universities in the GCC countries, several pieces of conventional wisdom related to quality assurance may be challenged (Akinyemi, 2005). It would be interesting, therefore, to examine and discuss the implications of the new space created by online universities on the landscape of higher education in GCC countries for quality assurance strategy.

3. Conceptual Framework and Research Questions
Following a review of extant literature (Al-Dossari, 2005; Jung, 2011; EADTU 2012) and interactions with focus group members, we propose a framework (Figure 1) that highlights key quality assurance dimensions.

![Research Framework](image)

Figure 1: Research Framework

4. Research Question and Hypotheses
In view of the problem stated above, the following overarching research question was posed for this study.

**RQ1.** What are the dimensions of quality assurance perceived by senior academics and administrators in the context of GCC countries and how valid and reliable are these dimensions? This question is of strategic relevance in view of the potential of E-learning to grow in the GCC countries and indeed elsewhere in the Middle East. Quality assurance strategy will certainly continue to be the main theme in higher education discussions in the following years. Critical issues such as maintaining academic standards and accountability to the government and other stakeholders in E-learning are likely to attract much attention as online delivery systems begin to take hold. This question is necessary because of the recognized instability of the dimensions of quality assurance (Sallis, 1994). The convergent validity of the dimensions of quality assurance is addressed in the conduct of factor analysis. Reliability of constructs is tested using the Cronbach's alpha (Table 5).

The following hypotheses were formulated for further empirical scrutiny.

**Hypotheses**

*H1.* Quality assurance is positively associated with accreditation

*H2.* Quality assurance is positively associated with accountability to stakeholders

*H3.* Quality assurance is positively associated with assessment

*H4.* Quality assurance is positively associated with benchmarking
The hypotheses postulated for this study appear to be consistent with the literature (de Paor, 2016). They capture the essence of the quality assurance methodology in the context of E-learning and reflect this study’s research question.

5. A Retrospection of Literature

Despite the outpouring of an impressive array of studies during the last four decades focusing on the dimensions of quality assurance, gaps exist in our understanding of quality assurance as a stylized framework. (Barnett, 1992). This is mainly due to the fact that quality assurance has been described in the literature as a relative concept. Consider the following:

*Quality is relative to the user of the term and the circumstances in which it is involved. It means different things to different people, indeed the same person may adopt different conceptualizations at different moments. This raises the issue of whose quality?* (Harvey and Green, 1993).

There are different stakeholders in the quality of higher education such as learners, employers, faculty and support staff, government agencies, accreditation bodies, and even lobbying organizations. Each of these stakeholders may have subjective expectations of quality assurance (Harvey and Green, ibid). The incongruent dimensions of quality assurance found in literature as follows.

<table>
<thead>
<tr>
<th>Contradictions</th>
<th>Statements in Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic and operational</td>
<td>Quality is both a visionary and operational concept</td>
</tr>
<tr>
<td>Visionary and practical</td>
<td>Quality is both strategic and operational concept</td>
</tr>
<tr>
<td>Absolute and relative</td>
<td>Quality is both an absolute and relative concept. It might mean both ‘high quality’ and ‘fitness of purpose’</td>
</tr>
<tr>
<td>People and systems</td>
<td>Quality is about both people and systems</td>
</tr>
<tr>
<td>Institution-oriented</td>
<td>The perceptions of the institution and customers about quality may differ</td>
</tr>
<tr>
<td>Customer-oriented</td>
<td></td>
</tr>
<tr>
<td>Hard and soft</td>
<td>Quality can be defined with the help of measurable standards as well as soft intangible standards about customer care, courtesy and empathy.</td>
</tr>
<tr>
<td>Static and dynamic</td>
<td>Today’s top quality may change to tomorrow’s poor quality</td>
</tr>
</tbody>
</table>

Source: Sallis (1994)

In view of Table 1 and RQI, it may be argued that different sets of quality assurance dimensions are required for meeting different sets of expectations from the stakeholders. Despite the contradictions found in the conceptualization of quality assurance, the link between accreditation and quality assurance appears to be explicit and clear (Duff et al., 2000). A review of literature indicates that the concept of formal accreditation took birth in the American higher education institutions (Fraser, 1994). Later it was adopted and contextualized by Central and Eastern European countries. It eventually got integrated into the European Union countries as part of the Bologna Process. In order to uphold quality assurance, accreditation has gained popularity in higher education in a large number of Arab countries (Al-Dossari, 2005).

Quality assurance and accreditation are functionally different. Quality assurance serves as an enabling process for an institution to obtain accreditation. Accreditation provides standards and guidelines for the institutions to follow. However, they both seek to achieve similar outcomes: “The capacity to operate and to provide educational services, the capacity to award officially recognized degrees, and the right to be funded by the state” (Vlasceanu et al., 2004).

UNESCO has tried to integrate elements of accreditation into quality assurance as follows: “An all-embracing term referring to an ongoing, continuous process of evaluating (assessing, monitoring, guaranteeing, maintaining, and improving) the quality of a higher education system, institutions, or programmes” (Vlasceanu et al., 2004).
In view of the strategic importance of quality assurance in higher education, it would be interesting to explore its key dimensions in the context of E-learning in the GCC countries.

6. Research Method
In order to tackle RQ1 and hypotheses empirically, a survey was conducted based on a questionnaire. During the first phase of the survey exercise, an exhaustive list of quality assurance dimensions was prepared. The list was largely based on insights derived from the literature (EADTU, 2012). To finalize the list of variables, a virtual focus group was established. Ten senior academics from E-learning institutions (U21 Global, Singapore, Arab Open University, Bahrain, and Hamdan Bin Mohammed Smart University, UAE) were invited to form a virtual focus group. They were briefed about the purpose of the session. The guidelines developed by Morgan (1988) were used during the process of the discussion. The session was led by a moderator from HBMSU. The exhaustive list of constructs on quality assurance identified following a review of literature was revealed to the participants. They were asked to select and assess the variables they felt were important in the context of E-learning in the UAE and other GCC countries. The findings from focus group research were used to refine the survey instrument design.

6.1 Survey Instrument
During the second phase of the research exercise, a survey instrument was developed to identify the constructs and the items. The virtual focus group acted as a basis for the development of the questionnaire. The survey instrument sought information from the respondents on a total of seventeen items identified from the literature and the focus group discussion. The items were recorded on a 5 point scale in which ‘1’ indicated ‘Strongly disagree’ and ‘5’ indicated ‘Strongly agree.’

6.2 Sample Selection and Administration of Survey
The target population for the study included all senior academics and administrators who participated directly or indirectly in E-learning. For the purpose of this study, however, a sample of 300 senior academics and administrators was randomly selected representing E-learning institutions in Kuwait, UAE and Saudi Arabia (Table 1). 257 questionnaires were found to be usable, resulting in a usable response rate of 85.6 percent. The main reason for selecting senior academics and administrators as the unit of analysis is that they are the ones who quite often use Moodle, WebCT or Blackboard and participate directly or indirectly in quality assurance and accreditation exercises in their institutions. Because of difficulty in obtaining probabilistic samples in the E-learning sector, a convenience sampling technique was used. We used the procedure suggested by Salganik and Heckathorn (2004). The respondents were contacted personally by students of Hamdan Bin Mohammed Smart University in Dubai and through e-mails in Saudi Arabia and Kuwait. Fortunately, all the respondents were able to read, write and speak the English language.

Table 2 provides background information about the respondents. The survey had 42.8% of respondents from the UAE. They were quite enthusiastic to participate in the survey exercise in view of the popular policy track pertaining to smart education in the country.
7. Background Information

Table 2: Background information about the respondents

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 40 years</td>
<td>40.1</td>
</tr>
<tr>
<td>41 – 50 years</td>
<td>30.7</td>
</tr>
<tr>
<td>51 – 60 years</td>
<td>20.2</td>
</tr>
<tr>
<td>60 years and above</td>
<td>8.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>63.8</td>
</tr>
<tr>
<td>Female</td>
<td>36.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Countries</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Arab Emirates</td>
<td>42.8</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>32.7</td>
</tr>
<tr>
<td>Kuwait</td>
<td>24.5</td>
</tr>
</tbody>
</table>

| Total number of respondents | 257 |

Table 3 presents descriptive statistics. Descriptive statistics are used to have a general picture about the results of this study. Interestingly, all the constructs appear to be promising.
Table 3: Descriptive Statistics

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government’s role in regulating e-Learning programs is critical</td>
<td>3.76</td>
<td>1.037</td>
</tr>
<tr>
<td>Accreditation must encourage innovation and diversity in higher education in GCC countries</td>
<td>3.91</td>
<td>1.077</td>
</tr>
<tr>
<td>Accreditation gives confidence to stakeholders in e-learning programs</td>
<td>3.79</td>
<td>1.105</td>
</tr>
<tr>
<td>Accreditation standards for e-Learning programs in the GCC countries must be in line with global standards</td>
<td>3.45</td>
<td>1.189</td>
</tr>
<tr>
<td>There must be active co-operation between accreditation agencies and the private sector for designing Standards for E-learning</td>
<td>3.69</td>
<td>1.239</td>
</tr>
<tr>
<td>E-learning institutions must be accountable to the learners, the education sector and the economic sector at large</td>
<td>4.07</td>
<td>0.924</td>
</tr>
<tr>
<td>E-learning institutions must incorporate accountability measures in their strategic plans</td>
<td>3.99</td>
<td>0.866</td>
</tr>
<tr>
<td>E-learning institutions must have freedom to deploy resources provided by government agencies</td>
<td>3.89</td>
<td>0.992</td>
</tr>
<tr>
<td>The accreditation agencies must ensure that e-Learning institutions are meeting their purpose and goals.</td>
<td>3.93</td>
<td>0.930</td>
</tr>
<tr>
<td>E-learning institutions must have a balanced board of governors including representatives from stakeholder constituencies</td>
<td>3.81</td>
<td>0.986</td>
</tr>
<tr>
<td>Continuous assessment is desirable in all academic programs</td>
<td>3.99</td>
<td>0.937</td>
</tr>
<tr>
<td>E-learning must have credit-based courses</td>
<td>3.58</td>
<td>1.098</td>
</tr>
<tr>
<td>E-learning courses must be eligible for transfer to traditional programs of study</td>
<td>3.62</td>
<td>1.126</td>
</tr>
<tr>
<td>E-learning institutional processes and learner experiences must contribute to desired and measurable outcomes</td>
<td>3.73</td>
<td>1.083</td>
</tr>
<tr>
<td>E-learning programs in the GCC countries must be benchmarked to comparable programs in other countries</td>
<td>3.87</td>
<td>1.117</td>
</tr>
<tr>
<td>The accreditation standards for E-learning in the GCC countries must be benchmarked to those of the Distance Education and Training Council, USA</td>
<td>3.80</td>
<td>1.124</td>
</tr>
<tr>
<td>E-learning institutions in the GCC countries must create harmony with policy tracks designed by the Government</td>
<td>3.75</td>
<td>1.069</td>
</tr>
</tbody>
</table>

8. Results

8.1 Factor Analysis

Based on a review of literature and findings from focus group session, the items identified in the questionnaire were subjected to a factor analysis in order to group them into meaningful clusters. Factor analysis was conducted via principal component analysis with orthogonal varimax rotation. Various authors have given different cut-off values for the retention of items based on the value of factor loadings, varying from 0.35 to 0.50 (Tabachnick, et al. 1996). In this study, loadings greater than 0.50 were considered practically significant. The items were grouped into four factors with eigen values greater than 1.0. These factors are: accreditation, accountability, assessment and benchmarking (Table 5). These factors explain 64.952% of the total variance (Table 4). Factor 1 contains five items measuring responses to statements related to accreditation with a variance of 19.118%. Factor 2 also has five items measuring responses to accountability with variance of 18.534%. Factor 3 has three items measuring responses to assessment with variance of 13.798%. Finally, three items loaded on the fourth factor (benchmarking) with a variance of 13.502%.
Table 4: Variance

<table>
<thead>
<tr>
<th>Component</th>
<th>Rotation Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>3.250</td>
</tr>
<tr>
<td>2</td>
<td>3.151</td>
</tr>
<tr>
<td>3</td>
<td>2.346</td>
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<tr>
<td>4</td>
<td>2.295</td>
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</tbody>
</table>

The items in the factorial groups were then tested for reliability. To check the reliability of each factor, Cronbach’s alpha analysis using SPSS was computed (Table 6). The coefficients ranged between 0.752 and 0.858, which are all above the value of 0.6. This indicates that all items and factorial groups in this study are sufficient reliable measures (Nunally 1967). The correlations presented in Table 7 lend support to the reliability of the factorial groups.

8.2 Kaiser-Meyer-Olkin Measure of Sampling Adequacy

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy test was also conducted. The KMO measure of sampling adequacy is an index used to examine the appropriateness of factor analysis. A high value between 0.5 and 1.0 indicates factor analysis is appropriate. SPSS output produced a high value of 0.847, suggesting that factor analysis is appropriate.

Table 5: Principal Component Factor Analysis (Varimax Rotation), Factor Loadings and Communalities

<table>
<thead>
<tr>
<th>Factors</th>
<th>q1_1</th>
<th>q1_2</th>
<th>q1_3</th>
<th>q1_4</th>
<th>q1_5</th>
<th>q1_6</th>
<th>q1_7</th>
<th>q1_8</th>
<th>q1_9</th>
<th>q1_10</th>
<th>q1_11</th>
<th>q1_12</th>
<th>q1_13</th>
<th>q1_14</th>
<th>q1_15</th>
<th>q1_16</th>
<th>q1_17</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Accountability</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Assessment</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Benchmarking</td>
<td></td>
<td></td>
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</tbody>
</table>


8.3 Correlation Analysis

The correlations presented in Table 7 lend support to the reliability of the factorial groups.
Table 6: Cronbach’s Alpha

<table>
<thead>
<tr>
<th>Accreditation</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government’s role in regulating e-Learning programs is critical in the GCC countries</td>
<td>0.858</td>
</tr>
<tr>
<td>Accreditation must encourage innovation and diversity in higher education in the GCC countries</td>
<td></td>
</tr>
<tr>
<td>Accreditation gives confidence to stakeholders in e-Learning programs</td>
<td></td>
</tr>
<tr>
<td>Accreditation standards for e-Learning programs in the GCC countries must be in line with regional and/or global standards</td>
<td></td>
</tr>
<tr>
<td>There must be active co-operation between accreditation agencies and the private sector for designing Standards for E-learning</td>
<td></td>
</tr>
<tr>
<td>E-learning institutions must be accountable to the learners, the education sector, and the economic sector at large</td>
<td>0.840</td>
</tr>
<tr>
<td>E-learning institutions must incorporate accountability measures in their strategic plans</td>
<td></td>
</tr>
<tr>
<td>E-learning institutions must have freedom to deploy resources provided by government agencies</td>
<td></td>
</tr>
<tr>
<td>The accreditation agencies must ensure that E-learning institutions are meeting their purpose and goals.</td>
<td></td>
</tr>
<tr>
<td>E-learning institutions must have a balanced board of governors including representatives from stakeholder constituencies</td>
<td></td>
</tr>
<tr>
<td>Continuous assessment is desirable in all academic programs</td>
<td></td>
</tr>
<tr>
<td>E-learning must have credit-based courses</td>
<td></td>
</tr>
<tr>
<td>E-learning courses must be eligible for transfer to traditional programs of study</td>
<td></td>
</tr>
<tr>
<td>E-learning institutional processes and learner experiences must contribute to desired and measurable outcomes</td>
<td></td>
</tr>
<tr>
<td>E-learning programs in the GCC countries must be benchmarked to comparable programs in other countries</td>
<td>0.832</td>
</tr>
<tr>
<td>The accreditation standards for E-learning in the GCC countries must be benchmarked to those of the Distance Education and Training Council, USA</td>
<td></td>
</tr>
<tr>
<td>E-learning institutions in the GCC countries must create harmony with policy tracks designed by the Government</td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Correlations

<table>
<thead>
<tr>
<th></th>
<th>Accreditation</th>
<th>Accountability</th>
<th>Assessment</th>
<th>Benchmarking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accreditation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accountability</td>
<td>.330**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment</td>
<td>.341**</td>
<td>.483**</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Benchmarking</td>
<td>.519**</td>
<td>.237**</td>
<td>.308**</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).

9. Conclusions and Policy Implications

The validation of hypotheses viewed in conjunction with the available literature focusing on E-learning suggest that accreditation, accountability, assessment and benchmarking are distinct but inter-related processes in quality assurance (Table 7). These processes continue to be uniquely conditioned by government policy tracks ensuring standardization, stability and conformity to certain pre-determined
standards. However, in the emerging scenario characterized *inter alia* by the emergence of E-learning, the institutions of higher learning offering online programs have to design a strategy to foster innovation, uniqueness and diversity in the educational system of their countries.

The quality assurance mechanisms have been carefully crafted and established by the accreditation agencies in the UAE and elsewhere in the GCC countries. Given the growing importance of the private sector in the Arab World, it is now desirable for these agencies to be market-oriented and involve representatives from that sector in designing quality assurance strategies and ensuring that the outcomes of the entire process are actually market-oriented.

In view of the openness of the GCC economies and their integration into the world economy, the quality assurance standards for E-learning in particular ought to be regio-centric similar to the ones designed by the European Union or even geo-centric similar to the ones crafted by the World Bank or UNESCO.

E-learning institutions compared to conventional education institutions are in a better position to open virtual branch campuses globally. Surely, virtual programme delivery formats have implications for the accreditation agencies. The quality assurance *standards* crafted for institutions operating within the GCC countries may not be applicable in several other countries. Hence, a different kind of approach is desirable in this situation.

The GCC governments operating through the national accreditation agencies have quite often relied on eminent scholars from all parts of the world to review the performance of academic institutions. Can or should the practitioners be involved in the accreditation of E-learning programs? This is certainly an interesting question, especially in view of the perception that some of the E-learning programs might not provide hands-on experience desired by the corporate sector (Tweney, 1999; Cantor, 2001).

Quality assurance of E-learning in private versus public institutions may pose a thought-provoking policy question. It is popularly perceived that private for-profit institutions sometimes tend to sacrifice quality for the sake of achieving financial returns. How can the quality assurance agencies strike a balance in their standards addressed to both public and private institutions with different missions? This question is worth exploring as E-learning begins to spread its wings far and wide.

An important factor pushing decision makers, particularly in the GCC countries, is the increasing external competitive pressure on education and training. In fact, if E-learning institutions operating in the GCC countries were to compete successfully in international markets, they must improve their competitive ability by entering into partnership arrangements with well-known open universities such as the Open University, UK. The quality assurance programmes in the context of e-learning in GCC countries must be in line with international trends. Surely, E-learning is a promising candidate for rapidly internationalizing higher education in the GCC countries. Arguably, an international approach appears to be promising.

10. Limitations of Study and Future Research Direction

Admittedly, this is an exploratory study based on a modest survey exercise in 3 GCC countries. The constructs of quality assurance strategy used in this study need further validation. Nevertheless, despite this limitation, our study has at least paved the way for an interesting discussion related to the quality assurance of E-learning in the UAE and elsewhere in the region. It may be suggested that future research work focusing on this important area should integrate perspectives from (a) producers of knowledge including academics (b) customers including students and practicing organizations, and (c) the guardian of society—the government. The integrated perspectives from all the stakeholders in E-learning would certainly enrich knowledge in the area of quality assurance.

References


Active online education: a new educational approach at the Open Universiteit of the Netherlands

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Keywords: Improving the quality in higher education, blended degree education

Abstract
In the last decade the Open Universiteit of the Netherlands has had serious concerns about student retention. Every year about 5700 new students start studying at the OUNL, about two thirds of them with the intention of obtaining a BA or MA degree but less than 15% actually gets the diploma. In 2013 the board decided to rigorously transform the educational approach by introducing a new system of active online education with an emphasis on degree programs instead of individual courses and with the introduction of more structure and social and academic integration. In September 2014 all the master programs were transformed and the first master students started in the new system. Evaluation data were collected at every step and the first findings suggest that dropout rates have decreased and that students study faster and achieve more credits per year. Student satisfaction was always very high at the Open University and in the new system there has been only a slight overall decrease in student satisfaction. The students like the increased tutor involvement and the (online) materials but the face-to-face and virtual meetings are only rated highly when students experience real added value from them. About 55% of the students like the new model with more structure and deadlines but 15% of the students remain quite negative and feel that too much flexibility is lost. Although part of the staff was quite critical about the new system, most lectures now agree that teaching in the new system is more satisfying as they have more contact with the students and they can use more group activities. In September 2016 the Open Universiteit started with the transformation of all the BA programs. At the time of writing we only have preliminary results of the BA-programs and it is still too early to draw any conclusions as far as the Ba programmes are concerned.

Keywords: Improving the quality in higher education, blended degree education

1. Introduction

The Open Universiteit is the only open distance teaching university of the Netherlands. The OUNL was founded in 1984 and its basic philosophy was to provide (part time) higher education for independent self-directed adult students who could decide for themselves what, where and how to study. There were no
entry requirements, there was no academic year and students could start studying whenever they wanted and write the exams when they felt they were ready for it.

These characteristics made the OUNL quite incomparable to other providers of part-time higher education on the Dutch market and also to other universities. The OUNL also held a unique position in the field of international distance universities as there was no other distance teaching university which offered such a degree of freedom to her students (van den Boom & Schlusmans, 1989).

When the Open Universiteit was established openness for all groups of students was a key issue and study success and student retention were only minor concerns. Nowadays however the reduction of student drop out and the increase of academic success are very high on the educational agenda and as far as output and success are concerned the Open Universiteit is now compared to other Dutch universities. And in this comparison the OUNL did not perform well. Every year about 5700 new students start studying at the OUNL, about two thirds of them with the intention of obtaining a BA or MA degree but less than 15% actually gets the diploma (Open Universiteit, 2013). In its institutional plan 2012-2016 the OUNL stated “Our success rate can and must be improved and the traditional model of independent self-study is not sufficient anymore to serve this goal” (Open Universiteit, 2012, p. 5). With this goal in mind the board decided to rigorously transform the educational approach of the OUNL by introducing a new system of active online education with an emphasis on degree programs instead of individual courses and with the introduction of more structure and social and academic integration. In September 2014 all the master programs were transformed and the first master students started in the new system. In September 2016 the first degrees in the new system were awarded.

In this article we report on this whole transformation. A previous version of this article was presented in the EADTU proceedings 2016 (Schlusmans, K., Munckhof, R. van den, Nielissen, G. & Giesbertz, W., 2016). The theoretical background is the same but the research findings have been updated and the results of 2016-2017 are included.

First we describe the new model and the scientific foundation and evidence for the new model. Secondly we report on the evaluation studies we carried out in 2014-2017. At the end of the paper we discuss the scope for improvements and the first results of the transformation of our bachelor programs.

2. A model for study success
A complex of factors is held responsible for academic success and student retention. Although there are factors that are related to the education programs, research shows that student-related factors are mainly responsible for academic success (Woodman, 1999; Simpson, 2003, 2012; Ergül, 2004). Student characteristics are not just personality traits and intelligence but also personal circumstances such as family life and work load. This is also evident from the annual student survey at the OUNL (Van den Munckhof & Puls, 2012, 2013). Students who dropped out gave a variety of reasons which mainly relate to personal circumstances, such as lack of time to study (in conjunction with parenting, work and other commitments) and life events (ill health of self, partner or children, moving house, divorce etcetera). Only a few mentioned institutional factors such as too much freedom, too little support and too little contact with fellow students. We also asked our active students if they had ever considered dropping out. About one third of them had actually thought of quitting because of the slow progress in their studies which had a negative effect on their study motivation. When asked what made them stay, they contributed this to personal characteristics: they call themselves real go-getters, they do not give up and their perseverance helps them to go on with the study despite the bumps. They also mention the waste of invested time and money as a motivation no to
stop prematurely. Only occasionally students mentioned an action from the Open Universiteit as a reason to persevere.

The picture that emerges from this study at the Open Universiteit, agrees with the findings of studies at other distance teaching institutions (Ashby, 2004; Yorke, 2004; Simpson, 2003, 2012; Powell, 2009) which state that academic success is largely the result of a combination of factors outside or mainly outside the sphere of influence of the institution. However, this should not prevent a university to take action. Rather, an institution must consider how the opportunities that do exist can be better utilized. When the new educational model of the Open Universiteit was designed several potentially relevant measures were combined (Open Universiteit, 2014). We present these measure in a model for study success which can be used as a foundation for the new educational model.

![A model for improving study success](image)

**Figure 1** A model for improving study success

As stated before in this model we consider student characteristics as the most important factor for study behavior and in its turn for study success. Although student characteristics as such cannot be influenced by the institution, the study intake process can play an important role in the self-selection of the students and in their study choice (Simpson, 2003, 2012). Students often indicate that good information and a better introduction into the academic system probably would have helped to achieve more academic success. Students who are successful have spent more time and energy to choose and prepare for the study and have paid more attention to the match between the study and their own abilities (Kearney and Kearney, 1994; Warps, Hogeling, Pass & Bruckx, 2009; Nederlof, 2011). Part of the intake is also clarifying the expectations. Tinto (2009) indicates that high expectations for students are essential for study success.

Institutional factors do not lead to study success directly but can influence study behavior and study motivation which in its turn lead to study success.

The first institutional factor is the organization of the program which can lead to the reduction of non-commitment by setting deadlines and providing structure (VSNU, 2011; Wijnen, Wolfhagen, de Bie, Brouwer,
Ruijter, & Vos, 1992; Baars, Adriaans, Godor, Hermus, & van Wensveen, 2012; Vermeulen et al, 2012; Vos, 1992, 1998). Also the reduction of parallel programming of course modules (Wijnen et al, 1992, Jansen, 2004, van den Berg & Hoffman, 2005), the even distribution of the study load over the academic year (Wijnen et al, 1992) and the monitoring of student progress (Tinto, 2009) will contribute to more successful study behavior. Moreover financial issues prove to be a significant factor (Sandler,2000; Breier,2010). The impact of this is twofold. On the one hand, the height of study fees will have a positive effect on success because commitment will be larger if one has already invested more and has got more to lose. On the other hand if the costs are higher, students will choose more wisely and enroll less quickly.

The second factor is social and academic integration. Regular contact with the lecturers and professors and the sense of belonging to the academic community are critical to the academic success of students. Social integration is the extent to which students feel at ease among the students and teachers, accepted and feel connected. Any form of academic and social bonding contributes to improved academic achievement and to an increase of the degree of goal orientation and bonding of students to the institution. (Tinto, 1999; Pascarella & Terenzini, 2005; Severiens & Schmidt, 2009; Schmidt, 2012). This in its turn influences the decision either to drop out or to continue (Tinto 2004, 2009, Texas State Higher Education Coordination Board, 2004; Ministry of Education and Science, 2008; Goovaerts, 2012). The relationship between academic integration and study success has been demonstrated in a number of studies in recent decades (Chapman and Pascarella, 1983; Bean & Metzner, 1985; Ulriksen, 2009 Ulriksen, Madsen & Holmegaard, 2013) and these studies stress the importance of (informal) contact with lecturers about the subject matter, discussions with fellow students and participation in academic activities as factors related to study success.

The third factor is the didactic approach: the quality of the teaching materials and the testing are important for academic success. There is an optimal ratio between self-study and contact time (Gijnselaers & Schmidt, 1993; Vos, 1992, 1998; Schmidt et al, 2010). A limited contact with lecturers and professors will motivate students to study independently but too much contact will take up time which could be used for self-study. Also the use of active teaching methods (Merrill, 2002; Matthews, 2009; Zhou, 2012) and formative types of tests and the use of partial exams (Oosterzee et al, 2010; Bruijns, 2014) will contribute to study success.

3. The new educational model: Active online education

In the last decade the Open Universiteit has carried out several projects on study success (Oosterzee et al, 2010; Nederlof, 2011; Schlusmans & Schoevaart, 2013; Schlusmans, Boon, Van der Klink, & Schoevaart, 2015) but there was never an overall model for the whole university. In 2012 a task force was established to develop a new evidence based educational model which would increase study success (Koper et al, 2013). This new model attempts to integrate most of the study-promoting factors mentioned above.

The main characteristics of the new model are:

- Intake interviews with new student to clarify expectations.
- Reduction of non-commitment by introducing an academic year and a course schedule with fixed deadlines.
- Increase of social and academic integration by organizing more virtual classrooms, more f2f-meetings, a pro-active tutor and a study counselor who monitors student progress
- The introduction of a new educational approach with more active teaching methods, more working in groups, regular formative tests and partial exams.

In the table below all the measures are summed up
Table 1 The new educational model of the Open Universiteit

<table>
<thead>
<tr>
<th>Factors influencing study success</th>
<th>Actions/measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Intake with a student counselor</td>
</tr>
<tr>
<td></td>
<td>Strict entry requirements comparable to other universities</td>
</tr>
<tr>
<td></td>
<td>Design of a study plan</td>
</tr>
<tr>
<td></td>
<td>Information about the level of the study and the amount of study time necessary</td>
</tr>
<tr>
<td>Organization</td>
<td>Introduction of an academic year</td>
</tr>
<tr>
<td></td>
<td>Courses with fixed course schedules</td>
</tr>
<tr>
<td></td>
<td>Exams at pre-arranged times</td>
</tr>
<tr>
<td></td>
<td>No automatic renewal of registration</td>
</tr>
<tr>
<td></td>
<td>No additional exams</td>
</tr>
<tr>
<td></td>
<td>Deadlines within the course</td>
</tr>
<tr>
<td></td>
<td>Active monitoring of the students</td>
</tr>
<tr>
<td>Didactic Approach</td>
<td>Online learning</td>
</tr>
<tr>
<td></td>
<td>Active learning</td>
</tr>
<tr>
<td></td>
<td>Assignments and feedback</td>
</tr>
<tr>
<td></td>
<td>Study load more in accordance with credits</td>
</tr>
<tr>
<td>Social and academic integration</td>
<td>More contact with lecturers</td>
</tr>
<tr>
<td></td>
<td>Introductory meetings and f2f-meetings</td>
</tr>
<tr>
<td></td>
<td>Virtual classrooms</td>
</tr>
<tr>
<td></td>
<td>More group work</td>
</tr>
</tbody>
</table>

The task force presented the new model in May 2013 and an institutional project was set up to transform all the master programs. The aim of the project was to train the staff, to transform the administrative procedures and to develop new programs in accordance with the new guidelines. In September 2014 the first master students started studying in the new model. In September 2016 the first degrees were awarded.

4. The evaluation research

With the introduction of the new educational model in the master program a parallel evaluation program was set up (Schlusmans, van den Munckhof & Nielissen, 2016; Münstermann, Giesbertz & Schoevaart, 2016; Giesbertz, Münstermann & Schoevaart, 2016; van den Munckhof, Schlusmans & Winkels, 2017). The main questions of the evaluation were:

1. How many students enroll in the new programs?
2. Does the new model lead to more study success on the course level and on the program level?
3. Are students satisfied with the new model and what can be improved?
4. Is the staff satisfied with the new model and what can be improved?

The evaluation research was conducted as follows:

- Every six months all the student registrations and results in the new model were analyzed.
- A field test was organized for each course in the new educational model. This means that students were asked to report each week on the study load and they received a comprehensive questionnaire at the end of the course.
- In June 2015, March 2016 and December 2016 all students studying courses from the new master were sent a questionnaire which asked how satisfied they were with the new program and how they perceived
the workload and the program level. We also asked students to identify two positive and two negative points of the program.

- At the end of 2014 and in June 2016 focus groups were organized for the staff.
- In July 2016 57 students of the new master program were interviewed. The emphasis in the interviews was ‘How can we improve the programs?’
- The Open Universiteit participates in the National Student Survey. The results of these surveys were analyzed for the new programs. In 2017 also the open answers were analyzed.

The new administrative procedures in the new model are very different from the old procedures. So it was difficult to really compare the old and the new groups of students. Therefore we tried to define reference groups for the old system. The reference groups were constructed as follows.

- Reference for study success on program level: students who registered in July-October 2013 for master courses and who did comply with the entry requirements in the new model. There is no reference group for Software Engineering as this program only started in 2013.
- Reference for study success on course level: all master courses in the old model.
- Reference for student satisfaction: The student survey 2015 for students in the old master program (Schlusmans & van den Munckhof, 2016) and the National Student Survey 2014 (NSE, 2014).

5. Student registration

In the table below the number of new students in the master program is presented. Students can start twice a year in September and in February. In 2014 we only started in September so there was only one starting date. It is difficult to compare numbers in the past as in the old model students at the Open Universiteit did not register for a program but registered for individual courses. In the last column we present the number of students in 2013 who gained access to the master program and had finished at least one course.

Table 2 Number of new students in the master program

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Science and Technology</td>
<td>116</td>
<td>501</td>
<td>778</td>
<td>203</td>
</tr>
<tr>
<td>Psychology and Education</td>
<td>23</td>
<td>130</td>
<td>319</td>
<td>204</td>
</tr>
<tr>
<td>Cultural Sciences and Law</td>
<td>25</td>
<td>97</td>
<td>171</td>
<td>121</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>728</td>
<td>1268</td>
<td>528</td>
</tr>
</tbody>
</table>

The number of new students increases gradually, in 2014 and 2015 there were still a lot of students studying in the old model. Especially in the faculty of Management, Science and Technology the numbers are really up, also in comparison to 2013. In the two other faculties the increase is much slower.

6. Study success

We measured study success on two levels: program level and course level.

Program level

Study success on program level is measured by the number of credits a student earned in the first year. The number of credits the students earned on average was calculated for each cohort separately. We compared the results of the new group of students with a comparable group of students in 2013 in the old model.
In Figure 2 and 3, computer sciences and environmental sciences are reported separately as the number of students was smaller than 10, but they are included in the total results.

Compared to the reference group, we see a considerable increase in the number of credits per year in most of the programs. Especially in Management and Management and IT, we see a spectacular increase. However, there are two exceptions: psychology and cultural sciences. Here it appears that students in the first year earn less credits than the reference group. An explanation of this might be the way the courses are programmed. We found out that students earn more credits if the courses are programmed in sequence instead of in parallel.

![Figure 2: Number of EC per year of students who started in September 2015 compared with reference group](image)

![Figure 3: Number of EC per year of students who started in February 2016 compared with reference group](image)

**Course level**

Study success on course level is measured by the percentage of students who get a course certificate within a year. As a reference group, we looked at all the master courses per program in 2013 and calculated the average percentage of students who got a course certificate within a year. The courses for Software Engineering, Management and IT, and Computer Sciences are combined under the heading of Information Technology as many courses appear in more than one of these programs. At the course level, there is a large increase in the percentage of students who get a certificate within a year. In cultural sciences, the increase is only very slight, which can partially be explained by the fact that cultural sciences already offered a structured approach in 2013 for its master courses and already got the highest percentage of course certificates in 2013.
Student satisfaction

When we started the new programs we were afraid that there would be a considerable drop in student satisfaction as the programs were less flexible and put more demands on the students.

The Open Universiteit participates in the National Student Survey (NSE) which is set out in all institutes for higher education in the Netherlands. We compared the results of 2014 before the new programs were introduced with the results in 2017 and we found out that the general satisfaction of the students has gone down a bit although the programs still score a 4.1 on average which is still very high. The one exception is management where satisfaction is up.

In general satisfaction is down a bit at the Open Universiteit in the National Student Survey so we also looked at our internal annual student surveys in 2015 and 2016 where students were asked to give an overall score for the programs (Schlusmans & van den Munckhof, 2016, 2017). In 2015 only students in the old programs got the questionnaire, in 2016 all the students had been moved to the new programs. Programs with less
than ten respondents are not included in table 3. The average grade for the programs at the end of 2016 is just over 7.7, which is the same for the old programs in 2015. There are some minor changes between the overall scores but we have not found the same decrease as in the NSE.

**Table 3 Overall scores for the new and for the old master programs (internal survey)**

<table>
<thead>
<tr>
<th>Program</th>
<th>New program 2016</th>
<th>Old program 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management and IT</td>
<td>7.6</td>
<td>-</td>
</tr>
<tr>
<td>Cultural sciences</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td>Management</td>
<td>7.7</td>
<td>7.5</td>
</tr>
<tr>
<td>Educational Sciences</td>
<td>7.7</td>
<td>7.6</td>
</tr>
<tr>
<td>Psychology</td>
<td>8.1</td>
<td>7.7</td>
</tr>
<tr>
<td>Law</td>
<td>7.6</td>
<td>7.5</td>
</tr>
<tr>
<td>Software Engineering</td>
<td>8</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7.7</strong></td>
<td><strong>7.7</strong></td>
</tr>
</tbody>
</table>

**Tutoring and support**

In the annual internal student surveys the students were also asked to rate various aspects of the program on a five point scale. In the new model more students are satisfied with the tutoring and support on offer than in the old model (62% versus 54%). However the group of dissatisfied students has also increased slightly.

![Figure 6 Satisfaction with tutoring and support in the new and in the old model (internal surveys 2015 and 2016)](image)

In the course evaluations we also looked at the students’ ratings for tutoring and support and we found out that the students are very satisfied with the increased support of the tutor or lecturer. They are more critical about the f2f-meetings and certainly about the virtual meetings.
In 2016 we interviewed 57 master students (Schlusmans, van den Munckhof, Münstermann & Giesbertz, 2016) and in 2017 we analyzed the open answers in the National Student Survey (Schlusmans, van den Munckhof & Winkels, 2017) and we found that students are quite critical about the f2f-meetings and the virtual meetings which are often also semi compulsory, the meetings are parts of the course and students are expected to attend. Students only like those meetings when they are well organized and when they have real added value. Meetings just for the sake of meetings are not appreciated.

**Structure and planning**

Another important feature of the new model is the structure with strict deadlines and more planning. In our annual student survey we asked students how satisfied they were with the way they could combine study with other activities. We also looked at the satisfaction with the way the study could be combined with other activities such as work or home activities.
Figure 8 Satisfaction with the way the study can be combined with other activities

The same picture emerges from the course evaluation. 55% of the students appreciate the new structure with the tight schedules and say that they need deadlines to get ahead, 15% of the students regret the introduction of deadlines and the reduction of freedom. For them it is more difficult to combine the study with other activities and a week’s holiday or peak periods at work lead to delays. Those students also indicate that the new system is too rigid for adult education.

Also in the interviews and the analysis of the open answers in the NSE we found out that there is a group of students, around 15%, who do not like the new model. Especially students who had previously got a bachelor degree in the old model regret the organization with more restrictions and a reduction of freedom. Although they admit that deadlines help their progress, they feel that it is more difficult to cope with unexpected events such as deadlines at work or a casualty in the family. They also regret that there are no activities in the summer holiday as for some students this is their preferred period for study. Students do not like parallel courses as often deadlines and peak periods come together.

8. Staff satisfaction
In the autumn 2014 and in the spring 2016 we organized focus groups with the staff: lecturers and study counselors. In general the staff was initially very skeptical about the new model. They felt that the reduction of freedom affects the core business of the Open Universiteit. However in the last focus groups most members of the staff were pleasantly surprised by the new system. They appreciated the fact that they had more contact with their students, they were happy that more students finished their courses and they also got some very positive feedback from the students. Nevertheless they also mentioned that the workload had increased and that the tools they have to monitor students’ progress are not sufficient. (Münstermann, Giesbertz & Schoevaart, 2016; Giesbertz, Münstermann & Schoevaart, 2016)

9. The bachelor program
In September 2016 the new system was introduced in the bachelor programs. In the bachelor program there is more scope for flexibility as only part of the courses is fixed and about one third to half the courses remains flexible. It is still too early to interpret the results of the bachelor programs. One of our main concerns is that parallel programming of fixed and flexible courses is a basic feature of the bachelor
programs and as we have mentioned before, students do not like parallel programming. So this might be a hindrance for study progress. It is one of the things we will look into when interpreting the results.

Another challenge in the bachelor programs is the size of the student groups. Offering active online teaching for large groups of students is going to require a major effort.

10. Conclusion

Although the numbers are still fairly small for some master programs, we feel confident to say that it looks as if the new master programs are successful. In most programs the students earn on average more credits per year than the reference groups and the percentage of course certificates in a year has increased considerably.

Student satisfaction was always very high at the Open Universiteit and in the new system it has only decreased slightly but it remains high (4.1 on average on a five point scale). Most students like the programs and most of them like more contact with their tutors. Also the staff who was initially quite skeptical is now more and more satisfied with the new ways of teaching.

However, there is a group of students, around 15%, who is very critical about the new programs. Those students regret the loss of flexibility and complain that it is harder than before to combine study with other activities. Students who were very successful in the old programs sometime feel hindered by the new rules and deadlines. The Open Universiteit will have to look into the needs of this group as the group is too big to ignore.

Also there is still scope for improvement in our tutoring and support system and in the organization of the programs. Students are critical about the quality and the added value of the f2f-meetings and the virtual classrooms. This will be a major concern in the training of the staff in the near future. Parallel programming of courses will have to be looked into so that the work load of the students does not become too high. Study counselors need better tools to monitor their students’ progress. Steps have been taken in this regard but this also remains a basic concern.

11. References


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Addressing the undergraduate dissertation challenge in higher education virtual environments: applicability of Pecha Kucha method

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Abstract
The oral end-of-studies dissertation in higher education virtual environments raises considerable difficulties due to the high number of students that compose each course. This is an additional challenge on top of the student's main difficulties in this type of dissertations: exposing clearly the main lines of the research, that is, focusing and defining the key concepts; and, on the other hand, develop the defence in a given time, delving into the basic terms. In this article, we present a pioneering experience in the end-of studies dissertation in undergraduate degrees in Education, Psychology and Economics studies in one of the largest virtual European Universities through the use of a presentation / video according to Pecha Kucha method. The purpose of our research is, in the first place, to present the challenge that supposes the training of competences and evaluation of the undergraduate dissertation in virtual higher education environments, especially oral competences, and secondly to investigate the adequacy of the format Pecha Kucha through a research pilot in our university, to contribute to provide appropriate tools for the success of this learning activity. According with the result of this pilot, Pecha Kucha seems to be an appropriate approach for the end-of-studies dissertation in virtual learning environments and to practice the oral competences in these dissertations in the virtual higher education.

Keywords: Pecha Kucha, Virtual environments, End-of studies project, Dissertation, Competences.

1. Introduction
In the emerging European Higher Education Area (EHEA), the focus has shifted from governmental actions, including legislation, to implementation of reforms within institutions and studies, with a broad support for the underlying idea of more student-centred, and employability as a high priority in the reform of curricula in all cycles (Sursock, Smidt & Davies, 2010; Van der Wende, 2000).
The introduction of the EHEA means that undergraduate dissertations are mandatory, which represents an important change for several universities due to the important consequences this will have on academic procedures. Undergraduate dissertations is considered an original and autonomous academic work that can represent a link between university and professional development of the student, as a vehicle to strength his employability due to its intrinsic characteristics in competence building, but, despite the perceived pedagogical value of the dissertation, “there is evidence that in some higher educational institutions there is pressure to abandon it as being too expensive in the context of mass undergraduate provision” (Todd, Bannister & Clegg, 2004, p. 337, referring to UK).

Simultaneously, the Europe 2020 Strategy invites European states to collaborate with higher education institutions to promote innovation through more interactive learning environments. The conclusions of the Council of Europe on the modernization of higher education explicitly include encouraging the adoption of student-centred approaches, promoting the diversification of study modes, and also making effective use of information and communication technologies (Official Journal of the European Union, 12/20/2011). General trends in learning development include an increased number of courses and programs offered online or in a blended learning environments.

Therefore, the problem of how to approach management and successful learning in these end-of-studies work in virtual environments arises, especially when many universities have a large number of students and cannot guarantee a face-to-face evaluation in the classical style of the dissertation, with presentation of the student to an academic court, but at the same time must guarantee the acquisition of skills and competences that this type of work demands and they have to be evaluated. Therefore, in this article we present a pioneering experience of defending undergraduate degrees in Education, Psychology and Economics degrees in one of the largest Distance European Universities through the use of a video presentation, according to Pecha Kucha method.

The purpose of our research is, in the first place, to present the challenge that supposes the training of competences and evaluation of the undergraduate dissertation in virtual higher education environments, and secondly to investigate the adequacy of the format Pecha Kucha through a pilot research in our university, to contribute to provide appropriate tools for the students’ presentation of the learning output of the final grade dissertation, or project.

The present study comprises six sections. After this introduction, Section 2 reviews the opportunities and main challenges of undergraduate end-of-studies dissertations, with special focus in virtual higher education environments. Section 3 completes the literature review studying the applicability of Pecha Kucha format to this kind of dissertations. Section 4 presents the design of this experience, and in section 5 are included the empirical analysis results. Finally, Section 6 contains the conclusions of the study and its implications for design of the end-of-studies work in virtual higher education, as well as its limitations and future avenues of research.

2. The undergraduate dissertations: the virtual higher education challenge
The term “thesis”, “dissertation”, “end-of-studies project” are used differently in different national contexts of Europe and America (Aghaee & Keller, 2016), referring to a created report or document by learners in order to get the Bachelor’s, Master’s, or Doctoral degrees (Evans, Gruba, & Zobel, 2011). In some European countries, the term “thesis” is used for the undergraduate (bachelor’s level) and graduate (master’s level),
and the term “dissertation” is more commonly used to refer to the document that is created to achieve a Doctoral degree (Jaldemark & Lindberg, 2013). In any case, this work is a particularly demanding subject in its design, knowledge management and final presentation, since it requires an effort for the theme selection, information management, presentation and defence, with a personal implication and responsibility by students superior to the rest of the subjects in the degree. This kind of activity is viewed as the culminating learning experience of the studies program (Mateo et al., 2012) and the quality of student output is often used as an indicator of the quality of the program as a whole (Jawitz, Moore & Shay, 2002).

The regulation for the design of graduate degrees in Spain and in the EHEA states the need of the elaboration and defence of a final work. It also specifies that must be completed at the end of the curriculum and related to the assessment of competences associated with the corresponding title (Arteaga et al., 2013), with the aim of training the student for his future profession. This activity is organized as a learning process of acquisition of competences; it arises as an opportunity for research and problem solving, and a resource to develop the ability to solve dynamic problems (Yañiz, 2007). The presentation of this work supposes a great challenge for the student, because not only it should be presented in a writing report but also orally defended by means of s/his explanation in a determined time included to answer to any questions that arise (Rosello, 2004).

The guidelines of the EHEA imply also the rethinking of many of the current evaluation systems, since the new pedagogical models are now focused on the learning acquired through the students’ personal work and on the establishment of the ideal conditions for them to achieve the learning outcomes of the proposed educational objectives (Mateo et al., 2012). However, one practice has proven more resistant to change, technology enhanced or not: the supervision and evaluation of students' undergraduate dissertations (Jaldemark & Lindberg, 2013).

The experiences and perceptions of final-year students were investigated by Todd, Bannister, & Clegg (2004), and Greenbank & Penketh (2009). Both studies demonstrate that students value autonomy, authenticity and ownership in relation to the dissertation. However, considerable challenges, especially in relation to time, were reported in Todd, Bannister, and Clegg (2004). While reporting on how to improve the formative assessment in dissertation supervision, Heinze & Heinze (2009) suggest that good communication between students and tutors is crucial for the supervision process, and advocate a combination of meetings and technology communication.

Reviewing the literature, there has been little research on the challenges and complexities of online / distance end of studies project in technology environments (Aghaee & Keller, 2016) and also postgraduate research degree programmes (Nasiri & Mafakheri, 2015; Evans and Green 1995; Andrew 2012). Technology-supported thesis supervision has previously been studied at a bachelor level from the perspective of the learners (Jaldemark & Lindberg, 2013) and from the viewpoint of the supervisors (Augustsson & Jaldemark, 2014), and its assessment in these environments is still a nascent area of research, especially in higher education where providing useful feedback to large number of students can be difficult, as Crisp & Ward (2008) pointed out.

### 3. Applicability of Pecha Kucha method in higher education

Pecha Kucha (Japanese for “chit chat” or the sound of conversation) is a presentation format that originated in 2003 in Tokyo, Japan, in an event evening created by Mark Dytham and Astrid Klein as a venue for
designers and architects to present their work in an engaging format (Anderson & Williams, 2013). The structured format is comprised of 20 slides each shown for 20 seconds for a presentation that lasts 6 minutes and 40 seconds (it is also called 20x20 format). The slides are graphic images with little to no text, which are automatically advanced.

Pecha Kucha, conceived for designing and architecture projects presentation, is beginning to appear in classrooms (Bang-Jensen, 2010; Gries & Brooke, 2010; McDonald & Derby, 2015) and to reach university instruction (Murugaiah, 2016; Klentzin, Paladino, Johnston & Devine, 2010), in disciplines such as marketing (Levin & Peterson, 2013) or law (Rosello, 2014), and others, but its use are still very limited. The format is appropriate for a research project presentation to a general audience such as that reported in Stoblein 6 Kanet (2008) who describe using Pecha Kucha presentations for undergraduate students research projects in an operations management course. Chikushi, et al. (2009) suggested that it might also be used as a thesis presentation format, requiring students to provide an overview of the project allowing a lengthier question and answer defence period. Moreover, Pecha Kucha facilitates students to learn how to communicate an argument with a clearly stated thesis (Levin & Peterson, 2013).

Oral communication in classroom frequently implies a PowerPoint presentation, though there are other variations like podcasting (Armstrong, et al., 2009) and video presentations for online learning (Green, 2008). Murugaiah (2016) claims that focusing on less important information rather than critical points, reading from crammed slides and exceeding the time allocated for presentations reflect poor oral presentation skills. In fact there is general agreement in literature that support this claim (Tomsett and Shaw, 2014; Oliver and Kowalczyk, 2013; Levin and Peterson, 2013; Lehtonen; 2011; Anderson and Williams, 2012). As PowerPoint has received a big criticism (Garber, 2001; Tufte, 2003; Thompson, 2003), Pecha Kucha has the potential to improve student presentations for several reasons (Beller, 2011): 1) Because slides are automated, the presenter must be organized to capture the message of each slide in the time permitted, 2) due to the use of pictures and graphical resources that make visual connections between abstract concepts (Eves & Davis, 2008) and deliver clearer messages (verbal message is not competing with text, in accordance with Paivio’s Dual Coding Theory), and 3) because students like incorporating new technology into the classroom and enjoy pictures and movement in their presentations (Clark, 2008). Pecha Kucha may be also a presentation that reduces cognitive load (Beller, 2013). Therefore, this method could constitute a new approach for developing and practicing student communication skills (McDonald & Derby, 2015).

Pecha Kucha has also disadvantages: Klentzin et al. (2010) indicate that the speed of a timed presentation makes it impossible for nuanced explanation of many complex concepts, but this study also provides evidence that students understanding of communicated content in Pecha Kucha presentations is statistically equivalent to that of a longer traditional PowerPoint lecture, and that Pecha Kucha can be an effective instructional technique in the university classroom. In addition to improving student speaking skills, students’ projects presentation by Pecha Kucha format fits well with the goal of develop students’ ability to communicate effectively in a variety of formats (Halonen et al., 2002; Beller, 2013).

Pecha Kucha could, therefore, be an excellent approach for the defence of the undergraduate dissertation in virtual learning, and contribute to develop the oral competence in the end-of-studies thesis dissertation, especially in virtual higher education, as developing this competence in grade level students poses considerable difficulties due to the high number of students, the time limitation in class to the activities that develop the oral expression and the inherent difficulties in virtual environments, together the reluctance of some students to participate, due to their shyness or insecurity when presenting work.
4. Research design and sample

The present research is part of an Educational Innovation Project in one the Spanish University for Distance Education (UNED), that tries to develop a transversal line common to the Faculties of Education, Psychology and Economics, to improve the orientations and realizations of the undergraduate dissertation. Its main objective is to contribute to the improvement of the Guidance and Evaluation System of the subject of Final Degree Project, focusing on the analysis of the generic and specific competences that students must demonstrate through the realization of their work.

The research has been carried out with students of the last year in the degrees of Social Education, Pedagogy, Psychology and of Business Administration and Management during the 2016-2017 academic year, inviting the students to join the innovation project that included the preparation of the Pecha Kucha presentation.

The proposed oral presentation by using a short video (actually a Pecha Kucha presentation recorded with voice) had an extra score of one point over that obtained in the written memory of the project. The presentations are made visible to the students and a forum is enabled for students to comment / evaluate the presentations of their classmates.

The Teaching Team evaluated the short videos, taking into account the comments / assessments among students, according to the following criteria:

- Adaptation to 20x20 format: number of transparencies and timing
- Quality of presentation
- Adjustment and structure: the content is aligned with the memory
- Creativity
- Analysis and synthesis
- Oral communication
- Verbal expression

Technologically, various possibilities were offered to the students to record the combination of slides and voice, including open source options and free licenses. We provide the student with a tutorial with the technical indications and steps to record the presentation. The process was completed with a online survey, answered by students, to evaluate the Pecha Kucha format, its adequacy and its contribution to the acquisition of competencies.

The final number of students that answered the questionnaire to evaluate the Innovation Project was 50. Therefore, our sample in the survey was N=50. The profile of the participant is presented in following tables: by gender (table 1) and by age (table 2).

<table>
<thead>
<tr>
<th>Table 1: Gender</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Male</td>
<td>17</td>
<td>34.00</td>
<td>34.00</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>66.00</td>
<td>100</td>
</tr>
</tbody>
</table>
An interesting initial result is the predominance of female participants (66%) versus an inferior participation of males (34%). On the contrary, the distribution by age is much more balanced as indicated in table 2.

Table 2: Age

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
<th>Valid %</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td>22-26</td>
<td>10</td>
<td>20.00</td>
<td>23.30</td>
</tr>
<tr>
<td></td>
<td>27-31</td>
<td>5</td>
<td>10.00</td>
<td>11.60</td>
</tr>
<tr>
<td></td>
<td>32-36</td>
<td>7</td>
<td>14.00</td>
<td>16.30</td>
</tr>
<tr>
<td></td>
<td>37-41</td>
<td>6</td>
<td>12.00</td>
<td>14.00</td>
</tr>
<tr>
<td></td>
<td>42-46</td>
<td>4</td>
<td>8.00</td>
<td>9.30</td>
</tr>
<tr>
<td></td>
<td>47-51</td>
<td>9</td>
<td>18.00</td>
<td>20.90</td>
</tr>
<tr>
<td>52 +</td>
<td>2</td>
<td>4.00</td>
<td>4.70</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>43</td>
<td>86.00</td>
<td>100</td>
</tr>
<tr>
<td>Lost</td>
<td>Not valid</td>
<td>7</td>
<td>14.00</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

During the preparation of the Pecha Kucha dissertation, the student moved from panic to enthusiasm. Initially they had many concerns about the complexity and risk of the experience, but finally they start feeling comfortable about the preparation. Collaboration between students was excellent and fundamental for the success of the learning experience. They help each other, improved the tutorial and gave very positive feedback about the process.

5. Empirical analysis and results discussion

Beyond the positive feedback received throughout the process, the survey answered by students after the completion of the project can give us interesting insights on how this experience is perceived in the preparation and dissertation of the final undergraduate project, and how it has been able to help students acquiring the competences and obtaining the learning results expected in this subject.

From the total questions in the survey, we show in Table 3 the questions related to the Pecha Kucha presentation (in the interview it is called "mini video", informal term that we manage with the students to
denominate the Pecha Kucha presentation). These are issues included in a Likert survey questions (min. 1 to max. 5).

It was observed that the students evaluation related to the acquisition of competences are especially high (creativity, ability to synthesis and oral expression), and demonstration of synthesis ability, above all skills and with a higher minimum value.

Table 3: Survey items related to Pecha Kucha

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The guidelines for the presentation of the dissertation through the mini video in Pecha Kucha format provided by the academic tutor have facilitated me to develop the mini-video.</td>
<td>30</td>
<td>1</td>
<td>5</td>
<td>4.10</td>
<td>0.994</td>
</tr>
<tr>
<td>The development of the mini for the end-of-studies dissertation has allowed me to develop my creativity</td>
<td>28</td>
<td>1</td>
<td>5</td>
<td>4.14</td>
<td>1.044</td>
</tr>
<tr>
<td>The elaboration of the mini-video for the end-of-studies dissertation presentation has allowed me to show my capacity for synthesis</td>
<td>28</td>
<td>3</td>
<td>5</td>
<td>4.36</td>
<td>0.826</td>
</tr>
<tr>
<td>The elaboration of the mini video for the end-of-studies dissertation has allowed me to show my communicative competence of oral expression.</td>
<td>28</td>
<td>2</td>
<td>5</td>
<td>4.18</td>
<td>0.983</td>
</tr>
<tr>
<td>I consider that the elaboration of a mini-video is an appropriate method for the presentation of final project at the UNED.</td>
<td>34</td>
<td>1</td>
<td>5</td>
<td>3.91</td>
<td>1.111</td>
</tr>
<tr>
<td>I believe that the preparation of mini-video by Pecha Kucha format should be used by students of the UNED to present other works.</td>
<td>32</td>
<td>1</td>
<td>5</td>
<td>3.87</td>
<td>1.008</td>
</tr>
<tr>
<td>N valid</td>
<td>28</td>
<td></td>
<td></td>
<td>4.09</td>
<td></td>
</tr>
</tbody>
</table>

The importance of these results and the high valuation in the practice and development of competences with Pecha Kucha are especially evident when we compare them with the generic evaluations related to the competences for the complete process of preparation of the undergraduate thesis, which includes aspects such as identify and analyze problems in the research process, search for resources, ability to evaluate and diagnostic strategies, data analyze in the research process, formulate conclusions based on the research process, communicative competence in written expression.

In all cases, except in search of resources (mean = 4.26), the practice of competences in Pecha Kucha receives a higher valuation. With the sole exception of the search for resources, students recognize the "mini video" as the best tool to acquire or practice the corresponding skills compared to the usual process.

On the contrary, the discordant note is introduced by the students' evaluation of the appropriateness of the Pecha Kucha format for the oral presentation of the final project (and to present other works in the
university): it is a positive evaluation but presents a lower one than the obtained ones with competencies. That is, students value more Pecha Kucha as a method of practicing competencies than the formal process of official presentation of the final grade work. This can be due to the pilot character of the exercise, voluntary and without the characteristics of a classical dissertation with the solemnity and officially that carries with it (academic court, questions, etc.).

6. Conclusions
The oral end-of-studies dissertation in higher education virtual environments raises considerable difficulties due to the high number of students that compose each course. This is an additional challenge on top of the students’ main difficulties in this type of dissertations: exposing clearly the main lines of the research, that is, focusing and defining the key concepts; and, on the other hand, develop the presentation in a given time, delving into the basic terms.

From the informal students feedback of this experience it is observed that Pecha Kucha can be an effective training technique in the university education: we consider that students’ learning about Pecha Kucha fits well with the goal of developing students’ ability to effectively communicate in a variety of formats (as Halonen et al., 2002) and allows to acquire and practice skills that a mere written exercise does not allow.

The results on the students’ survey answers demonstrate that this experience is perceived as a very valuable instrument for practicing / developing different competences such as creativity, oral skills or synthesis capacity. An especially relevant finding is the value given by students to the practicing of the synthesis capacity when using Pecha Kucha: this is a genuine result from this research and a new contribution to Pecha Kucha literature.

This empirical experience should to be improved in following courses: we need to formalize the exercise and include a more procedural process (in the evaluation, involve an academic court, promote formalized chats as vehicle for questions etc.) to reach the quality required in an official university assessment system. We consider that this experimental character has penalized the valuation of Pecha Kucha by students as an appropriate tool for the end of studies dissertation in online education. Nevertheless, their feedback is positive.

It is necessary to mention that the Pecha Kucha format also has some disadvantages: we observe that the speed of a timed Pecha Kucha presentation makes the nuanced explanation of many complex concepts impossible.

In spite of this, Pecha Kucha seems to be an excellent approach for the end-of-studies dissertation in virtual learning environments and for practicing the oral competences in the thesis dissertations in the virtual higher education, given that the development of this competence presents considerable difficulties, due to the high number of students, the limited number of activities that develop the oral expression along the degree, the difficulties inherent to the virtual environments and the reluctance of some students to participate because of their shyness or insecurity when presenting oral works.
7. References


Advancing Student Support for ODL: Experiences from the EMPOWER Project

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Abstract
European universities face great challenges dealing with XXI century world changes. Deep transformations are required to the extent that a wide range of life-long learning scenarios is progressively replacing the traditional scope of university studies, also giving access to a larger number of students all over the world in more flexible ways. Therefore, the modernisation of university modes of teaching and learning is being requested by the European Commission, also stating that technologies, in general, and online and open education, in particular, are relevant contributors to the feasibility and effectiveness of the educational revolution. Aiming at giving support in the transition of European higher education institutions to those new modes that implement digital, open and online learning, the EMPOWER project was launched in 2015, looking to share the long expertise of Distance Education Universities in the field.

The EMPOWER is organised in 12 main areas. One of them refers to Student Support, being considered as the central field for students’ success. Its final goal is to empower students to become life-long self-directed learners in open, online and blended-learning environments, increasing students’ retention and enhancing their academic performance, integration and satisfaction. In the present communication, the experts of the EMPOWER Student Support group summarise the work been done during the past two years. Our main objective has been to offer different tools and resources (e.g. webinars, reports, etc.) that could help institutions and academics in their understanding of what underlies student’s engagement and motivation vs. Students’ drop out. Also, we aim at sharing expertise about how to develop innovative, advanced and quality student support services mediated by technologies to large and small groups of students.

Keywords: student support, distance learning, blended learning, online learning, e-learning, engagement, motivation, drop-out, EMPOWER project
1. **Introduction to Empower project and the Student Support Group**

The European Commission is urging universities to widen the access to university studies to a larger number of students using more flexible, innovative and personalised life-long programs, strengthening inclusive education. Besides, higher education attainment, not only should increase participation but improve completion rates, also (European Commission, 2011, 2017).

To accomplish these main goals, campus education should be re-shaped and blended, and online learning should be properly integrated at the university level, according to the Group of experts for the *modernisation of Europe Higher education System* (2013, 2014). In their own words:

> “Online learning transforms how people access knowledge, and opens up higher education to people for whom it is now out of reach. While opportunities to rethink higher education will abound, this revolution will be challenging on many fronts: the role of the teacher will change radically, with online learning calling for completely new skillsets, and the teaching and learning process becoming increasingly individualised. We will witness teaching moving outside the institutions altogether and into virtual space… Online delivery is not only a challenge to the classroom. It is a challenge to our entire model of higher education. Governance, accreditation and quality assurance will all have to adapt” (p.45).

For that matter, Open and Distance Learning (ODL) universities have a long tradition and more than 25 years of experience in online learning. That implies a deeper knowledge and expertise than the merely experience derived from the quite recent MOOCs movement in which HE institutions, including face-to-face ones, have been actively involved since 2012. In this sense, the European Association of Distance Teaching Universities (EADTU) has represented the Europe’s leading institutional association in online, open and flexible higher education for years. That implies that the association has been in charge of different projects in the field, the majority of them being developed in conjunction with the most recognised open universities in Europe, as EADTU members.

At present, the association is highly involved in the *modernisation of the European Higher Education* and the *Opening-Up Education through new technologies* and also aligned with the objectives of the *ET2020 Working Group on Digital skills and Competences* at HE level, among other programmes. The EMPOWER Project is a main example of this commitment. This programme aims at sharing the expertise of EADTU ODL Universities with traditional face-to-face ones, in their transition to new models of teaching and learning, technologically enriched. The project may contribute, thus, to answer some of the current HE challenges for a XXI century.

The EMPOWER Project was launched by the end of 2015 in a foundational meeting in Brussels. As said in its webpage, it is the **biggest pool of leading experts in online, open and flexible higher education**, aiming at:

- **Challenging universities in innovating their education.**

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1. [https://eadtu.eu/](https://eadtu.eu/)
4. [https://empower.eadtu.eu/](https://empower.eadtu.eu/)
- Enhancing universities in the uptake of new modes of teaching.
- Bringing theory into practice together by organising seminars, staff training, supporting materials, institutional implementation, etc.
- Working under a multidisciplinary approach within pilots.

EMPOWER actions are organised in 12 pools of expertise (e.g. Course related expertise, course and curriculum design, access to knowledge resources, student support, assessment online, institutional development, and so on).

The present paper is concerned with the role and actions of the Student Support pool in the EMPOWER. To start with, it is worth reminding the recommendation of the High-Level Group on the Modernisation of HE in its 2013 Report to the European Commission (Recommendation 9):

“Higher education institutions and national policy makers in partnership with students should establish counselling, guidance, mentoring and tracking systems to support students into higher education, and on their way to graduation and beyond” (p.45).

This statement ends up with a checklist of questions to leaders, managers, and HE teachers as well, about students’ support actions, among other relevant issues (p.70).

- How far does my institution offer transparent information on learning opportunities to prospective and actual students to help them choose the learning offer most appropriate to them?
- How and through which structures (e.g. counselling and mentoring services, platforms for exchanges with teachers and fellow-students) does my institution support students during the entire student life cycle?
- How does my institution monitor student success, i.e. dropout rates, time to degree, employment rates after graduation? How is the data collected, evaluated and used for constant quality enhancement?
- How does my institution provide for and respond to real-time student feedback on the quality of teaching and learning, i.e. not just end of semester or course feedback but in-course feedback for early adjustment where necessary of programmes and methodologies?

These questions are at the main core of what Student Support services should be. According to Simpson, (2012) Student Support includes: “All those activities that, beyond production and distribution of didactic materials, support student’s progress towards success in his/her studies”. In other words, everything that could help students at increasing and sustaining their learning motivation would be supporting them in their learning process. This main idea is also in line with Lehman & Conceição (2014) definition of support:

“Support means creating an environment that is conducive to learning, developing strategies that create community engagement, and incorporating assistance throughout the process. Support provides students a sense of community, which allows them to avoid the feeling of isolation; gives students a sense of self-direction and management, thus reducing loss of control; contributes to learner satisfaction; and increases motivation, helping students persist in an online course”.

82
But, how might students be better supported to achieve their academic and personal goals? Simpson proposed a simple and elegant formula with the main ingredients of success (Simpson, 2012, derived from Seidman’s one, 2005): \( S = AC + Eld + (E+C) PaM \)

- **S** = Success
  - **AC** = Appropriate Course Choice.
  - **Eld** = Early Identification of vulnerable students.
  - **(E+C) PaM** = Early and Continuous Proactive Motivation Support.

Therefore, most of the student support services could be organised around these three main areas that should get everyone involved in HE institutions. Besides, a holistic approach should be at the main core of the student support services. Academic and non-academic support needs to be provided to bring students of different backgrounds a real inclusive education, as explained below. As such, early detection of problems is considered crucial for the identification of students’ s need and, thus, the kind of support they might need and should have received.

In addition, at present technology gives us, as never before, new and stronger opportunities to take advantage of, widening the possibilities of support through online, mobile, ubiquitous, hybrid and more personalised and adaptive support to students (Sánchez-Elvira, 2016; Tait, 2014). According to these approaches, the EMPOWER Student Support Group of expertise\(^5\) aims at helping HE institutions in the development of those student support services whose quality could empower students as self-regulated learners in online and blended-learning environments. Under a student-centred learning perspective, we consider that giving support to students represents a powerful tool to engage them by increasing their motivation, promoting retention, enhancing their academic performance, integration, satisfaction and well-being, and promoting sustainability and continuity of education, that is, life-long learning. As such, we must be aware of the pernicious effects of high-dropout rates in distance and online learning environments, to be able to develop, subsequently, better support measures to prevent this first main obstacle. Therefore, reducing student dropout should be, definitely, a main target of student support services and actions.

2. **Introduction to the relevance of student support in drop-out prevention**

As above mentioned, there is a spectre haunting the world of online education; it is the spectre of student dropout. For in many respects online education is a great success. Brown et al. note that:

‘[Online education] is the fastest growing sector of university-level education (Tennant, McMullen & Kaczynski, 2009). In the United States, a recent annual survey of online education claims the number of students taking at least one online course has surpassed 6.7 million (Allen & Seaman 2013). Based on these figures, Allen and Seaman (2013) estimate that 32% of higher education students in the United States now take at least one course online.’ (Brown et al 2015).

The situation in Europe is little different - the growth in online education has been following US trends.

\(^5\) https://empower.eadtu.eu/fields-of-expertise/student-support/introduction
Clearly there are a number of reasons for this growth - the presumed economies of scale and production for institutions, the accessibility and financial savings to students, the ‘technophilia’ of many of the institutional staff involved, and, not least, the recognition by some commercial entities of the possibility of large profits.

Yet at the heart of this growth there is a category error. The category error (a semantic or ontological error in which things belonging to a particular category are presented as if they belong to a different category - Ryle 1949) is the use by institutions of the very term ‘online learning’. What institutions are doing is online teaching; it is the students who are doing the online learning - or, as will be suggested in this introduction, all too often not doing the learning. The error is significant; it allows institutions an unwarranted complacency. The term ‘online education’ is a more accurate phrase to describe what online institutions are doing.

2.1 Dropout in online education

For it is clear that there is a huge level of dropout from online education. The data are hard to collect as institutions are obviously not keen for the publicity that adverse dropout rates might attract. There is also no agreed format for presenting dropout rates. However if the simplest measure- graduation rates - are used then it is possible to compare some data from a few institutions which do make the data available - Figure 1.

![Figure 1: Graduation rates for some conventional and distance institutions compared (Simpson, 2012)](image)

It is worth examining the data for the UK Open University in more detail as there have been historical changes. Since it can up to 12 years for a particular UKOU student to graduate the data is always behind the actuality, and so it is only possible to study cumulative graduation rates. Thus Figure 2 shows the cumulative graduation rates for a number of years of student entry, starting in the UKOU’s first year of intake in 1971 (see Figure 2).
While this date is now rather old, more recent data suggests the trend is continuing, with the UKOU’s latest graduation rate now down to 13%. During this later period the UKOU has been moving increasingly to online modes of delivery, and whilst there may be a mix of explanations for the substantially decreasing graduation rate, it is clear that going online has not helped with this decline in student success.

2.2 Does student dropout from online education matter?
There is some evidence from UK full-time higher education that dropping out can increase the likelihood of students experiencing higher probabilities of depression, unemployment, indebtedness and - for women - experiencing violence from their partners (Bynner 2001). There appears to be no research into the effects of dropping out on online students although the effects can hardly be positive.

There can, of course, be effects on online institutions in terms of reputation and financial support from governments, and it is notable, for example, that the UKOU recently decided not to participate in the UK’s recent Teaching Excellence Framework (TEF) exercise. One of the factors determining an institution’s award of gold, silver or bronze status in the TEF is its retention rates, so non-participation was an inevitable decision given the invidious comparisons with conventional institutions.

Finally and most importantly of all there is a simple question of ethics. It cannot be right to actively recruit new students to online institutions without at least being up-front with them about their chances of ultimate success. But as far as known there is no institution that does that, despite it being perfectly possible to give intending students that information in statistical form using the new field of Learning Analytics. It would not be possible to market a new model car with only an average 10% chance of reaching its destination. Online students deserve better than this.

Figure 2: Cumulative UKOU graduation rates 1971 to 1997 (Simpson, 2012)
2.3 Why do online students drop out?
Clearly there are many factors involved in online student dropout. They often tend to be older than conventional students and have other demands on their time from families and work. And open entry institutions like the UKOU are bound to suffer lower rates through having students with lower previous entry qualifications. But a more detailed examination of the data suggests that none of these factors are able to fully explain the sharp discrepancy between graduation rates of more than 80% for conventional UK higher education and the 13% for the UKOU, or the 45% points difference between the University of London International Programmes supported and online modes. This latter data may suggest that the difference can be explained at least partially by the lack of student support in the online mode.

Another clue that it is the lack of student support that may lie at the base of these differences can be drawn from the success rates of MOOCS - the Massive Online Open Courses that have been a feature of online education in the last few years. These are usually unsupported and often have completion rates of less than 10%. Whilst there will other reasons for these low rates it is hard to dismiss the thought that the lack of student support may be an important factor.

a. How can online student dropout be minimised?
There are two possible ways in which online study can be made more effective - through course design and student support.

Course design is clearly very important and it must be possible to write courses to be retention-friendly. For example, the UKOU has some considerable data on the retention rates of its course modules compared with benchmarks estimated from the probability of success of students on those courses. This analysis shows that there are courses delivered in very similar ways, which nevertheless have very different retention rates. Crooks (2005) examined course modules, which were particularly successful in retaining students and suggested that they allowed students greater flexibility in both study materials and assessment. There will be other factors such as readability, cognitive load, assessment, and workload that will affect a module’s success in retaining its students.

Student support is the other key factor in increasing online student success. This paper focuses on student support, which here is defined as all those activities, which institutions might undertake to assist students outside course design. The emphasis of this part of the EMPOWER Project is on such student support.

2.4 Student Support - definitions
Student Support can be of two kinds:

Academic - aimed at developing a student’s cognitive and learning skills - in other words teaching or tuition.

Non-academic - aimed at developing a student’s organisational and affective skills - in other words their ability to manage their employment, family and other demands on their time, and to deal with the various emotional stresses of study, in particular, their ability to stay motivated to keep learning.

It is useful to note that non-academic support can include action taken with a student - such as giving advice or assessing readiness for study - and action taken for a student such as making out a special case for them or attempting to change the institution in some way to help them more effectively.
A great deal of attention has been given to academic support - online teaching - in the research literature. Much less research has been focused on non-academic support, despite opinion amongst some workers in the field that it is at least as important as academic support, and in some cases perhaps more important.

Under the perspective of the Student Support Group, The EMPOWER Project has been focusing on both kinds of support as will be described in the next section.

3. The EMPOWER Project vision on Student Support

Since its launch in 2015, although small in number of members, the Student Support Group of the EMPOWER has been very active working on several lines of actions:

- Attendance and participation in EMPOWER meetings (face-to-face and online).
- Development and update of the information and resources of its own space on the EMPOWER public website.
- Development and update of its private space in the EMPOWER Google+ site.
- Organisation of a series of webinars and videos on topics related to the field.

A summary of these actions is exposed below.

3.1. Development and update of the information and resources of the Student Support Group website

Within the EMPOWER website, each one of the pools of expertise brings its information. As the other groups, the Student Support group prepared and updates regularly the information of its space, whose structure is common to the rest of the groups:

- **Introduction**: general overview of the field and past events organised by the group of expertise.
- **Meet the experts**: general information about each one of the experts that integrates the group.
- **Tools & resources**: a selection of relevant tools and resources available related to the field. Documents are downloadable.
- **Member area**: access to the private site of the group in Google+ Sites.

3.2. Development and update of its private space in the EMPOWER Google+ site

The experts of each EMPOWER group have a their disposal a private working space in the EMPOWER Google+ site to organise and share news, information, online Hangouts meetings, and those materials and resources of interest for the group purposes. This is accomplished by using a Google Drive area to upload, sharing and storing documents. The structure of the Shared Drive of the Student Support group serves as a basis for the story line of the group since it was launched.

3.3. Organisation of a series of webinars and videos on topics related to the field

One of the main line of actions that EADTU proposed for EMPOWER dissemination and expertise sharing was the organisation of open and free webinars. Webinars would be organized by each of the twelve different

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7 https://empower.eadtu.eu/fields-of-expertise/student-support/meet-the-experts
8 https://empower.eadtu.eu/fields-of-expertise/student-support/tools-resources
experts pools. Since this first proposal by EADTU Secretariat, the Student Support Group has offered a total of five webinars using the EADTU ClickMeeting web conference tool.

Until now, the webinars of the group have combined synchronous participation of one-two experts with pre-recorded videos (some of them offered as introductory of complementary materials to the main presentation). Contributions of each webinar share a common thread, being introduced by the chair of the group. All videos, synchronous and asynchronous, are uploaded to the YouTube channel of the EADTU and are also available in the EMPOWER website. Webinars are previously announced in EADTU social nets, twitter (@EADTU) and Facebook.

Taking into account the integral and holistic perspective of the group concerning what student support should be considered, the main aim of the webinars have been, on the one hand, to address and discuss on relevant issues concerning students’ retention and drop-out in open, distance and online learning. On the other hand, to share innovative solutions for empowering students, increasing their motivation and well-being, reducing drop-out and failure rates and promoting success. So far, these are the main topics that have been addressed in the webinars and videos, thanks to the contribution of experts of well-known distance education universities, members of EADTU, and the participation of Latin-America institutions, as well. A total of 96 online attendants from 23 different countries have taken part in the webinars (Table 1). The link to the videos in EADTU YouTube site are available at the EMPOWER website.

Introduction to the Student Support Group. Ángeles Sánchez-Elvira (Chair, UNED, Spain)

A general overview of the Student Support group and main results of research on ODL students’ psychological profiles related to success and failure are presented in two videos. From our perspective, psychological variables have a main role that should be taken into account for a better understanding of students’ engagement and motivation in opposition to procrastination, anxiety or academic burnout among others. This knowledge is even more relevant if we consider its implications in the use of different learning strategies by students. In this way, we would be in a better starting point to train them to develop more successful ways of coping with studies and academic stress, therefore promoting not only their success but also their well-being (Sánchez-Elvira, 2016).

- Student Support field of expertise: An introduction. 76 CanalUNED visualisations.
- Success and risk profiles of Distance Education Students. 26 YouTube visualisation

Student retention vs. Student dropout. Ormond Simpson (International consultant in ODL and former OPEN UK).

In these two webinars, Ormond Simpson (a recognised international expert in student support in ODL) gave keys to the understanding of the major problem of drop-out in ODL. The serious consequences -social and financial -for students, institutions and society as a whole are analysed and it is argued that overcoming the

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9 https://www.facebook.com/eadtu/
10 https://empower.eadtu.eu/fields-of-expertise/student-support/introduction
11 https://canal.uned.es/mmobj/index/id/52143
12 https://www.youtube.com/watch?v=St_4K4BQVbE&feature=youtu.be
problem involves recognising that funding appropriate student support is not simply a cost but can have a positive financial return for institutions through increased retention. Simpson suggested some ideas for discussion about what that appropriate support might comprise. Also, some of the theories that could be helpful in supporting students for retention are presented. In particular, a look at learning motivation theories and how to help students keep their drive to learn is stressed.

- **Student dropout in distance education - how many, who, when, why, what are the consequences and how do we overcome them?** \(^{13}\) (S1) September 2016.
- **Theories of Student Support for Retention** \(^{14}\). March 2017.

### Innovative Actions for Student Support

In the webinars that follows, pre-recorded videos were presented embedded during the synchronous sessions to present international experiences of distance education universities.

- **Innovative Student Support Solutions for Large Groups** \(^{15}\) (LG) November 2016. Ángeles Sánchez-Elvira, Covadonga Rodrigo, Tim Read, Guillermo de Jorge (UNED, Spain), Mehmet Firat (ANADOLU, Turkey). Open and distance education universities are among the largest ones in the world by number of students enrolled. To give support to large number of students is a great challenge that calls for strong and extremely well organised student support programs, at an institutional level, as well as innovative and creative proposals to give efficient answers to main students’ needs in this type of mega-universities. In this webinar, distance education universities with a long experience in the field and a large number of students, present some of their innovative solutions at giving support to big numbers in blended and online learning environments. Single videos can also be watched independently. In this sense, UNED video explaining the automatic evaluation system of open answers through G-Rubric \(^{16}\) has received more than 90 visualisations.

- **Institutional support for prospective and new students in online and distance education** \(^{17}\) (IS) April 2017. Angeles Sánchez-Elvira (UNED), Antonio Moreira Teixeira, Lina Morgado (UAB, Portugal), Marion Stevens (OPEN, The Netherlands), Magdalena Cruz Benzán (UAPA, Dominican Republic) and Mehmet Firat (ANADOLU, Turkey). Considering the relevance of effectively support students during their first year at the university, and of an early detection of students’ problems, international experts from different continents present examples of induction programmes that have been implemented at an institutional level. Also, good practices for giving support to prospective and new students are described, such as the awarded "Studiecoach" programme of the Open University of the Netherlands.

- **Analytics for Action (A4A): Using data analytics to improve student’s performance in modules in presentation** \(^{18}\) September 2017. Rafael Hidalgo Aponte (OPEN, UK). This webinar introduces an approach to the use of data analytics that identify issues of student performance and progression.

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\(^{13}\) [https://youtu.be/zLIOURPCec](https://youtu.be/zLIOURPCec)

\(^{14}\) [https://youtu.be/ykNp_y8JxSw](https://youtu.be/ykNp_y8JxSw)

\(^{15}\) [https://youtu.be/LoeCrN5-2SU](https://youtu.be/LoeCrN5-2SU)

\(^{16}\) [https://www.youtube.com/watch?v=RfZKRqVT7gA&feature=youtu.be](https://www.youtube.com/watch?v=RfZKRqVT7gA&feature=youtu.be)

\(^{17}\) [https://youtu.be/wMUgU553UhE](https://youtu.be/wMUgU553UhE)

\(^{18}\) [https://youtu.be/w5fw7f_gmJE](https://youtu.be/w5fw7f_gmJE)
and embeds to evaluation with Student Services Teams, and module and qualification teams to support in-presentation and post-presentation improvements to student experience and outcomes.

Table 1 summarises the percentage of participants of different countries that attended each webinar synchronously and the number of attendants and visualisations that each video has in YouTube since it was uploaded. As can be appreciated, there were attendants from different continents being five countries on the top of the list (The Netherlands, Spain, Great Britain, Ireland and Portugal).

Table 1: Number of attendants and YouTube visualisations of webinars and video, percentage of participation by country of the Student Support Group

<table>
<thead>
<tr>
<th>Countries</th>
<th>S1</th>
<th>LG</th>
<th>S2</th>
<th>IS</th>
<th>A4A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Attendants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>18</td>
<td>17</td>
<td>14</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>YouTube visualizations</strong></td>
<td>94</td>
<td>51</td>
<td>59</td>
<td>31</td>
<td>4</td>
</tr>
<tr>
<td><strong>% Participation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Netherlands</td>
<td>31</td>
<td>17</td>
<td>22</td>
<td>25</td>
<td>24</td>
</tr>
<tr>
<td>Spain</td>
<td>13</td>
<td>17</td>
<td>12</td>
<td>20</td>
<td>8</td>
</tr>
<tr>
<td>Great Britain</td>
<td>4</td>
<td>11</td>
<td>24</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Ireland</td>
<td>9</td>
<td>25</td>
<td>12</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Portugal</td>
<td>13</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Switzerland</td>
<td></td>
<td>12</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Turkey</td>
<td>9</td>
<td>6</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>6</td>
<td>6</td>
<td>12</td>
<td></td>
<td></td>
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<tr>
<td>Austria</td>
<td>4</td>
<td>6</td>
<td></td>
<td>8</td>
<td></td>
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<tr>
<td>Sweden</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Denmark</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Ukraine</td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Argentine</td>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lituania</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germany</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moldavia</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>6</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, the Student Support group has contributed with two articles to the first Envisioning Report for Empowering Universities\(^{19}\) released in May 2017 (Ubachs, Konings & Brown, 2017). On this report, different expert pools of the EMPOWER cover the latest trends and developments in new modes of teaching and learning. Under the main title “Supporting the Success of 21st Century Learners”, the Student Support pool presents its contributions. On the one hand, some innovative solutions for giving support to large groups of students, based on the years of experience in ODL of the 3rd and 29th universities in the list of HE institutions by enrolment (ANADOLU University, Turkey, and UNED, Spain (both EADTU members). In this first contribution, the experts introduce “some main innovative solutions mediated by technologies, whose aim is to improve student support and the services to large numbers of students in blended and online environments. These solutions are focused on: the optimisation of online students’ information and orientation strategies; Synchronous and asynchronous video-tutoring; Automatic formative assessment for open answers and a technologically controlled system for face to face exams (Sánchez-Elvira et al. 2017, p.53).

On the other hand, on the second contribution of the group, Ormond Simpson reflects on some of the potential innovations in distance education support and estimates the chances of them being mainstreamed in DE within a five years horizon (Simpson, 2017, p.56). Virtual reality, artificial intelligence systems, emotion detection systems, learning analytics, MOOCs, online feedback and assessment, communication and social software, or something else…

¿What is your opinion? ...

4. Conclusions

Higher Education is facing great challenges in the XXI century. ODL and online learning education are called to play a relevant role in the development of new scenarios in which contribute to widening the access of millions of people to tertiary education and life-long learning, all over the world.

With respect to Europe, the EADTU launched the EMPOWER project in 2015. Its main objectives are, on the one hand, to share the expertise of ODL universities with traditional HE institutions in their transition to an enriched and technologically mediated education. On the other hand, promoting innovation in teaching and learning through interactive spaces for exchanging and discussing good practices and experiences.

The Student Support pool constitutes one of the 12 EMPOWER expert groups. Considering the special characteristics of ODL students, student support is an even more relevant issue in HE, as recognised by well-known models of quality assessment in distance and online education. In this sense, they include specific indicators for the evaluation of student’s support, both at an institutional and course level programs (e.g. EADTU E-xcellence, 2016, 3rd ed\(^{20}\); Ossiannilsson, Williams, Camilleri & Brow, 2015; Stewart, Goodson, Miertschin, Norwood & Ezell, 2013).

In general, the quality of the Support services delivered by ODL institutions is highlighted by quality agencies. At this respect, Ossiannilsson, Williams, Camilleri and Brow (2015) point out that "There is widespread

\(^{19}\) https://empower.eadtu.eu/home/sharing-expertise?id=85

evidence, from Europe, Asia and Americas that open, distance, flexible and online education, including e-learning providers, satisfy national regulators with the quality of their student support services and often rank higher than conventional institutions" (p. 17).

At the EMPOWER, the Student Support group is focused on the ways ODL students might be better supported, especially in online and blended-learning modalities; also, the development of proactive actions to guarantee students support at an institutional, administrative and academic level is a central area of interest.

Concerning online learning, digital technologies will let us to providing more personalised and effective ways of support. Possibilities should be investigated, developed and implemented. Student support should be a clear source of inspiration and innovation for the delivery of more advanced ways of helping students under a more integral perspective. That means that both, academic and personal support (such as emotional one) is required, in search for student’s success and well-being. In this sense, a critical sight to current institutional approaches should be done, as students’ drop-out in ODL is a clear shortcoming not always conveniently faced by universities. As Ormond Simpson points up in this paper, institutions are more focused in the online teaching perspective that on the online learning process, the other side of a single coin. That means to keep a narrow focus on the problematic.

In sum, the Student Support Group of the EMPOWER aims at contributing to promote innovative student support actions for a renewed higher education. Thanks to technologies, flexible, interactive, seamless and personalised learning environments will be our future teaching and learning paths. Therefore, students will need to be conveniently supported, oriented and guided for a successful learning experience. Under this wider perspective, the pool of experts is working for the dissemination of advanced theories and practices in the field through a variety of actions such as those presented in this paper.

5. References


Closing the Knowing–Doing Gap in Online Courses: Business Simulations and Assessment of Learning for Graduate and Undergraduate Students

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Abstract
Online and blended learning offer exciting opportunities to both enhance and scale education. Enhancements in the quality of educational experiences can be accomplished through technological advances that increase student engagement and interaction with the content, the instructor, and their peers. When these technologies are used, it is important to ensure that the increase in scale does not reduce the level of “doing” while learning. Increasing access does not have to come at the cost of student learning, engagement in doing, effective assessment practices, and quality of experience. Business simulations in online and blended education provide students essential opportunities to apply conceptual knowledge to realistic problems and situations while the instructor serves as a facilitator to guide and direct application of theory and textbook information. As students repeatedly act and then reflect on their business decisions and actions, they experiment in a safe environment, construct and scaffold their learning around authentic experiences, and through a combination of concrete experiences, reflective observation, abstract conceptualism, and active experimentation (Kolb’s Cycle of Learning), they deepen their understanding of business principles. Business simulations can be leveraged as further value add to online and blended education through collection of data about student learning. Before, during, and after simulation experiences, the data that is generated can be used to assess course and program quality and effectiveness, individual student learning, and predict and ameliorate student issues and needs. This data can then be used to support accreditation efforts and to enhance the quality of the educational environment.

Keywords: simulations, engaging students in learning, closing the knowing-doing gap, assessment, data collection for assurance of learning

1. Introduction
The paper focuses on the link between business simulations and assessment of learning in online courses at the graduate and undergraduate level. The outcome of any teaching experience is an acquisition of knowledge based on learning experience(s). The next step is assessment of these learning outcomes (including the measurement of these outcomes), and the last step is linking these outcome measures to accreditation standards. Both AACSB International—The Association to Advance Collegiate Schools of Business (AACSB) and European Foundation for Management Development (EFMD) EQUIS accreditations require the measurement of learning outcomes as part of the standards associated with assurance of learning. AACSB standards are extremely important in online courses, programs, and degrees. Schools seeking new or maintenance of accreditation are required to demonstrate assurance of learning, documenting that students are engaged in experiences that help them master learning content and skills.
Rubin and Martell (2009) have outlined detailed practices linking assessment and accreditation in business schools.

The building blocks of assessment begin with individual lectures that are bundled into courses and then collected to form a curriculum and a degree. While most accreditations measure learning outcomes at the degree level, the learning and doing happens at the course level.

Rubin and Martell focus on distinct learning categories (see Table 1. Classification of Assessment Learning Outcomes).

Table 1: Cognitive: knowledge-based (e.g., recall of facts, principles, rules, models, etc.)
Potential Methods Across Outcomes (Rubin & Martell 2009)

<table>
<thead>
<tr>
<th>Learning Outcome Category</th>
<th>Learning Concept</th>
<th>Measurement focus</th>
<th>Potential Assessment Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive outcomes</strong></td>
<td>Verbal (declarative)</td>
<td>Quality of knowledge, recall accuracy, speed of recall</td>
<td>Exams testing recognition (e.g., multiple-choice) or recall (e.g., essay, fill-in-the-blank)</td>
</tr>
<tr>
<td></td>
<td>Knowledge organization</td>
<td>Idea similarity, knowledge interrelatedness, hierarchical ordering</td>
<td>Concept mapping or card sorting</td>
</tr>
<tr>
<td></td>
<td>Cognitive strategies</td>
<td>Forming concepts and procedures, problem solving</td>
<td>Case scenarios, problem sets</td>
</tr>
<tr>
<td><strong>Skill outcomes</strong></td>
<td>Skill acquisition</td>
<td>Proceduralization compilation</td>
<td>Assessment centers, work samples, role plays, behavioral checklists, presentations</td>
</tr>
<tr>
<td></td>
<td>Automaticity</td>
<td>Automatic processing</td>
<td>Behavioral observation, performance ratings</td>
</tr>
<tr>
<td><strong>Affective outcomes</strong></td>
<td>Attitude</td>
<td>Targeted object (e.g., ethics), attitude strength, self-efficacy</td>
<td>Self-report, task specific self-efficacy</td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td>Effort, tenacity, goal difficulty, motivation to learn</td>
<td>Self-report, observation, time-on-task, goal-difficulty, ratings</td>
</tr>
</tbody>
</table>

The ideal assessment would implement all outcome categories in a single course, which could be key for online courses as a way to measure whether students are meeting learning objectives and may even help determine whether online learning is comparable to face to face learning.

Of utmost importance is using the appropriate methods to assess the learning outcomes. Depending on the class and material as well as considering the barriers to scale and class size the instructor ideally would use some combination of tests, cases, projects, activities, and simulations where appropriate. This approach is further supported by the work of Kolb, et al. (2014). Experiential Learning Theory (ELT) provides a comprehensive framework to guide the facilitator in the learning process. In Kolb, et al. the authors describe the relationship between the learning cycle and experience. “Teaching around the learning cycle” involves the instructor assuming roles as a facilitator, subject expert, evaluator, and coach: (see Table 2, Examples of Beliefs). These roles can be accomplished in both face to face and online format.
Table 2: Examples of Beliefs, Goals, Styles, and Practices Associated With Educator Roles (Kolb et. al. 2014)

<table>
<thead>
<tr>
<th>Educator role</th>
<th>Beliefs: “Learning occurs best when...”</th>
<th>Goals: “My students develop...”</th>
<th>Style: “As a teacher, I prefer to be...”</th>
<th>Practices: “Instructional forms I often use include...”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitator</td>
<td>It begins with the learners experience</td>
<td>Empathy and understanding of others</td>
<td>Creative, warm, affirming</td>
<td>Class discussion, journals, personal stories</td>
</tr>
<tr>
<td>Expert</td>
<td>New concepts are integrated into existing mental frameworks</td>
<td>Analytic and conceptual abilities</td>
<td>Logical, authoritative</td>
<td>Lectures, readings, written assignments</td>
</tr>
<tr>
<td>Evaluator</td>
<td>Clear standards and feedback are provided</td>
<td>Problem-solving skills</td>
<td>Structured, outcome-oriented, objective</td>
<td>Laboratories, graded homework assignments</td>
</tr>
<tr>
<td>Coach</td>
<td>It takes place in a real-life context</td>
<td>Ability to work productively with others</td>
<td>Applied, collaborative, risk-taking</td>
<td>Field projects, role-plays, simulations</td>
</tr>
</tbody>
</table>

Experiential learning in its many forms can entail a variety of methods, projects, cases, global study experiences, internships, and consulting projects (see Kolb vs. Kolb, et al., Table 3 Educator Roles, Learning Styles, and Instructional Techniques). In addition, many of these measures can be implemented in courses that utilize teams or individual learning experiences.

Table 3: Educator Roles, Learning Styles, and Instructional Techniques (Kolb et. al. 2014)

<table>
<thead>
<tr>
<th>Teaching roles</th>
<th>Instructional techniques</th>
<th>Learning style</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitator</td>
<td>Journals, group discussion, brainstorming, perspective taking, personal examples</td>
<td>Experiencing, imagining, reflecting</td>
</tr>
<tr>
<td>Expert</td>
<td>Lectures, readings, written assignments, model critiques</td>
<td>Reflecting, analyzing, thinking</td>
</tr>
<tr>
<td>Evaluator</td>
<td>Laboratories, case studies, simulations, graded homework</td>
<td>Thinking, deciding, acting</td>
</tr>
<tr>
<td>Coach</td>
<td>Field work, site visits, applied projects, practicum experiences</td>
<td>Acting, initiating, experiencing</td>
</tr>
</tbody>
</table>

One additional form of experiential learning not listed in the above table is the use of simulations.

2. The Role of Simulation

Simulations can take many forms and range from the use of simple card decks to complex computer applications. Simulations can be used for individual or team learning experiences (see excellent summary of simulations in the Academy of International Business (AIB) Exercise and Simulation listing: [https://aib.msu.edu/resources/exercisessimulations.asp](https://aib.msu.edu/resources/exercisessimulations.asp)).
Several papers have discussed the role of simulations in experiential learning. Davis et al. (2015) examine the relationship between emotions and cognition in the context of experiential learning in particular a business simulation. Cadotte (2014) analyses the business simulation as a learning tool. Simulations allow students to participate as opposed to observing. Learners construct their own knowledge. Cadotte demonstrates the ability of business simulations to translate the theory of experiential learning into the situational learning of a business simulation. As Cadotte describes “the experience is both cognitive and emotional.”

Simulations are a subset of quantifications. Excellent discussion of games and simulations appears in Neck, Green, and Brush (2014). The simulations are included within the context of games and the practice of play. Simulations are referred to as a form of role playing. Simulations fill a wide variety of needs: experiential learning, role-playing, making decisions under ambiguity, and measuring subject knowledge, just to name a few. Barišić and Prović (2014) studied business simulations as tool to improve learning and provided a detail set of examples, including quoting a table from Oblinger (2004), see Table 4.


<table>
<thead>
<tr>
<th>Principle</th>
<th>Description</th>
<th>Application in Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualization</td>
<td>Learning is tailored to the needs of the individual</td>
<td>Games adapt to the level of the individual</td>
</tr>
<tr>
<td>Feedback</td>
<td>Immediate and contextual feedback improves learning and reduces uncertainty</td>
<td>Games provide immediate and contextualized feedback</td>
</tr>
<tr>
<td>Active learning</td>
<td>Learning should engage the learner in active discovery and construction of new knowledge</td>
<td>Games provide an active environment which leads to discovery</td>
</tr>
<tr>
<td>Motivation</td>
<td>Students are motivated when presented with meaningful and rewarding activities</td>
<td>Games engage users for hours of engagement in pursuit of a goal</td>
</tr>
<tr>
<td>Social</td>
<td>Learning is a social and participatory process</td>
<td>Games can be played with others (e.g., multiplayer games) or involve communities of users interested in the same game</td>
</tr>
<tr>
<td>Scaffolding</td>
<td>Learners are gradually challenged with greater levels of difficulty in a progression</td>
<td>Games are built with multiple levels; players cannot move to a higher level until that allows them to be successful in small increments, and incompetence is displayed at the current level</td>
</tr>
<tr>
<td>Transfer</td>
<td>Learners develop the ability to transfer learning from one situation to another</td>
<td>Games allow users to transfer information from an existing context to a novel one</td>
</tr>
<tr>
<td>Assessment</td>
<td>Individuals have the opportunity to assess their own learning and/or compare it to that of others</td>
<td>Games allow users to evaluate their skill and compare themselves to others</td>
</tr>
</tbody>
</table>

Schindehutte and Morris (2016) examine the use of experiential learning portfolios (see Table 5 sample experiential Learning Portfolio) as course-based measures. Simulations are one part of this mix of tools within the portfolios.
Table 5: Sample experiential learning portfolio (Schindehutte & Morris)

<table>
<thead>
<tr>
<th>Course-based</th>
<th>Co-curricular</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea diaries</td>
<td>Idea jams</td>
</tr>
<tr>
<td>Business models</td>
<td>Internships at local ventures and incubators</td>
</tr>
<tr>
<td>Business plans</td>
<td>Entrepreneurial mentors for students</td>
</tr>
<tr>
<td>Feasibility studies</td>
<td>Entrepreneurship study abroad programs</td>
</tr>
<tr>
<td>Written or video case studies</td>
<td>Elevator pitch competitions</td>
</tr>
<tr>
<td>Mini- and full case studies</td>
<td>Pitching to a banker</td>
</tr>
<tr>
<td>Live cases</td>
<td>Campus business plan competitions</td>
</tr>
<tr>
<td>Interviews of entrepreneurs</td>
<td>Students competing in regional or national competitions</td>
</tr>
<tr>
<td>YouTube Videos of entrepreneurs</td>
<td>Student venture hatcheries</td>
</tr>
<tr>
<td>Hollywood movies</td>
<td>Campus-based businesses run by students</td>
</tr>
<tr>
<td>Entrepreneurial audits</td>
<td>Prototype development/fab labs</td>
</tr>
<tr>
<td>Marketing inventions</td>
<td>Website development</td>
</tr>
<tr>
<td>Small business consulting projects</td>
<td>Start-up weekends</td>
</tr>
<tr>
<td>In-class games or exercises</td>
<td>Shadowing entrepreneurs</td>
</tr>
<tr>
<td>Simulations</td>
<td>Student venture fairs</td>
</tr>
<tr>
<td>Adopting a family firm</td>
<td>Speaker series</td>
</tr>
<tr>
<td>Role plays</td>
<td>Community outreach initiatives (e.g., bootcamps, women’s symposia)</td>
</tr>
<tr>
<td>Negotiations</td>
<td>Technology commercialization projects</td>
</tr>
<tr>
<td>Guest lectures by entrepreneurs</td>
<td>Students mentoring high school or disadvantaged students</td>
</tr>
<tr>
<td>Lean start-up methodologies</td>
<td></td>
</tr>
<tr>
<td>Experiential exams</td>
<td></td>
</tr>
</tbody>
</table>

3. Closing the Gap

The final element of closing the gap involves linking simulations to measuring learning outcomes.

Dierdorff (2015) identifies the role simulations play in promoting learning and measuring outcomes linked to program goals and outcomes. Simulations serve two roles. First, they create a learning environment for students to make decisions and represent a form of experiential learning. Second, simulations provide an assessment system to systematically measure outcomes related to accreditation standards. Simulations provide an integrated and balanced assessment to systematically measure program goals. Means and Kraft (2016) detailed the benefits of experiential learning and course related experiential learning types as they related to simulations.

4. The Experience

There are a wide variety of simulations for use at the graduate and undergraduate level. The simulations can be part of a course as well as the singular focus of a program such as a capstone experience. At the University of Florida, we have used simulations from a variety of providers (e.g. Cesim, Capsim, Marketplace) for undergraduate, graduate, and certificate programs (see Table 6 Implementing Simulations on a Large Scare and Table 7 Mapping Assessment to Learning Goals). Simulations can also be linked to cases measuring firm performance (see Kalis). Kalis has identified firm strategies and linked them to strategies used in simulations.
Table 6: Implementing Simulations on a Large Scale (Means & Kraft 2016)

<table>
<thead>
<tr>
<th>Course</th>
<th>Level</th>
<th>Foundation</th>
<th>Capstone</th>
<th>GlobalDNA</th>
<th>Capsim Global</th>
<th>CompXM</th>
<th>TeamMATE</th>
<th>Capsim Core</th>
</tr>
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<tbody>
<tr>
<td>Strategic Management</td>
<td>Undergraduate</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Business</td>
<td>Undergraduate</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Strategic Management</td>
<td>Graduate (Online MBA)</td>
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<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global Strategic Management</td>
<td>Graduate (MS MGT)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business Policy</td>
<td>Graduate (Engineering)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capstone Project Course</td>
<td>Graduate (MS IB)</td>
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<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Finance</td>
<td>Undergraduate</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Principles of Marketing</td>
<td>Undergraduate</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

KEY: ✓ = implemented; ● = planned implementation

Table 7: Mapping Assessment to Learning Goals (Means & Kraft 2016)

<table>
<thead>
<tr>
<th>Learning Goal</th>
<th>MBA</th>
<th>MIB</th>
<th>MSM</th>
<th>BSBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrate competency across business disciplines</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
</tr>
<tr>
<td>Demonstrate teamwork and leadership skills</td>
<td>TeamMATE</td>
<td>TeamMATE</td>
<td>TeamMATE</td>
<td>TeamMATE</td>
</tr>
<tr>
<td>Demonstrate critical thinking</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
</tr>
<tr>
<td>Possess effective communication skills</td>
<td>CompXM/Capsim360</td>
<td>CompXM/Capsim360</td>
<td>CompXM/Capsim360</td>
<td>CompXM/Capsim360</td>
</tr>
<tr>
<td>Possess a global perspective on business</td>
<td>N/A</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
</tr>
<tr>
<td>Apply appropriate problem-solving and decision-making skills</td>
<td>N/A</td>
<td>TeamMATE</td>
<td>TeamMATE</td>
<td>TeamMATE</td>
</tr>
<tr>
<td>Appreciate the ethical aspects of business</td>
<td>N/A</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
<td>Capstone/CompXM</td>
</tr>
<tr>
<td>Understand the principles of groups, teams, managers, and leaders</td>
<td>N/A</td>
<td>CompXM/Capsim360</td>
<td>CompXM/Capsim360</td>
<td>CompXM/Capsim360</td>
</tr>
</tbody>
</table>

KEY: Blue = currently used; Green = available to use; N/A = not applicable to program

Implementations of simulations and systematically assessing learning goals are a key component of the accreditation process. Due to the online and cloud-based aspects of online simulations, these applications allow data to be systematically collected, reviewed, and available to “close the loop” and make program adjustments. The use of simulations allows data to be uniformly collected independent of the facilitator.
5. Conclusion

Simulations provide a systematic assessment of learning that can be conducted at a large scale as well as a mechanism for measuring outcomes. Simulations can be used to comparing learning outcomes, scores, careers, programs, degrees, and schools. The benefits to the instructors, students, and program are a uniform and consistent measure of learning. Simulations can also be combined with cases, text, projects, internships, and other forms to present an array of measures. Learning outcomes can also be linked with employment prospects. Figure 1 Degree of Skills Deficiency Across the Overall Employee Base indicates the corporate needs and how they match business school goals and objectives. Simulations provide a link to experiential learning and use the gap in assessment as a longer run objective for matching goals to corporate skill needs.

![Degree of Sufficiency and Degree of Deficiency]

**Figure 1:** Degree of Skills Deficiency Across the Overall Employee Base (Deans Summit 2017)

By linking objectives in Table 7 to deficiencies in Figure 1, simulations can be used to measure performance of in solving skill deficiencies.
6. References


“Exercises and Simulations.” *Academy of International Business*, Academy of International Business, aib.msu.edu/resources/exercisessimulations.asp.


Countering post-truth and post-trust attitudes through online and offline pedagogy

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Abstract
The current post-truth, post-trust and post-factual era is inimical to the core values of higher education such as objective knowledge, academic openness and international collaboration. One element of universities’ responses should be to help students to position themselves individually on the attitudinal continua of open vs. closed and inclusive vs. exclusive, which are more salient today than the old left-right divide. We review the pedagogies that can be used for such purposes, which go back at least to Blaise Pascal and rely more on debate and discussion than on didactic teaching. We then ask how online learning and teaching can be used for this purpose, drawing *inter alia* on observations of MOOCs learners.

1. Introduction
The current post-truth, post-trust and post-factual era is inimical to the core values of higher education such as objective knowledge, academic openness and international collaboration. Surges of nationalism, nativism and populism aim to make societies more closed. A striking example was the legislation passed in Hungary in April, 2017 threatening to remove the right to operate from the Central European University, which was set up expressly as an ‘island of liberal thought’ to teach ‘the values of open society: free minds, free politics, free institutions’ in former communist states (The Guardian, 2017). This and similar events, such as attempts to shut down the European University St Petersburg (Public Sociology Laboratory, 2017) run counter to higher education’s historic commitment to global openness and rigorous knowledge as the basis for human progress. Such political trends discount the importance of experts, elites and internationalism. They are particularly challenging to higher education institutions (HEIs) in today’s digital world because the Internet and social media make untruths and ‘alternative facts’ as readily as verifiable knowledge.

Our first section examines the trends that have brought us to this ‘post-truth’ and ‘post-trust’ era, noting the impact of populism of both left and right. As a result, the old left-right political spectrum is no longer as salient as continua between open/closed and inclusive/exclusive.

In the second section, we argue that notwithstanding this dispiriting context - indeed because of it - humankind will depend greatly on HEIs for its healthy development into the 21st century. The inclusion of higher education in the 2030 Sustainable Development Goals expresses a global consensus on its importance (UNESCO, 2015; 2016). But how should higher education respond to this new context? The core objectives of HEIs are to stand up for evidence, facts and the truth (Glover, 2017). University graduates should acquire an attitude of systematic scepticism. This requires curricula that put less emphasis on didactic teaching and more on debate, both online and face to face.
In a final section, argue that educational technology can play an important role in furthering these aims. In particular, the various trends towards openness in academe (e.g. in software creation, access to research results and the sharing of educational resources) can be powerful forces for nourishing diversity and countering trends to close down debate. Moreover, while the impact of social media can sometimes be baleful, they may be turned to advantage if students use them to understand and assess divergent points of view on diverse issues.

2. The Post-truth and Post-Trust Era

Each year the Oxford dictionaries choose a ‘word of the year’. For 2016 that word was ‘post-truth’. They define post-truth as "relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief". Their example is the sentence: "In this era of post-truth politics, it is easy to cherry-pick data and come to whatever conclusion you desire.”

Loss of trust in institutions is another feature of our times. This can be a gradual process. Over 50 years Americans’ trust in government has declined from 80% to 20%. Trust in government is one of many measures that the Economist Intelligence Unit conflates to produce its annual democracy index (Economist Intelligence Unit, 2016). In 2016, for the first time, the US no longer ranked among the world’s 19 ‘full democracies’, but has been demoted to ‘flawed democracy’.

In his book, ‘Trust and the Reconstitution of Social Order’, Francis Fukuyama (1995) demonstrated persuasively that the economic, social and cultural success of nations relates directly to the trust that their people have in each other and in their institutions. Some countries flourish because strangers learned to trust one another when signing contracts, allowing them to do deals outside the circles of family, tribal or in-group kinship relied upon in low-trust societies.

The rector of the University of Oslo, Ole Petter Ottersen, argues that universities should be trust building as well as truth seeking. "In our age of turbulence”, he argues, “these two words – trust and truth – are inextricably intertwined” (Ottersen, 2016).

Populism is the political expression of these trends away from truth and trust. It combines nostalgia for the past, post-truth rhetoric, lack of trust in experts and institutions, a desire to divide and, above all, hostility to whatever can be labelled elite, usually by an accuser from another elite.

Populism can develop on either side of the conventional left/right political spectrum. Its common factor is an attempt to mobilise ordinary people against elites that are perceived to be self-serving. Right-wing populism also accuses these elites of coddling a third group, usually immigrants and other minorities (Judis, 2016).

Trump and Sanders stood for the right-wing and left-wing versions of populism in the 2016 US election campaign. In Europe, the right wing has the National Front in France and UKIP in Britain, while the left wing has Podemos and Syriza in Spain and Greece.

Events in Hungary are an alarming example of the threat that populist politics poses to HEIs. On April 4, 2017 the Hungarian Prime Minister, Viktor Orban, pushed a bill through parliament aimed at closing the Central European University (CEU) in Budapest, a prestigious graduate university with an international mission and staff and students from over 100 countries. Transforming it into a Hungarian institution with a different name will, in Orban’s view, eliminate nefarious influences from abroad. Academics around the world have reacted angrily to this blatant attack on academic freedom and internationalism. The European Union has weighed in and the CEU’s Rector, Michael Ignatieff, has pledged to keep the university and its values alive at
all costs. The matter is now before the courts, but unless it is resolved the CEU will have to move to another country. It has received offers from potential hosts.

We note two other symptoms of the threats posed to truth and trust when leaders like Orban try to close their societies to external influence. First, ‘expert’ was used as a pejorative term in the 2016 referendum and election contests in the UK and the USA. British Leave-the-EU campaigners told people to disbelieve expert projections about the impact of Brexit, whether from economists, newspaper columnists or diplomats. In the USA, the Trump campaign denigrated the work of the intelligence services and the Bureau of Labour Statistics. The business of higher education is to produce experts in all fields of human endeavour. We must teach them use their expertise confidently, fearlessly and persuasively.

A second, less obvious, symptom of post-truth and post-trust thinking is loss of belief in progress. Higher education is grounded in a belief that change is welcome because, on the whole, it is for the better. The students in our HEIs believe that, by pursuing truth, they will operate from a higher base of knowledge and skill than we did, whether in dentistry, ecology, history or philosophy. They expect that their more advanced knowledge and skills will create a better world.

Although they do not always call them ‘the good old days’, many contemporary politicians hark back to a time when things were supposedly better. Wisely, they don’t usually specify when that time was, because surveys show that most people think the world was at its best when they were in their early twenties. Dating the good old days is subjective. Nevertheless, nostalgia has resurfaced in a big way. People and movements are reaching back to an illusory past and trying to chart the future through a form of retreat (Kelly, 2016).

There are two antidotes to this: facts and knowledge. ‘Nothing is more responsible for the good old days than a bad memory’, so higher education must be a good memory for humanity. All graduates should leave their HEI with a grasp of the broad sweep of human development. In a recent summary, Swedish historian Johan Norberg documents the enormous progress achieved, not just over previous centuries but also over the decades since the badly remembered ‘good old days’. His book, ‘Progress: Ten Reasons to Look Forward to the Future’, is a powerful antidote to the temptation to generalise from the latest news report about a famine, a war or the health challenges of modern life and conclude how awful things are today (Norberg, 2016). Arguing that ‘the Good Old Days are now’, Norberg documents long-term trends for the better in vital areas of life all over the world. These underlying trends are persistent and will continue despite occasional setbacks or bad choices.

However, populist campaigns are usually advance warning of political crises. There are many such today and our higher education graduates will have to live through them and solve them.

3. How should Higher Education respond?

Given the challenges we have outlined, humankind will depend crucially on universities for its healthy development into the 21st century. One indicator of the consensus on their importance is that whereas the Millennium Development Goals of 2000 were limited to basic education, the Sustainable Development Agenda for 2030 has higher education as one of the targets of Goal 4, namely: “by 2030, ensure equal access for all to affordable and quality technical, vocational and tertiary education including university education” (UNESCO, 2015).

As regards what HEIs teach, degrees are a useful foundation, providing evidence that a graduate has learned to think, but today’s hybrid jobs require extra skills. People must learn to dissect post-truth discourse and
post-trust attitudes. They should cultivate an attitude of systematic scepticism and they must position themselves on the continua between open/closed and inclusive/exclusive that are successors to the older left/right political distinctions.

To quote Ottersen again: “what role can a truth-seeking university play in an era characterised as ‘post-truth’?” His answer is that: “Faced with the prospect of a post-factual society, universities have to re-establish a respect for objective truth and powerful arguments – through our educational programmes and through our public outreach. We have to create many more arenas for debate – arenas that are open and inclusive so as to give a voice to those who feel left behind too” (Ottersen, 2016).

Pollsters noted that in the 2016 political campaigns, in both the UK and the US, university graduates were much less likely than those without degrees to support populist positions. This suggests that higher education, in and of itself, acts as an antidote to post-truth and post-trust thinking. However, HEIs should offer greater diversity in what they teach and how they enable people to learn.

In its report, ‘Culture at Work’, the British Council (2013) showed that the abilities to demonstrate respect for others and to understand different cultural contexts and viewpoints – as well as knowledge of a foreign language – are prized in the workplace. The report urges that HEIs should do more to develop intercultural fluency by teaching communications skills, giving students opportunities to gain international experience and developing international research partnerships.

The art of opening and changing minds was articulated by the philosopher Blaise Pascal over 300 years ago, when he observed that: ‘people are generally better persuaded by the reasons they have themselves discovered than by those which come into the mind of others’ (Quartz Media, 2016). Pascal’s proposal for how to do this is worth quoting in full:

‘When we wish to correct with advantage, and to show another that he errs, we must notice from what side he views the matter, for on that side it is usually true, and admit that truth to him, but reveal to him the side on which it is false. He is satisfied with that, for he sees that he was not mistaken, and that he only failed to see all sides. Now, no one is offended at not seeing everything; but one does not like to be mistaken, and that perhaps arises from the fact that man naturally cannot see everything, and that naturally he cannot err on the side he looks at, since the perception of our senses are always true.’

In sum, HEIs should be more explicit in challenging their students to position themselves along the continua of open/closed and inclusive/exclusive and to understand the positions taken by others. We should not tell students where to position themselves but, as Ottersen said, create arenas for debate where they must address this issue personally, possibly arguing for different positions, whether they agree with them or not, rather as students do in Model United Nations simulations.

Whatever the positions that individual students take, universities as institutions must stand for openness. Their motto could be the 50-year old slogan of The Open University: ‘open to people; open to places; open to methods; open to ideas’. Their challenge is to maintain openness in the post-truth era when politics can have such a negative influence on higher education policies and practice, as we can see in states like Hungary and Turkey.
4. How can Technology help?

Finally, what role can educational technology play in achieving the aims we have outlined? Online learning is a powerful tool for opening up institutional reach, notably to older part-time students. By making people more aware of their thinking processes, online study helps them to be more purposeful in pursuing lifelong learning, which makes for better persistence and outcomes.

For HEIs in the post-truth era, technology is both part of the problem and also part of the solution. Access to digital resources can turn up ‘alternative facts’ just as readily as verifiable knowledge. However, technology can also greatly facilitate the debates in which students should engage in order to develop their own positions and attitudes of scepticism. It can also traverse national borders and offer quality content and verifiable knowledge even where nationalistic policies attempt to shut out ideas from the external world.

The combination of online technology with the philosophy of openness, as exemplified in open source software, open access to research findings and open educational resources (OER), is of special relevance to HEIs. Target 4.3 of the Incheon Declaration cited earlier (UNESCO, 2015) refers explicitly (item 43) to OER as a tool for promoting higher education, noting that ‘a well-established properly regulated tertiary education system, supported by technology, open educational resources and distance education can increase access, equity, quality and relevance.’

Both authors were involved in preparing UNESCO’s 2012 World Conference on Open Educational Resources and in drafting of the Paris Declaration on OER that it adopted by acclamation (UNESCO, 2012). Noting that the wider use of OER can also facilitate the achievement of UN goals in many areas, the Declaration argued that ‘governments can create substantial benefits for their citizens by ensuring that educational materials developed with public funds be made available under open licences (with any restrictions they deem necessary) in order to maximize the impact of the investment.’

Although the Paris Declaration did not include any formal monitoring mechanism, reports show that the use of OER by both teachers and learners is increasing steadily (University Affairs, 2017). OER may not have not have permeated academe as rapidly as open access to research publications, but open textbooks are very popular with students and substantially cut the cost of higher education in those jurisdictions that make them available. A second UNESCO Conference on Open Educational Resources is scheduled to occur in Ljubljana, Slovenia in September 2017.

Finally, social media can be a rich resource for following Pascal’s advice and finding out how people with other opinions see a question. Most MOOCs (Massive Open Online Courses), particularly those on the FutureLearn platform, make extensive use of social media. Indeed, FutureLearn calls itself ‘a social learning environment at its heart’. Both authors have taken FutureLearn courses, where discussion threads attract thousands of contributions, which course assistants review and summarise regularly.

MOOCs, and distance learning courses more generally, are usually developed by teams of academics and professionals. This teamwork tends to ensure that issues are presented in a balanced way from a variety of perspectives and also to filter out ‘alternative facts’. One of the authors (Daniel) was very proud to be told by a graduating student that ‘after studying with the Open University I can’t see less than six sides to any question!’
5. Conclusion
We have argued that the post-truth and post-trust attitudes engendered by populist politics pose a serious challenge to higher education. HEIs must re-establish a respect for objective truth and powerful arguments and put more of the onus on students to develop their own antibodies to alternative facts through lively debate. Evolving educational technologies can contribute greatly to this work. The importance of higher education to human development will continue to increase and the momentum to greater openness and international communication is unstoppable.

6. References


Quartz Media (2016) A philosopher’s 350-year-old trick to get people to change their minds is now backed up by psychologists. https://qz.com/778767/to-tell-someone-theyre-wrong-first-tell-them-how-theyre-right/?utm_source=kwfb&kwp_0=338025&kwp_4=1286435&kwp_1=572600. Accessed 2017-08-18


Creating synergies and transversality among universities with flipped classrooms and project-based learning

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Abstract
IONISx is the online learning branch of IONIS Education Group, the leading private higher education group in France (22 universities, 23,000 students). IONISx began developing MOOCs in 2013. Starting in 2014, IONISx turned its focus to degree-granting programs, creating flipped classrooms for over 5,000 undergraduate engineering and business students and project-based learning for continuing education master’s degrees. With time, we developed new offers for lifelong learning including shorter learning programmes.

Producing collaborative modular content on a platform based on open source technology and carefully designing learning scenarios proved to be the keys to success. This enabled us to create real synergies among universities, producing content in a transverse manner. We also exploit content in varied ways, by combining independent modules and envisaging specific scenarios depending on the audience of the course.

In our quest for quality, and as IONISx is also in charge of the digital transformation of the IONIS Education Group, we also conduct regular reviews and workshops with both students and academics. The format of these sessions has evolved with time: staff awareness; focus groups to interpret learning analytics results, gather insights and formalise new needs and expectations; co-design workshops making the participants real actors of the digital transformation of their university.

In our workshop, we’ll first rapidly look back on these experiences and show some of the tools and methods that proved successful in our organisation. We will then propose a discussion with the audience to exchange best practices, common issues and ways to get around them.

Keywords: online learning, higher education, lifelong learning, flipped classrooms, degree-granting programs, project-based learning, quality.

1. Introduction
IONISx is the online learning branch of IONIS Education Group, the leading private higher education group in France (20 schools, 23,000 students). IONISx began developing MOOCs in 2013.
Starting in 2014, IONISx turned its focus to degree-granting programs, creating flipped classrooms for over 5,000 undergraduate engineering and business students and project-based learning for continuing education master’s degrees. (Figure 1 displays a brief timeline of the evolution of our activities over the past few years).

Producing collaborative modular content in Open edX and carefully designing learning scenarios proved to be the keys to success. In this paper, we’ll look back on these experiences and show you some of the tools and methods we recommend.

2. **How Open edX enables synergies among higher education institutions: flipped classrooms**

In early 2015, IONIS Education Group decided to implement flipped classrooms for undergraduates in its schools. Many first-year students study similar introductory lecture material -- for example, both biotech and aeronautics students study physics, with some differences in content. (Figure 2 illustrates the case of 4 of our engineering universities.) The schools wanted to digitize content for these introductory classes and dedicate face-to-face class time to practical exercises.

![Image of flipped classrooms]

**Figure 1:** The activity of IONISx moved from MOOCs to degree-granting programs.

**Figure 2:** The scenario solution for our 4 engineering universities: Standardise online components while allowing for specialisation online and in class
The challenge was standardising the online content as much as possible, while still allowing each school to ensure a relevant curriculum for its students. The solution was to create classes organized into 30-minute independent micro-modules. The content of the modules is normalised: they all include an introductive summary stating the objectives of the module, one or several short videos followed by training exercises, a summary sheet for synthesis, evaluation exercises, and a feedback component to assess one’s understanding level and the quality of the module. (See figure 3 with a screenshot.)

**Collecting data**

- Coding the possible values of the variables
  - Learning and Training
- Data File
  - Learning and Training
- Synthesis
- Evaluation
  - Self-Evaluation

**Training: Question 1** (1 point possible)

Check right sentences:

- A single individual is statistical unit of the study in a row.
- A individual mix is the statistical unit of the study in a row.
- A multiple item in a single column.
- A item in a single column.

Figure 3: Screenshot of a module in statistics
The micro-modules were designed in coordination with each of the schools, and each school decided which micro-modules to include in its curriculum (see figure 4 with the extract of a curriculum in Maths).

<table>
<thead>
<tr>
<th>Code MIIMo</th>
<th>Chapitre</th>
<th>Notion (Titre du MIIMo)</th>
<th>EPITA</th>
<th>IPSA</th>
<th>ESME</th>
<th>Sup’ Biotech</th>
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<td>S3</td>
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<td>Déterminant d’une matrice carrée - Applications</td>
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<td>Généralités sur la diagonalisation des matrices carrées</td>
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<td>Généralités sur les intégrales impropres</td>
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<td>Convergence absolue d’intégrale impropre</td>
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Figure 4: Independent micro-modules to be selected and combine liked Lego blocks

Flipped classrooms have several advantages in this context, including being able to customise the angle of the course in face-to-face class time through the exercises discussed, varying the type of learning by alternating between distance and face-to-face, and avoiding passive lectures: class time is devoted to interactions.

Our flipped classroom approach includes all of the following:

- A face-to-face session to kick off the course, where the course plan and the first “interest of the notion” (why learn this?) are explained (either by the teacher or through videos designed with the schools).
- Online learning.
Learning analytics that teachers consult before each live session to identify learner comprehension.

Live session, ending with the kick-off of the following topic, with explanation or video about the “interest of the notion”.

(Repeats until end of the course.)

After a successful first run with first-year students in IT, math, and physics, the program has been put in place for second-year students and we are now working on the remaining three years and other subjects.

Figure 5: Our process requires a high level of coordination for the conception and selection process.

After 3 years, we’ve established a successful model for: (See figure 5 with a scheme of our iterative process)

- Using the benefits of Open edX to create synergies for several institutions who want to use content that is similar but not exactly the same.
- Spliting courses into small, independent units.
- Organizing flipped classrooms for undergraduates.
- Collaborating with teachers from different institutions and animating the community (collaboration tools like our production dashboard (see figure 6), the role of the “referent teachers”, the course authors, the pedagogical coordinator...)

3. From higher education to lifelong learning: project-based learning for working professionals

At the same time, IONIS Education Group decided to create fully online continuing education offerings to benefit working professionals anywhere in the world. These competency-based programs (degree-granting or short training certificates) allow learners to work toward a career change or promotion or to update their skills.

We adopted a project-based learning approach (see figure 7), most often using group projects, to allow learners to apply their skills immediately and come out of the programs with real experience. This approach also gives them maximum flexibility in organizing their time while still benefiting from interactions with peers.

- **Online courses** = mutualisation of learning content across blended and self-paced programs
- **Projects** = individual and group work to validate skills acquisition
- **Master classes** = synchronous or asynchronous content provided face-to-face or remotely

![Blended Model Structure](image1)

![Self-paced Model Structure](image2)

Figure 7: Project and skilled oriented pedagogical model
Like for the undergraduate classes, a main challenge was creating modular course content that could be adapted to programs with different focuses. Courses were also created as 30-minute micro-modules using the same format. Thanks to Open edX and our back office, we can use the same content in branded environments for different schools in the group or external partners (see figure 8).

Figure 8: Examples of an accounting course various learning environments: IONISx and SNCF

The online courses for each program are a library indexed by topics and competencies to correspond to projects. Learners take the classes on their own time and depending on their particular level of knowledge. At the same time, they work on the group projects with remote support from instructors who hold video
conferences (virtual classes) to kick off the project and debrief the project, and provide individualised support in between. At the end of each project, students turn in a video presentation and their related documents. Figure 9 is a screenshot of a video presentation with indexed feedback from the instructor. Figure 10 displays the typical sequence of a course.

![Screenshot of the video presentation of a project.](image1)

**Figure 9**: Screenshot of the video presentation of a project. On the left are the indexed remarks from the instructor.

**Key Success Factors for blended model**
- Flexible yet synchronous learning paths
- Group projects and assessments
- Tutoring and master classes

![Course sequence for blended and self-paced sessions](image2)

**Figure 10**: The course sequence for blended and self-paced sessions

The online classes themselves are not mandatory, in the sense that the students are only graded on what they produce for their projects, but learning analytics are still used to motivate students and measure engagement.

Since the launch of our first Online MBA in January 2016, we’ve successfully:

- Used the structural possibilities of Open edX to create synergies for several continuing education programs with different target learners.
• Used effective online classes in a competency-based and project-based learning curriculum.
• Developed a model for how instructors can “animate” remote project-based learning to better evaluate competencies and motivate learners.

4. From higher education to lifelong learning: project-based learning for working professionals
In our quest for quality, and as IONISx is also in charge of the digital transformation of the IONIS Education Group, we also conduct regular reviews and workshops with both students and academics (See pictures in figure 11 and 12). The format of these sessions has evolved with time: staff awareness; focus groups to interpret learning analytics results, gather insights and formalise new needs and expectations; co-design workshops making the participants real actors of the digital transformation of their university.

Figure 11 and 12: Discussion with students and academics at co-design workshops, spring 2017.

5. Conclusions
Modular content in Open edX makes synergies possible between different schools, different programs, and different levels of students. To create content that can be adapted in this way and provide flexible paths for learners, many people have to dive deep into course content before it moves to production. The importance of advance planning can’t be overstated.

The support that both learners and teachers are provided throughout the course is also key to a smooth implementation. It’s still often the first time people are learning and teaching online. With flipped classrooms and project-based learning, the content of the online classes is only part of the learning experience. It is key to think in terms of learning scenarios: all aspects of the course have to be clearly organized, questions anticipated, and information clearly communicated.
Designing distance learning courses for adult refugees in a transit country (Greece)

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Abstract

The proposed paper discusses the challenges encountered in the process of designing and implementing distance learning courses for adult refugees in Greece. The presentation is based on interdisciplinary research conducted in the framework of the project P.R.E.S.S. (Provision of Refugee Education and Support Scheme) and the consequent implementation of educational interventions, which are funded by the Hellenic Open University (Daskalaki & Androulakis, 2017). Among the various educational and awareness-raising strands of the project there is also the design of a short course and an undergraduate degree for adult refugees, by employing the approach of adapting pre-existing educational material of the Hellenic Open University.

More specifically, the paper addresses issues of instructional and cultural adaptation and linguistic choices, as well as the key-concepts of mobility, diversity and engagement of participants as they relate to the contingent character of refugees’ residence in Greece and their ‘first’ encounter with the European educational system.

The introduction of innovative techniques and support tools are considered paramount in such efforts, yet the paper also problematizes the concept of massive online courses, as it is diversified by the application of specific learning design parameters which seek to meet the needs and social conditions of the specific population.

Keywords: refugee education, integration, cultural adaptation, mobility

1. Introduction

The recent flow of refugees in Europe is one of the global phenomena that have tested the limits of European capacity for empathy, hospitality, integration and the political handling of alterity (Rozakou, 2012; Papataxiarchis, 2016a, 2016b). Greece, geographically placed on the receiving front of the newcomers into Europe was, until early 2015, a ‘transit’ country for the vast majority of refugees who wished to enter Europe with a final destination much northern in the continent. After the border closing in March 2015 the situation dramatically shifted, resulting in some 50,000 persons being in more or less involuntary encampment in various places in the country.

This new socioeconomic and biopolitical situation, which has strands much wider than the scope of the present article, rapidly created new pressing needs: response to immediate and secondary needs of the refugee population, planning the provision of mid-term solutions and –as an ‘emergency’ situation begun to turn rather permanent– the design of strategies for the integration of refugee adults and children in Greek society.
One of the basic prerequisites for such and integration is of course education. Among the many initiatives implemented the last two years in response to refugee education today we present the example of Project PRESS, put forward by the Hellenic Open University. This wide project, aiming at the provision of refugee education and support, includes twenty-four actions that stretch from non-formal education and awareness-raising to language lessons and empowerment, to e-learning courses and support instruments and activities. The common denominator of all actions is the 9-month anthropological and sociolinguistic fieldwork research conducted by Project PRESS research team in Lesvos, Athens and Thessaloniki. To a great degree, most actions are research-based in their conception, design and implementation, which was one of the main virtues and considerable challenges of Project PRESS.

This paper only deals with one action of the project, namely the online short course we have created entitled “Introduction to European History and Culture”. It presents and analyzes the challenges faced in the process of designing educational material in the context of cultural adaptation of distance learning for adult refugees (aged 16 plus), which aim at adapting existing educational material to meet the needs and social conditions of the target population. We examine the main components of instructional design, which is situated in a disciplinary area at the intersection between distance learning and social anthropology.

In particular, the paper examines issues of educational and cultural adaptation of material focusing mainly on the following themes:

1. educational content in a highly fluid terrain
2. appropriate media that take into account the characteristics of the population
3. diverse activities that meet the different needs of the population (gender, age, ethnicity, etc.)

2. Education for adult refugees in a highly fluid terrain

Refugee education in a ‘transit’ country presents certain particular characteristics that are relevant to the design of educational content as well as the instruction media used. Namely, as our fieldwork observations indicate:

- the majority of population apprehends their situation as transitory, i.e. they hope, and actively seek ways, to relocate which usually renders their local plans as only temporary
- the population is very mobile, since state and international agents are in the process of deciding about their temporary or permanent location
- the largest part of the population is in a state of encampment, in conditions that fulfil the minimum requirements of a routine, normal daily life
- the material and technical recourses they have are often very limited
- their personal and family ‘educational projects’ are being constantly reshaped in light of other –more pressing, in their view– shifts in housing, employment, health, legal status, reunification etc.

Moreover, on the side of agents that provide education, the landscape is rather erratic: the provision of programs with basic requirements of design and consistency aimed at young and adult refugees have been almost inexistent until only a few months ago. The main reason for this deficiency lies in the fact that the term ‘education’ is mainly understood in reference to younger ages (and often presented as identical to
compulsory education). The provision of educational activities for older ages (over 16 years) for Arab-speaking and Farsi-speaking women and men was limited in the first phase of the refugee ‘crisis’, during which NGOs had the first say about the educational handling of newcomers, providing mainly informal education, support services and, usually fragmentary, language lessons.

Only much later (from mid-2016), when the Ministry of Education undertook the responsibility of a more organized educational provision, and within a growing European concern for the integration of refugees in tertiary and post-secondary education, programs for young people and adult refugees begun to receive some attention, however no state policy or plan has yet been presented on adult and lifelong education for refugees. Especially in regard to younger age groups (16-25) this lack is even more acute since there are some specific characteristics that make the situation harder for them to be satisfied educationally and/or professionally. Namely, young refugees (mainly men, for which relocation and family reunification processes are much harder and more time consuming) cannot participate in formal education due to language barriers and the fact that they have remained for a long time outside any systematic educational provision (if they are literate at all, as is the case for many young men of Afghan background); they are not in a legal age to pursue formal work (which is an expressed need for many of them); they are in an age that presents heightened personal challenges (as far as their needs go in education and social recognition, but also psychologically and sexually); last, but not least, although they are considered as children/adolescents in the host countries, according to the cultural and value system of their own societies, they are deemed as grown men who as called to shoulder responsibilities of pressing economic and other nature, which leads to systemic and internal contradictions.

Even on a research level, the response was somewhat delayed. Few research approaches addressing emergency and refugee-specific education (Hos, 2016) focus on the compulsory education of children and refer to the ‘lost generation’ of pupils mainly of Syrian descent (Deane 2016). However, these studies all underline the fragmentation of educational experience and the linguistic barriers that arise in addressing these educational needs (Dryden-Peterson, 2015) and highlight the temporary nature of the interventions offered even in countries hosting large populations of refugees, such as Turkey (Aras & Yasun, 2015).

The result of this justified void was on the one hand the continuing inactivity of adults in a daily routine that is inherently characterized by instability, and their reduced ability of self-identification, i.e. their inability to define routines themselves, covering basic and secondary needs and making viable future plans in what is often an ‘unknowable future’ (Dryden-Peterson, 2017). On the other hand, and as large population groups began to realize that their relocation may be long or far from feasible, there was a growing demand for education addressed to people who had involuntarily interrupted their studies or the need for older adults for training and continuing learning.

In response to the aforementioned contradicting conditions, the Hellenic Open University adopted a holistic approach that takes into account the specific needs of a fluid population in a transit country, by proposing the cultural and instructional adaptation of existing educational material. In contrast to massive online courses, this process recognizes the particular socio-economic conditions of the learners’ groups and values their cultural capital, their prior expertise and future aspirations in an attempt to provide cognitive skills as well as a basic sense of well-being (Frimberger, 2016). We hold that, given the large production of modern and quality material that is available today, the use of cultural adaptation processes is crucial since:

- it assures the use of "ready" educational material and makes it quickly and reliably available to larger population groups in pressing need,
it focuses on the educational needs of more ‘neglected’ or ‘marginalized’ groups that tend to remain on the edge of educational interest,

- it decreases the tendency of homogenization that dominates modern distance learning models, with the refinement of concepts and tools that serve the massive but targeted satisfaction of educational needs and expectations.

In the specific action of the PRESS project, the adaptation was done on three levels, recognizing the basic characteristics of the target populations:

- Adapting the educational content itself
- Adapting language (from Greek to Greek and Greek to Farsi and to Arabic)
- Adapting the delivery media and the digital environment

3. Selecting educational content
The main factor that influenced our choice on educational content was the prospectus students’ contingent position as newcomers in the European space. The notions and ideas of adult refugees about what Europe is (or may become for them) has been ethnographically shown to rely, at some degree, on the educational provisions directed towards them. In this respect, designing a course that includes key concepts of European history and culture in Farsi and Arabic served the purpose of combining basic information about Europe as well as a European online context of study that potentially addresses their desire to be integrated in the new continent and their experimentation with alternative citizenships (Fincham, 2012).

The primary material from which the educational content was acquired was decided after studying all the thematic units of the curricula of the Hellenic Open University and comes from the volumes of GC 10: "General History of Europe" (Raptis, 1999a, 1999b) and EC 12: "General Geography, Anthropogeography and Material Culture of Europe" (Leontidou et al., 2013). The rationale for this decision was based on the selective presentation of key stations in the history of Europe with emphasis on cultural history, the development of European thinking, philosophy and art with particular sensitivity to the selection of modules and the presentation of issues related to migratory flows, but also with the historical narrative of shaping the central European values (tolerance, individual freedoms and so on). The acquaintance of adult and young students with these concepts and historical fermentations and the cultivation of critical thinking over the controversial notion of ‘European culture’ is one of the main targets of this short course, with particular emphasis on the combination between language and visualization of information (the animation of the material and its dynamic supplementation with external sources) and the avoidance of patronizing approaches of ‘disempowered’ refugees through their educational and digital empowerment.

The orientation of the project as a whole towards well-being (Frimberger, 2016) and taking place in an emergency situation (Hos, 2016; Dryden-Peterson, 2017) points to the direction of engaging and interesting educational content, with themes immediately relevant to the experience of students (as social subjects and trainees). Especially since relevant studies have indicated the high degree of disrupted educational opportunities as relate to refugees and the significant language barriers that compromise educational access, we focused on appropriate subject and modality of instruction, so as to avoid the eminent loss of interest and quick dropout of studies.
4. The potential of appropriate media

On the level of educational narration and tasks, one of our main considerations was that the material attracts the attention of young people, aged 16 and above, and aspires to involve women trainees to the same degree as men. Therefore, the material has been designed with many alternative activities, which are all provisional and open-ended and promote intergroup communication as well as personal expression, agency and individual or collective authorship (Zimanyi, 2017).

This approach encourages non-linear contact with material, through differentiated engagement of learners according to their particular profile, and some degree of educational empowerment, which remains a central goal of this particular action. It has been shown that digital media, such as storytelling combined with imagery – live action, interactive, animated, or illustrated – can be a powerful means of communication between young people (regardless of refugee status) to engage with the complexities of the refugee crisis (Dahya, 2017). Long-term research also indicates that in various refugee contexts (i.e. Palestinian refugee camps), the role of digital storytelling promotes the creative empowerment of marginalized youth, which can be seen as novel tool to be applied in diverse global settings (Sawhney, 2009). Media literacy, as a central component of this action, coincides with a principal demand of modern education (Buckingham 2003, 2007) and is presumably a valuable skill for adult and young refugee men and women of limited conventional literacy (Windle & Miller, 2012).

Indeed, recent research findings demonstrate that digital infrastructure underpins and guides refugees through the physical infrastructures of roads, railways and sea crossings. It comprises a multitude of technologies and sources: mobile apps, websites, messaging and calling platforms, social media, translation services, and more (Gillespie et al., 2016). In such studies we observe that quick technological fixes do not usually work it is the actual uses of technological and informational resources which direct any initiatives and in so doing contribute to their success. Moreover, such studies exemplify that “successful solutions can be rooted in local communities and bottom-up, organically evolving approaches, based on understanding shifting local conditions, drawing wisdom from on-the-ground experience and the strength of sustainable existing networks” (Gillespie et al., 2016, p. 98). These studies exemplify that in order to “ensure trustworthiness, an initiative needs to involve refugees directly: its design and implementation, and its monitoring and evaluation must include refugees” (ibid.).

Furthermore, digital expression and activity overcomes may problematic issues that are sources of conflict and pain for most refugees (such as physical territory, borders, ownership, appropriation of public sphere etc). Arjun Appadurai (2016), building on his seminal earlier work (1996) that offered a fresh postnational discourse in anthropology and cultural studies, places the refugee subject in the dynamics of the digital arena, as he once situated the modern subject in new localities and transnational entities. As before, the centrality of the imagination in Appadurai’s work, reveals new potentials for postcolonial subjectivity, where the media through which the word is perceived and communicated have ultimately the potential to transform the world itself. In this notional space, he now proposes that versions of imagined/desired citizenship that can be rendered real through the ‘aspirational maps’, the personal digital archives that new digital realities offers (Appadurai, 2016). In this short course, we modestly hope to generate what Appadurai terms ‘the capacity to aspire’ by mobilizing memory, aesthetic and even kinesthetic means (Frosh, 2015) towards the professed democratic potential of digital media (Boler, 2008). Among different and differentiated tasks, the designed short course uses various geographical, chronological and concept maps as they have been identified as credible tools for describing the challenging realities of young refugees (Brooker, Lawrence, & Dodds, 2017).

In terms of media, we chose to adopt a multimedia presentation with a wide range of audiovisual material, but also using word files, pdf to allow weighing the different ways in which formats work Information and to
identify possible preferences for user groups. These alternative narrations will be evidently evaluated in order to proposed more long-term solutions to higher education for refugees (Harris & Marlowe, 2011). Offering many choices is key to promoting textual, visual or otherwise digital expression and communication, as it has been shown that no one information recourse is adequate to satisfy varying and temporally transforming educational demands (Mason & Buchmann, 2016). A combination of recourses and media and careful monitoring are usually the sole guarantees of successful implementation and meaningful and sustained learning. Indeed, studies that approach post-secondary education—including higher education, teacher training, and vocational training—propose that multiple tools and devices, online and offline solutions, are combined to ensure that the target group can be reached through different channels, under unstable and fast changing conditions of crisis and conflict (Dahya, 2016, p. 32). As Dahya proposes (2016, p. 32): “Digital video is being used in non-formal education and for informal learning in important ways, including imparting necessary life skills to communities facing conflict and crisis and by creating community dialogue about important topics. Social media and virtual social networks are an important part of refugee pathways to education. Social media and networks can be a crucial source of information for displaced people in search of access to education”.

Also, as has emerged from recent observations (Witty, 2015) in conjunction with our fieldwork, the use of smartphones and portable devices (i.e. tablets) is a highly popular technology for young and adult refugees due to the possibility of networking, communication with countries of origin and their desired relocation, but also because there are numerous applications (translation, search) that act supportively in the everyday life of many of them (Kozyra, 2016). Moreover, cheap portable technology has been indicated to be vital for refugee psychosocial survival (Middle East Online, 2015) but also to give ‘voice’ (Rodriguez-Jimenez & Gifford, 2010) and agency to a somewhat ‘muted’ and ‘entrapped’ population. It is in fact the case that certain individuals employ this means of communication and/or broadcasting to describe their current situation, to claim (digital) citizenship and forge versions of their (often compromised) personhood in more equal terms than standard schooling or political representations allows. Thinking and participating through digital media is tentatively a means to answering educational needs in diverse transnational environments and non-conventional localities (Hudson & Zimmermann, 2015).

With this in mind, the hardware is designed to be responsive, ie to respond well to small or large devices, and to give easy access to easy-to-use external digital resources, creating a personalized library / digital library for each user. To that end a moodle platform has been adjusted for the purposes of this course, with particular concern to its adaptive features for mobile and diverse technology for refugees (Woodfield, 2016).

5. Diversification and adaptation
Over the past decade there has been a rapid expansion of distance education programs and institutions, and the issue of cultural diversity and its connection with the characteristics of education has occupied many scholars (Wilson, 2001; Warschauer, 1998). Given the number and variety of programs offered worldwide, the proposal for credible and effective cultural adaptation of distance learning presents both a theoretical interest and a merit as a social intervention. In view of recent findings, the short course was designed so that, in addition to the new stimuli it offers, it could mobilize the previous knowledge and the cultural capital of the trainees (music, history, folk & material culture). At the same time, it attempts to integrate aesthetic and acoustic elements from their cultures of origin in the e-learning environment itself, by systematically avoiding references to elements of educational content that may lead to traumatic and painful experiences. There is a relatively heightened degree in the usage of music and art in the tasks and the educational content,
as they have been indicated to have a positive impact on the learning and the well-being of youth (Marsh, 2017).

Most importantly, an extended online support network has been created in four languages and with different specialties and a constant effort is made to have some referrals in each hosting center in order to alleviate as much as possible the constraints resulting from the housing and everyday living conditions of the participants. The support network we have designed seeks to address the shifting day-to-day linguistic and material needs of the students in order for the resource to be sustainably maintained. Student support in distance learning has been acknowledged as very essential for over a decade (Dearnley, 2003; Keegan, 2003). In the case of refugee education, where collaborative learning might also be paramount for learning and social reasons (Lawrence, 2013), the issue of online support becomes even more complex yet at the same time also more essential. In this respect, we have observed that programs designed in the logic of massive audiences that provide limited to no support (e.g., MOOCs) do not sufficiently engage the target-population, whose needs are much diversified by the conditions and contingencies of their living/social status. The use of mother-tongues (Arabic and Farsi) as well as Greek and English in the support team not only targets the resolution of communication predicaments but also the conscious encouragement of multilingual practices (Moriarty, 2014) and accommodate diverse linguistic landscapes (Blommaert, 2013). In this part, a particular weight was given to the language, so that it is simple and understandable, and also the frequent use of symbols and pictorial messages for a more direct understanding of the information and the demands of the exercises/activities. Regarding specific language-cultural adaptation requirements, the platform incorporates a one-line basic terms dictionary and a discussion forum that will operate in 4 languages (with 3 facilitators). The educational content may also be accessible by the user(s) in Greek, so as to offer students the possibility of linguistic comparisons and the potential use of their skills and repertoires, should they wish to remain in Greece and learn the language. Given that Greek is a peripheral language with many special characteristics, culturally and often politically particular (Androulakis, 2012), and it is not widely spoken in the European territory, this might be a possible future asset for refugee students who wish to pursue it.

We acknowledge that cultural elements have always been embedded in the development of training modules, tools and instruction methods, therefore models of culture (culture-based models) are not something new in the field of education or in distance learning (Young, 2008). From the global community with audiences curricula have significant blockages in both the level of educational and cultural approach of content (Selinger, 2004). Excellent methodological efforts have been recorded on the introduction of comparative approach to better adapt to the cultural characteristics of large, massively offered e-learning programs (Blanchard, Razaki & Frasson, 2005; Edmundson 2007, 2010, 2013; Pawlowski & Richter, 2010). Both the technological and the cultural sensitivity characteristics have occupied much research being carried out in recent years (Liu et al., 2010) and the short course designed by Project P.R.E.S.S. hopes to contribute to this ongoing discussion with providing applicable evidence from the population of adult refugees. Following on the above discussion about digital participation, many of the tasks designed in this short course encourage students to express themselves creatively through easy-to-use applications, to narrate parts of their personal experience and to engage with the concepts of Europe in a personal and non-prescribed manner, making use of their cultural capital and identity profiles.

6. Conclusions

Many interesting and useful initiatives are being organized and implemented throughout Europe at the moment, many of which have much to offer for adult and young newcomers. In our view, it is essential that we share experience from the small victories and reported failures of such endeavours and keep coming back
to the population that receives them for more feedback and discussion. We hold that research-based approaches on refugee education are paramount in unravelling a very complex phenomenon as well as serving educationally a very diverse population on a unique historical contingency. Our preliminary assumptions demonstrate that one of the indicated ways to designing online education of adult refugees is the reliable adaptation of existing quality courses and curricula. We propose that there are three crucial levels for the instructional and cultural adaptation of e-learning modules: content, media and indicators of cultural sensitivity. Employing multiple disciplinary stances and different types of devices and narrations to engage youth and adults in culturally relevant, inclusive learning might be one plausible answer to the refugee ‘crisis’ inasfar as education ostensibly holds the answers to many contemporary sociopolitical predicaments.

7. References


Distance education teacher training in Brazil as a policy of social and digital inclusion

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Abstract
Since the promulgation of the Law of Directives and Bases of National Education in 1996 up to the National Plan of Education, there is a movement to ensure that all teachers of basic education obtain a specific high education training and knowledge in their field. Among the strategies to grant access to higher education to teachers, the courses in the distance education (DE) modality are highlighted due to their capacity of comprehensiveness and internalization. This is the case of distance courses offered through the Open University System of Brazil (UAB). UFJF participates in the UAB System since 2007 offering undergraduate distance courses. The aim of this article is to outline an initial profile of the undergraduate students of distance undergraduate courses at UFJF, to articulate the data obtained in questionnaires applied to students as a way of illustrating DE as a policy of inclusion. As a result, the evaluating data allowed us to conclude that UFJF has contributed to social inclusion through DE. Inclusion happens through access to the university not only to teachers training, but also to a part of the working adult population that are enabled to access to state-funded higher education for the first time.

Keywords: Distance Education, Open University of Brazil, Inclusion Policy, Teacher Training.

1. Introduction
Basic education teachers are among the most numerous professional groups in Brazil (BARRETO, 2015). The training required for the teaching profession is provided for in Art. 62 of the Law of Directives and Bases of National Education (LDB), adopted in 1996.

The training of teachers to work in basic education will be carried out at a higher level, in a full licentiateship, admitted as the minimum training for the exercise of teaching in early childhood education and in the first five years of elementary education, offered at the secondary level, in the normal modality (BRASIL, 1996, n,p) .

Despite the legal reference, data from the 2016 School Census show that there has been a growth in the percentiles of teachers without an undergraduate licentiateship in all national territory. (PNE OBSERVATORY, 2017). Therefore, strategies are made necessary as so to reverse the situation. It is possible to recognize part
of the effort in this sense in the Institutional Program of Scholarships for Teaching Initiation (PIBID), in the Programme for Consolidation of Licentiate Degrees (Prodocência), in the Observatory Programme on Education (Obeduc) and on the National Plan for the Qualification of Basic Education Teachers (Parfor). Together, these initiatives constitute a policy that aims for granting access and permanency of future teachers on the Licentiate Courses (BRASIL, 2008).

In addition to the programs to encourage teacher training, the identification of regional demands and the internalization of the offer of undergraduate courses through Distance Education (DE), also foreseen in LDB, have made significant progress in this context. The creation of the Open University of Brazil (UAB) in 2006 was a milestone in the internalization process of higher education in Brazil. Besides offering training to faculty already in place, one of UAB’s main goals would be to internalize the offer of higher education courses through the creation of regional centres (FERREIRA and MILL, 2014).

UAB stands out among the strategies for democratization of access to high degree qualification of teacher, due to its capacity of comprehension and internalization. That is the case of distance courses offered by the Federal University in Juiz de Fora (UFJF). Starting for this point, the aim of this article is to trace an initial profile of the student body of the distance undergraduate courses in UFJF, in special the undergraduate Licentiate in Pedagogy, as to articulate the attained data in a questionnaire applied to distance students as a means to demonstrate the role of DE as a policy of social and digital inclusion of the students.

2. The UAB System and the possibilities of Distance Education in the context of Brazilian policies on teacher qualification

With the universalization and the rise in the rates of conclusion of basic education, achieved in the final years of the 1990 decade, high education started to represent a bottleneck that needed revision. Beyond the grant of the right to higher education levels, stated in the 1988 Federal Constitution, the access to high education has represented and still represents a decisive factor of social inequality.

With president Lula’s government, beginning in 2003, there has been the start of a process of expansion due to a policy that, besides magnifying the access to high education, promoted the internalization of Brazilian federal universities. This expansion movement culminated in a series of programs that intended to equalize the offer of high education to its demand. (SANTOS and ALMEIDA FILHO, 2012).

According to the Ministry of Education (MEC), ‘the process of expansion encompassed three action fronts – the internalization, begun in 2003, and posteriorly the integration and regionalization of high education’ (BRASIL, 2015, p. 31). In this context, the Program for Restructuration and Expansion of Federal High Education Institutes (Reuni), the University for All Program (Prouni), the restructuration of the Student Financing Fund (Fies), the Unified Selection System (Sisu) and the creation of the UAB stand out, the latter being the initiative with the greatest impact in teacher qualification.

The National Educational Plan (PNE) 2014-2024 added even more elements to be considered on the efforts for magnifying high education. The plan proposed, in the goal n. 12, “to raise the gross rate of enrolment in High Education to 50% and the net rate to 33% of the population between the ages of 18 to 24 years old, assuring the quality of offer and expansion to at least 40% of new enrolments on the state-funded segment” (BRASIL, 2015, p. 61). Besides that, goal no. 15 is directly about the initial qualification of teacher, aiming to:

Grant, in a collaboration regime with the Union, the States and the Federal District and the Municipalities, in the term of 1 year of validity of this PNE, a policy of national qualification of teaching professionals that handle the incises I,
Il and III of the caput of Art. 61 of Law no. 9,394, from the 20th of December, 1996, assuring that all teachers of basic education have the specific qualification in high education level, attained in a licentiate course in the area of knowledge in which they act (BRASIL, 2014, p.78).

In tracing as aim that all teachers of basic education must be qualified by high education in the field of knowledge in which they act, the PNE 2014-2024 brought light over the fact that it might still be a significant number of teachers working outside their field of expertise. Data from the PNE Observatory show that 53% of teachers in the final years of elementary education were teaching outside their field of knowledge in 2016, as well as 45% of teachers of secondary level (PNE OBSERVATORY, 2016).

It is in this conflicted context that DE appears as a possibility of social inclusion. DE was admitted as a teaching modality foreseen by law as of 2009, with the approval of Law no. 12,056, which altered article no. 80 of the LDB. However, the Federal University in Mato Grosso do Sul, had already implemented a distance education course on Pedagogy for teachers working from grades 1 to 4 of elementary schools, in 1995 (MORAN, 2002). The institutionalization of DE in high education was implemented with the publication of Decree no. 5,800, of the 8th of June, 2006, that establishes the creation of UAB in Article no. 1.

Moore and Kearsley conceptualise Distance Education as:

Distance education is the planned learning that, normally, occurs in place diverse of the teacher and, therefore, requires special course planning techniques, special communication methods, electronic or others, as well as specific administrative and organizational structure. (MOORE and KEARSLEY, 2008, p. 2).

In this way, the teaching in DE is planned and executed agreeing with the specificities of this modality. UAB is considered as a definitive milestone of high distance education in the country precisely due to the creation of an enormous network of State-funded high education institutes in Brazil as of the proposal of availing itself of the structure already sealed in federal universities as to implant this program in a national level. UAB is, therefore, a system that works as an articulator between the participant federal institutions and the regional qualification demands: [...] the UAB System propitiates articulation, interaction and effectiveness of initiatives that stimulate a partnership of the three governmental levels (federal, state and municipal) with the state-funded universities and other interested organizations, while it enables alternative mechanisms for the development, implantation and execution of undergraduate and graduate courses in a consortium manner.

By planting the seed of quality state-funded university in further and isolated places, it encourages the development of cities with low HDI and Basic Education Development Index (IDEB). Thereby, it functions as an effective instrument for the universalization of the access to high education and for the requalification of the teacher in other subjects, giving strength to schools in the countryside of Brazil, minimizing the concentration of undergraduate courses in the great urban centres and avoiding the migration flux to big cities (CAPES, 2015). It is clear that, as of this excerpt, the focus of UAB in offering high education courses to population sectors that have difficulty in accessing state-funded high qualification: the proposal is to precisely optimize the access by the means and resources that the modality of Distance Education uses.

The citation above also makes UAB explicit as a public policy of initial and continued qualification of teacher. Linked to the Coordination of Improvement of High Education Personnel (Capes), that has the responsibility of supporting MEC “[...] in the formulation of policies and in the development of supporting activities to the formation of teaching professionals for basic education [...]’, the initial goal of UAB is to prioritize the
attendance of the demands for school leaders and workers already performing actions in basic education without the possession of the basic needed qualification for the position they occupy.

This presented context defines the target of courses and the basic systematization of the activities to be developed by the teaching institutions that join UAB. UFJF is an institution with a recognized role in the development of the Forest Zone of Minas Gerais region and, as of the offering of distance high education courses by UAB, has extended its relevancy to other parts of the state. Data from the High Education Census in 2015 show that, of all Federal Institute of High Education (IFES) in Minas Gerais state, UFJF was the one with the highest number of offer of licentiate courses, that being 6 courses. This means that almost 10% of its enrolments were made in licentiate courses in the modality DE (INEP, 2016).

3. Reflecting over DE as an inclusion policy in UFJF

This section proposes to present and analyze data regarding the distance undergraduate courses in UFJF, that possess a public with specificity in demand and qualification. It is important to initiate the presentation of the data that supports our argument with a contextualization of the instrument of data collection used in this research. The data was attained by the appliance of a questionnaire to the students of the licentiate courses in Computing, Physical Education, Physics, Mathematics, Pedagogy and Chemistry, as well as the bachelor course in Public Administration. Previous studies have been already profiling the students and their qualification needs in the Pedagogy course of UAB/UFJF (TEIXEIRA and BORGES, 2008; TEIXEIRA, 2010; BORGES, JESUS and ALEIXO, 2012). Therefore, we can ponder over the potentiality of amplifying the reflections on profile, access and permanency in a general means for UFJF, in the means that this was the first attempt to extend the research to the rest of the distance education courses of the institution. Our aim with this article is to reflect over the internalization of UAB’s distance undergraduate courses, initiate the social and economic profiling of the students of this modality, in searching to associate them to a more genera profile of the DE students, articulating the data with other studies that bring light to DE as a social policy.

The new groups of the six UFJF distance education courses that began to operate in the second semester of 2016 answered this questionnaire as one of the activities in the subject Introduction to the Modality of Distance Education, offered in the first semester to all distance education courses. It was the answer to the question “Who is our student” that gathered initial information on these new students and made possible the reflections on policies and initiatives of permanency to the DE public in the institution that are presented here.

In anonymous character and with mandatory answers, the quiz was made available to be answered in the period from November to December of 2016. It is, then, an exploratory and descriptive study in qualitative and quantitative character, as to obtain a more profound knowledge of the profile and characteristics of the student body of the distance education courses from UAB/UFJF, identifying possible relations between this data and the aspects of inclusive policy at UAB. We obtained a total of 564 replies to this quiz, with the following distribution among the courses:

Chart 1: Distribution of answers to the quiz “Who is our student” by distance education course in UFJF.

<table>
<thead>
<tr>
<th>Course</th>
<th>No. of answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Administration</td>
<td>76</td>
</tr>
<tr>
<td>Computing</td>
<td>70</td>
</tr>
</tbody>
</table>
The preliminary data raised by the questionnaire are regarding the social localization of the students enrolled at Distance Education courses. We return to the core purpose of the UAB System of amplifying and democratizing the access to education in the country as to analyze in what manner this demand has been met by UFJF. The initial information raised by the questionnaire indicate that there is effective internalization of the offer of state-funded high education, as shown in the following picture.

Fig. 1: Distribution of the centres of Distance Undergraduate Courses from UFJF

The figure gives us an initial panorama of the process of internalization in the offer of distance education courses at UFJF in 2016. It is important to emphasize that the scenery presented in the figure is regarding only to the active centres in the most recent courses, that had their activities beginning at the second semester of 2016. In the past ten years, the scenery of attendance to the cities, by these centres, is very dynamic, having in mind that the process of accreditation of the centres and posterior opening of new classes on distance education courses depend on elements such as the demand for the course and the own requisition of the municipalities to open the classes.

There is a small incidence of students from other states enrolling on distance undergraduate courses from UFJF, and that relates to the intentional goal of the institution to strengthen the offer of spots for the qualification in its own state of Minas Gerais. The greater number of students honoured by the courses are located in the Forest Zone (mesoregion of Juiz de Fora) and neighbouring mesoregions, as the River Doce Valley and the Metropolitan Zone of Belo Horizonte. Together, students of these three mesoregions concentrate 72% of the honoured public of UFJF’s distance education courses.

Another characterizing social and spatial element on the attendance of the demand on UAB/UFJF is relative to the size of the municipalities that offer a on-site centre. According to Capes, this modality comes as an alternative capable of encouraging the development of municipalities with low Human Development Index.
(HDI) and Basic Education Development Index (IDEB) to, therefore, ‘strengthen the school in the countryside of Brazil, minimizing the concentration of undergraduate courses in the great urban centres and avoiding the migration flux to big cities’ (CAPES, 2015). We realize, as of the data appearing in File 1, that this priority is being honoured.

File 1: Distribution of the number of students by class of population size in the municipalities:

<table>
<thead>
<tr>
<th>Population Size</th>
<th>Frequency</th>
<th>Percentile (%)</th>
<th>Valid Percentile (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 2,500 inhabitants</td>
<td>2</td>
<td>0.32</td>
<td>0.36</td>
</tr>
<tr>
<td>From 2,500 to 8,000 inhabitants</td>
<td>70</td>
<td>12.41</td>
<td>12.43</td>
</tr>
<tr>
<td>From 8,000 to 20,000 inhabitants</td>
<td>70</td>
<td>12.41</td>
<td>12.43</td>
</tr>
<tr>
<td>From 20,000 to 50,000 inhabitants</td>
<td>306</td>
<td>54.26</td>
<td>54.35</td>
</tr>
<tr>
<td>More than de 50,000 inhabitants</td>
<td>115</td>
<td>20.39</td>
<td>20.43</td>
</tr>
<tr>
<td>Total</td>
<td>563</td>
<td>99.82</td>
<td>100</td>
</tr>
<tr>
<td>Did not answer</td>
<td>1</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>564</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Questionnaire applied by CEAD/UFJF (2016).

The data presented above indicates that the majority of the centres of the Pedagogy course are in cities that have up to 50,000 inhabitants, according to IBGE classification, information that goes against data from recent studies regarding the characteristics of the centres of on-site support in the state of Minas Gerais. We can compare this data to the research conducted by Ferrugini et al (2013), that demonstrates that:

Regarding the average profile of the Minas Gerais’ municipalities that take part in the UAB System, it has been identified that two thirds (66.67%) of the municipalities with on-site centres have up to 60,000 inhabitants, what corroborates in a sense with the principle of the UAB System of democratizing (in potential) the access to state-funded high education into regions in which local access to other modalities of study is presented as limited, by this manner searching to reduce the inequalities of offer in high education among the different localities of the country, (FERRUGINI et al, 2013, p. 15).

As a inclusion policy, UAB reaches localities that are target of this initiative, and in the case of UFJF has brought state-funded high education into cities of small size in the countryside of Minas Gerais.

We now have to gather information regarding the students that are having access to such policy, in a manner of reflecting over their necessities. The age average of those who answered the questionnaire focused on two main ranges: from 23 to 28 years old (28%) and from 29 to 34 years old (34%). When analyzing the total value, it is possible to perceive that almost 60% of these students over 29 years old, data that indicates a significative interruption between completing secondary level education and commencing high education.
Other data gathered in the questionnaire were regarding marital status – 53% of students are married and 47% are unmarried – and children – 49% have children and 51% do not have children. All these data indicate a profile of student that is older and does not have such a recent contact with the academic field. Moreover, a significant part of the respondents has family ties, what differentiates expressively from the usual public of regular state-funded high education universities. The profile here presented is also shared by other studies in context of distance education courses tied to UAB, as the research conducted by Coutinho et al (2013) gathered data of students tied to the modality of distance undergraduate courses from the centres of UAB from Gaucho Highlands, and Ramos (2013), that profiled the student of the distance licentiate course from UFSC:

Regarding the personal and Family characteristics, age, marital status and children status were investigated. The results revealed that the age of students is 31,4 years old and, according to chart 6, that 55.5% of students are married or in common law partnership, 7.8% are separated or divorced and 36.7% are unmarried. Moreover, it is observed that the majority of students do not have children, meaning, 53.9% (RAMOS, 2013, p. 208).

The data regarding the profession of the students of distance education courses at UFJF also help to construct the profile of the student body of the courses as they demonstrate the expressive number of students with employment relationships and the workload used in these activities. The majority of the respondents affirms to have employment relationships, as of the total of 564 respondents of the questionnaire applied by the CEAD/UFJF, around 75% are already in the labour market. The information in this topic also compose the general profile of the DE student, as of the DE Census of 2015 also ponders that approximately 70% of state-funded and private institutions count on students that, in their majority, work and study (ABED, 2015). Moreover, on the case of distance education courses at UFJF, we can perceive that great part of students with employment relationships have a workload of 40 or more weekly hours (59%:

File 2: Workload of students’ Jobs in the distance education courses at UFJF.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentile (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 weekly hours</td>
<td>47  8.33</td>
</tr>
<tr>
<td>30 weekly hours</td>
<td>89  15.78</td>
</tr>
<tr>
<td>40 weekly hours</td>
<td>160  28.37</td>
</tr>
<tr>
<td>Over 40 weekly hours</td>
<td>170  30.14</td>
</tr>
<tr>
<td>None/Does not have employment relationship</td>
<td>98  13.38</td>
</tr>
<tr>
<td>Total</td>
<td>564</td>
</tr>
</tbody>
</table>

Source: Questionnaire applied by CEAD/UFJF (2016).

We believe that data like these express the indications of the importance of current expansion policies on Distance High Education. In the limits of this work, we look to make evident that such policy has already brought elements of promoting inclusion to population groups that up until now had not been inserted in the high education level. We believe that other data obtained by permanent monitoring of the subject-students can provide elements of reflection that would help us to improve the range strategies of this public.
4. Analysis of the specific context of the Distance Education Pedagogy Course at UFJF.

Having made this initial reflection over the main characteristics of the social and economic profile of students of the Distance Undergraduate Courses offered by UFJF, we can now present and reflect over the specific context of the Distance Education Pedagogy Course at UFJF. Our choice in making this cut lies on the fact that, since the beginning of the Distance Education Pedagogy Course at the College of Education (Faced) at UFJF, the coordination of the course invests efforts in the realization of research on monitoring and evaluation of the course. It is, therefore, a longitudinal research that has the main goal of highlighting the opinion of the students of the course over the conditions of its offer, and in the context of this paper serves to deepen the description and analysis of the profile of students of this high education modality.

Beginning in December of 2007, date of conclusion of the first semester of the first class of the course (conventionally denominated UAB I), the research is done as a survey (BABBIE, 1999). The questionnaire aimed at students had questions regarding: social and economic level/ school trajectory; knowledge on informatics; access to internet; possession of informatics resources; used didactic resources; frequency in which the platform is accessed; level of interaction between students, tutors and teachers of the course and their own evaluations and points of view regarding the course. The instrument was self-applied, answered in the same occasion of the on-site exams at the centres, in printed form.

However, the application of the questionnaire to the classes of Pedagogy/UAB did not have continuity in the years of 2012, 2013 and 2014. On the year of 2015, the research was continued, and the option of the researchers was to facilitate the application of the questionnaire in an online form using the Google Docs platform, aiming to optimize the time spent in the process of gathering and analysis of the data and in the manipulation of such a large number of physical documents for processing. This platform offers a package of applications with functions and web tools that allow the editing, disposal and collaborative portability of the files in a Cloud.

The intent of developing a continuous research with the students of the course was to construct a longitudinal study that allowed the observation “of the data movement” regarding the characteristics and life and education conditions of the students. The versions of the questionnaires were updated periodically due to the specificities of the semester. In the course of this ten-year period developing the research, it was possible to monitor a total of five classes starting the Distance Pedagogy course. We represent, on the following chart, the relation of centres linked to the five classes, as well as the total of enrolments available by class. It is, as of this panorama of application of the referred instrument of research in the period of 2007-2017 that we synthesize the data and analysis presented.

Chart 2: Relation of centres linked to the Pedagogy course at Faced/UAB – UFJF, distributed by class.

<table>
<thead>
<tr>
<th>Class</th>
<th>UAB I</th>
<th>UAB II</th>
<th>UAB III</th>
<th>UAB IV</th>
<th>UAB V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centres</td>
<td>Boa Esperança</td>
<td>Bicas</td>
<td>Boa esperança</td>
<td>Barroso</td>
<td>Boa Esperança</td>
</tr>
<tr>
<td></td>
<td>Coromandel</td>
<td>Boa esperança</td>
<td>Ilicinea</td>
<td>Bicas</td>
<td>Coromandel</td>
</tr>
<tr>
<td></td>
<td>Ilicínea</td>
<td>Coromandel</td>
<td>Ipanema</td>
<td>Boa esperança</td>
<td>Ilicínea</td>
</tr>
<tr>
<td></td>
<td>Salinas</td>
<td>Durandé</td>
<td>Mantena</td>
<td>Ilicínea</td>
<td>Ipanema</td>
</tr>
</tbody>
</table>

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The presentation of the data organized by class of enrolment also gives us the possibility to verify and point out regularities in certain predominant social characteristics in the classes that compose the investigated sample, namely, ‘UAB I’, ‘UAB II’, ‘UAB III’, ‘UAB IV’ and ‘UAB V’. Illustrating, UAB I starts the course in the year of 2007 and concludes the course in the year of 2011, as UAB V starts in 2014 and is currently active.

It is important to highlight that, from the beginning of the research, the main focus has been to investigate regarding social and economic profiles of its students. Borges et al. (2013, p.95) already brought attention to the panorama being of, considering the majority of analyzed cases, women over 30 years of age, that had already concluded their basic education for some time, and that were taking their first degree by this distance education course, offered by the UAB System. The following data reinforce the indication of regularity for the group of investigated samples.

File 3: Percentile of Male and Female public, Pedagogy Faced/UAB – UFJF.

<table>
<thead>
<tr>
<th>Class</th>
<th>UAB I</th>
<th>UAB II</th>
<th>UAB III</th>
<th>UAB IV</th>
<th>UAB V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santa R. de Caldas Pescador</td>
<td>Santa R. de Caldas</td>
<td>Ilicínea</td>
<td>Ipanema</td>
<td>Salinas</td>
<td>Ipanema</td>
</tr>
<tr>
<td>Salinas</td>
<td>Salinas</td>
<td>Ipanema</td>
<td>Salinas</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| No. of students | 350 | 450 | 250 | 300 | 250 |


It is noticed the expressive representation of the female public in this distance high education course, that according to Casas, Almeida and Viana (2012) is also the reality of in-site Pedagogy courses. It is important to notice that the class UAB IV is almost completely composed of women.
Complementary data, regarding the origin of students, indicates that the majority are originally from the city in which the Centre of Pedagogy Faced/UAB is located, or are originally from cities near the Centre. That is to say, the course attends, predominantly, people who were born in cities of the countryside of the state of Minas Gerais. This is a data that responds to the general panorama of the distance education courses at UFJF, presented in the previous section. Borges et al., (2012), describe that the cities-Centre are generally small, based in rural activities and distant from the urban centres (Borges et al., 2012, p.9).

The following file indicates which age group is predominant among the undergraduates of Pedagogy Faced/UAB.

File 5: Age group of students, Pedagogy Faced/UAB – UFJF.

<table>
<thead>
<tr>
<th>Age</th>
<th>% UAB I</th>
<th>% UAB II</th>
<th>% UAB III</th>
<th>%UAB IV</th>
<th>%UAB V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 20</td>
<td>4</td>
<td>10.6</td>
<td>2.8</td>
<td>5</td>
<td>10.9</td>
</tr>
<tr>
<td>From 21 to 30</td>
<td>33</td>
<td>37.8</td>
<td>30.1</td>
<td>32.5</td>
<td>32.6</td>
</tr>
<tr>
<td>From 31 to 40</td>
<td>39.5</td>
<td>29.9</td>
<td>46.2</td>
<td>42.5</td>
<td>34.8</td>
</tr>
<tr>
<td>From 41 to 50</td>
<td>19.5</td>
<td>18.9</td>
<td>16.9</td>
<td>18.8</td>
<td>19.6</td>
</tr>
<tr>
<td>Over 51</td>
<td>4</td>
<td>2.5</td>
<td>2.1</td>
<td>1.3</td>
<td>2.2</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>


It is possible to observe that the undergraduate course attends people in advanced age as the one stipulated to take up a first-degree course, as the majority of students is under the age group of 31 to 40 years old. Bruno e Teixeira (2012, p.164) located the predominance of the age group from 25 to 35 years old among the
undergraduates, and developed the interpretation that the UAB program represents the possibility of high education to students that, having concluded secondary school, did not have opportunity to access high education in the following year. This was one of the arguments presented with the intent to recognize the UAB System as not only a public educational policy, but also as a social inclusion policy. Another of the considerations made was to indicate the family income bracket preponderant among the first class of the course. Bruno and Teixeira (2012, p.168) observed that the majority of the sample ‘UAB I’ is composed by students with up to three monthly minimum wages.

As we could perceive by the data in the following file, such characteristic seems to have been kept on the subsequent classes of the course.

File 6: Estimated monthly family income by students, Pedagogy Faced/UAB – UFJF.

<table>
<thead>
<tr>
<th>Income</th>
<th>% UAB I</th>
<th>% UAB II</th>
<th>% UAB III</th>
<th>% UAB IV</th>
<th>% UAB V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 3 monthly minimum wages</td>
<td>60.3</td>
<td>52.9</td>
<td>...</td>
<td>54.9</td>
<td>76.1</td>
</tr>
<tr>
<td>From 3 to 5 monthly minimum wages</td>
<td>31.3</td>
<td>31.7</td>
<td>...</td>
<td>39</td>
<td>19.6</td>
</tr>
<tr>
<td>From 5 to 10 monthly minimum wages</td>
<td>6</td>
<td>12.8</td>
<td>...</td>
<td>6.1</td>
<td>4.3</td>
</tr>
<tr>
<td>From 10 to 15 monthly minimum wages</td>
<td>2</td>
<td>2.6</td>
<td>...</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Over 15 monthly minimum wages</td>
<td>0.3</td>
<td>0.0</td>
<td>...</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>...</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>


It can be verified that, in all observed classes, living with up to three monthly minimum wages is the reality of more than half of the sample of the course. Probably, one of the sources that compose the monthly income is stemming of own remunerated work due to, as the following files will show, the majority of the student body (around 80% in all classes) possesses personal income from monthly earnings, and is the main income source for the majority of the investigated sample. It indicates, along with the following file, that the undergraduate course in Pedagogy Faced/UAB attends to a considerable quantity of students in a routine of conciliation between studies and work.

The proportion of students in this course that is exerting any remunerated activity is considerable. Here, it is important to make a reflection over the relaxation of the relations between space and time which are proportionated by a distance education degree. As of the presented data, we can also consider the possibility of this being a determinant factor for the qualification of said students.

Still, other data from the applied questionnaires to the classes of the Pedagogy course indicate that it is also possible to associate the remunerated activity on which the student acts to their field of education: around 50 to 70% of the respondents from all classes signed as the remunerated activity on which they work is related to the Pedagogy course.
Another data that relates to the previous information is regarding the marital status of the respondent students. The higher index on answers, as we could observe in the following file, is concentrated in the ‘married’ option.

File 7: Marital Status of Students, Pedagogy Faced/UAB – UFJF

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>% UAB I</th>
<th>% UAB II</th>
<th>% UAB III</th>
<th>% UAB IV</th>
<th>% UAB V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>58.6</td>
<td>58.4</td>
<td>64.1</td>
<td>63.4</td>
<td>45.7</td>
</tr>
<tr>
<td>Unmarried</td>
<td>31.3</td>
<td>35.8</td>
<td>28.9</td>
<td>25.6</td>
<td>39.1</td>
</tr>
<tr>
<td>Widowed</td>
<td>0.7</td>
<td>0.9</td>
<td>2.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cohabitation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4.9</td>
<td>10.9</td>
</tr>
<tr>
<td>Separated</td>
<td>9.4</td>
<td>4.9</td>
<td>4.9</td>
<td>6.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>


We conjugate, to the data above, the information that around 60% to 70% of the respondents have children. It is presumable, then, that a significant part of these students conciliates a double or triple journey throughout their day (work, high education and caring for the house or the children).

Based on these presented data, it is possible to construct the following social and economic scenery:

Observe, then, the sample on this undergraduate course is, mostly, original and resident of the city-centres where Pedagogy Faced/UAB is offered, as indicated in the files 3 and 4. Students among the age group of 31 to 40 years old, according to file 5, that are having the opportunity of high education outside of the expected age considering the continuous flow of transaction between secondary school and high education. They are students in exercise of a remunerated activity linked to the field of education, as demonstrated in file 11. Thereby, the undergraduate course on Pedagogy Faced/UAB is acting in dialogue with the goals stipulated by the Open University in Brazil System. It is an undergraduate course that facilitates the qualification of workers of basic education and represents an opportunity of high education to inhabitants of small cities in Brazil that, for any reason, did not take part in this level of education before. (COORDINATION OF THE DISTANCE PEDAGOGY COURSE. COLLEGE OF EDUCATION. FEDERAL UNIVERSITY IN JUIZ DE FORA, 2017, p. 16)

To contribute in the comprehension and interpretation of the results, we have aimed to contextualize the realities that compose the distance high education modality in Brazil, as of the research on the social group honoured by distance high education courses, as described in this work. The classes at Pedagogy Faced/UAB are also inserted in this scenery, sharing these characteristics of being female, between 30 and 40 years old, with income of up to three monthly minimum wages and having studied in the state-funded basic educational system. This seems to compose specific characteristics of the social demand honoured by distance high education. (Martins et al., 2012; De Godoi, 2016; ABED, 2015).
5. Closing Remarks
The qualification of teacher of basic education is an aspect that is directly related to the quality of education. However, due to a wide range of obstacles, of which we highlight the dimensions of Brazilian territory and the characteristics of offer as related to demand, a considerate part of the population remained inaccessible to state-funded high education. In this context, the creation of the UAB System in 2005 contributed deeply to teachers’ qualification, bearing in mind that one of its main goals is the internalization of the offer of high education courses under the creation of regional centres. We have, therefore, state-funded internalized and free-of-cost high education by the UAB.

The initial information gathered by the questionnaire indicates an effective internalization of the offer of state-funded high education by the courses offered by UFJF in the distance education modality. On that, almost 80% of the municipalities honoured by UAB/UFJF have from 20,000 to 50,000 inhabitants, being in consonance with what has been established by Capes as to emphasize the distance education modality as a strategy also in the sense of strengthening schools in the countryside of Brazil. Furthermore, on the profile of students, a significant part of the respondents is concentrated on the age group of over 29 years old, has family ties, differing from the public who normally attend regular courses in state-funded universities.

By representing an articulating link between UFJF and the regional qualification demands, the courses in the distance education modality offered by the UAB System can access locations where the offer of high education is scarce, contributing also to the social inclusion of the population of municipalities that present low HDI and IDEB. With a trajectory on distance undergraduate courses that goes on since the Veredas Project, offered in 2002 in partnership with the Minas Gerais Secretary of Education, and passes through the pilot project of Open University in Brazil, with the offering of the distance course in Administration by the Bank of Brazil – MEC, the evaluation and monitoring of several aspects related to the offered courses are practices in which those involved have the concern to develop. Discussions regarding the quality of the offer of this state-funded high education are also important and already have place among the national academic discussions (BELONI, 2001; ALONSO, 2010). However, it is already possible to emphasize that this qualification has been happening as an effective alternative of high education and were made possible recently due to this policy on Distance Education.

6. References


MARTINS, R. X. et al. (2012). O perfil sociodemográfico de candidatos a cursos de licenciatura a distância e os objetivos da Universidade Aberta do Brasil. IX Congresso Brasileiro de Ensino Superior a Distância (IX Esud) (pp. 1-12). Recife, PE.


E-xcellence methodology: lessons learned over ten years of development and implementation

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Abstract
The E-xcellence methodology for quality assurance of e-learning in higher education has developed into a flexible and effective approach to quality assurance. It has proved suitable to meet the needs of a diverse range of institutions and national quality assurance regimes, and is applicable to both distance and blended modes. The E-xcellence resources (http://e-xcellence-label.eadtu.eu/) include a quality manual, guidance for institutions and assessors, and an online Quick Scan self-evaluation tool. The manual was updated in 2012 and 2016 to reflect evolving changes in practice.

The E-xcellence methodology provides 35 benchmark statements, grouped under six headings: Strategic Management, Curriculum Design, Course Design, Course Delivery, Staff Support and Student Support. Higher education institutions self-assess their capabilities against each of the benchmark statements on a four-point scale. They also prepare a roadmap of future actions which can be mapped to benchmark statements. A visit by external reviewers enriches and complements the self-assessment.

This study is based on an analysis of E-xcellence self-evaluations and roadmaps at twenty higher education institutions. Tabulating those benchmarks that are rated as not yet adequate, and those which attract the most planned actions, highlights the aspects that institutions have found most challenging as they develop and implement online and blended learning programmes.

This profiling exercise indicates that institutions regard issues of strategy, curriculum design and staff support as presenting the greatest challenges. Particular problems include staff workload and developing an online
academic community for students. In contrast, the provision of reliable IT systems and hardware is unproblematic.

**Keywords:** quality assurance, quality enhancement, e-learning, online learning, blended learning

### 1. Introduction

E-learning is increasingly important in Higher Education, but concerns are often raised about its quality (Vlachapoulos, 2016). An effective quality enhancement approach for institutions with e-learning or blended learning offerings is to review and evaluate their e-learning provision, taking into account all the relevant aspects, in order to facilitate improvement. The E-xcellence methodology (see http://e-xcellencelabel.eadtu.eu/; Kear et al., 2016; Kear, Williams & Rosewell, 2014) is a proven way to carry out such a review, supported by resources and external evaluators who can advise and offer their expertise.

The E-xcellence approach focuses specifically on e-learning and blended learning (rather than other aspects of educational provision) and is intended to complement the normal institutional or national quality assurance processes, which may not be well suited to e-learning provision. It is a benchmarking approach (Ossiannilsson & Landgren, 2012) seeking to reflect best practice in e-learning. As is recommended by Jung & Latchem (2012, pp. 268-9), it takes a quality enhancement stance that aims for continuous improvement, rather than a conformance stance. It emphasises self-assessment, based on a set of benchmark statements, encouraging an institution to take stock of its current practice and to plan for improvement. Feedback from participants in E-xcellence reviews highlights the value obtained by sharing of views and experiences and the opportunities for dialogue between varied stakeholders. An ‘E-xcellence Associates in Quality’ label can be awarded after external review.

E-xcellence reviews have been carried out at a number of European higher education institutions (HEIs) over the last ten years. These reviews, taken together, have revealed aspects that are particularly challenging for institutions in their adoption of e-learning. This paper, after describing the E-xcellence methodology, presents an analysis of the outputs from nineteen E-xcellence reviews. This analysis was carried out to address the following question:

*Which aspects of e-learning or blended learning have posed the most significant challenges to HEIs?*

### 2. Background and context

The E-xcellence methodology has been developed over a number of years in successive EU-funded projects and subsequent initiatives led by the European Association of Distance Teaching Universities (EADTU):

- **E-xcellence 2005-06:** Development and trialling of performance criteria, an E-xcellence manual and the methodology
- **E-xcellence Plus 2008-09:** Dissemination to institutions and to QA agencies in 9 European countries
- **E-xcellence NEXT 2011-12:** Continued dissemination and updating of performance criteria and resources; 2nd edition of the manual
- **2016:** 3rd edition of the manual (online only).

Revisions have been made to the E-xcellence approach and resources to take into account the changing landscape of e-learning, and to respond to feedback from participants in E-xcellence reviews. Resources to support the current version can be found on the website http://e-xcellencelabel.eadtu.eu/.
At the core of E-xcellence is a set of 35 benchmark statements that capture best practice in e-learning. These benchmarks are supplemented by the E-xcellence manual (Kear, et al., 2016), which provides guidance on the topics that underlie the benchmark statements. It is intended to focus discussion during self-evaluation and review, and to act as an introduction to the key issues an institution faces when introducing e-learning.

The manual includes a number of detailed performance indicators that can be used to provide evidence of meeting the benchmarks. The indicators are not intended to be used as a conformance checklist. Instead they suggest the types of evidence that an institution could look for in its current practice to judge how well it meets particular benchmarks, and what actions it might take to improve quality. Indicators are labelled at two levels: one which would be expected from most institutions, and one expected only of those institutions working at an ‘excellent’ level.

The benchmarks are organised into six topic areas, reflected by chapters in the manual. These cover:

- **Strategic Management**: a high level view of how the institution plans its e-learning
- **Curriculum Design**: how e-learning is used across a whole programme of study
- **Course Design**: how e-learning is used in the design of individual courses
- **Course Delivery**: the technical and practical aspects of e-learning delivery
- **Staff Support**: the support and training provided to staff
- **Student Support**: the support, information and guidance provided to students.

Sample benchmarks are given in Table 1; the full list of benchmarks can be found in the current E-xcellence manual at [http://e-xcellencelabel.eadtu.eu/tools/manual](http://e-xcellencelabel.eadtu.eu/tools/manual).

**Table 1**: Sample E-xcellence benchmarks

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Sample Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic Management</strong> (benchmarks 1-5)</td>
<td>1. The institution has an e-learning strategy that is widely understood and integrated into the overall strategies for institutional development and quality improvement. E-learning policies conform to legal and ethical frameworks.</td>
</tr>
<tr>
<td><strong>Curriculum Design</strong> (benchmarks 6-9)</td>
<td>9. Curricula are designed to enable participation in academic communities via social media tools. These online communities provide opportunities for collaborative learning, contact with external professionals and involvement in research and professional activities.</td>
</tr>
<tr>
<td><strong>Course Design</strong> (benchmarks 10-18)</td>
<td>14. E-learning materials have sufficient interactivity (student-to-content, student-to-student and student-to-teacher) to encourage active engagement and enable students to test their knowledge, understanding and skills.</td>
</tr>
<tr>
<td><strong>Course Delivery</strong> (benchmarks 19-24)</td>
<td>20. The systems for communication and storage of data are secure, reliable and assure appropriate levels of privacy. Measures are in place for system recovery in the event of failure or breakdown.</td>
</tr>
<tr>
<td><strong>Staff Support</strong> (benchmarks 25-30)</td>
<td>29. The institution ensures that issues of staff workload, and any other implications of staff participation in e-learning activities, are taken into account when managing courses or programmes.</td>
</tr>
<tr>
<td><strong>Student Support</strong> (benchmarks 31-35)</td>
<td>32. Students are provided with guidelines stating their rights, roles and responsibilities and those of their institution. Guidelines of specific relevance to e-learning include provision of hardware, information on accessibility and expected participation in collaborative activities.</td>
</tr>
</tbody>
</table>
An ‘E-xcellence Associates in Quality’ label can be awarded as recognition that an institution has carried out a comprehensive review of its e-learning performance, based on the E-xcellence benchmarks, and has an agreed action plan for further quality enhancement. To achieve the label, an institution will host a review by two or three E-xcellence external assessors. The outcome of this review will be an agreed report and action plan, and a recommendation to the board of EADTU whether or not the label should be awarded. The label should be renewed every five years. The label is awarded for specific programmes of study since e-learning is often introduced for certain programmes rather than on a whole-institution basis.

To prepare for the review, the institution will carry out a thorough self-assessment of its e-learning/blended learning provision against the E-xcellence benchmarks. An internal review team will be assembled that includes a wide range of stakeholders and representation from different functional areas involved with e-learning: for example, academics, IT specialists, Student Support staff and students. The team should include senior managers as well as practitioners.

The internal self-assessment is often started by using either the online or paper-based ‘Quick Scan’ tool, which asks for a judgement on how well each benchmark is achieved on a five-point scale. The outcome of discussions during the self-assessment should be a consensus judgement on each benchmark, together with evidence to support that judgement. Standard templates for documentation are provided. Once completed, the self-assessment document is shared with the external reviewers.

The external review takes the internal self-assessment document as a starting point for discussion. Review discussions are typically held over a two-day period during which the external reviewers will meet with the internal review team. The review is usually carried out as a face-to-face event but can also be conducted online. It provides an opportunity to discuss issues, share ideas for good practice, and discuss a draft action plan. Following the review, the internal team finalise their action plan, and the external review team then compose their report.

E-xcellence takes a flexible approach to assuring quality. Firstly, it offers a benchmarking approach rather than a checklist or scorecard approach. This allows individual institutions to offer evidence and examples that derive from their particular context as support for their claim to achieve any benchmark. E-xcellence has been used by a wide range of HEIs that could be characterised variously as fully online, ‘traditional’ open distance learning or campus-based with blended learning, and including institutions of widely different size. Secondly, the benchmarks are phrased in high-level terms, rather than being tightly prescriptive; this has allowed the benchmarks to remain valid even as technology and pedagogy has evolved.

Further flexibility arises because the E-xcellence materials can be used at a variety of levels of engagement, from formal to informal. We have discussed above the formal review process for the E-xcellence label, but the E-xcellence materials – for example the current edition of the benchmarks and manual – are freely available (with CC-BY-NC-ND licence) on the website (http://e-xcellencelabel.eadtu.eu/) for any group or individual to use. The website also hosts an interactive version of the Quick Scan tool which offers immediate feedback on each benchmark judgement. This means that an institution or an individual can carry out an informal self-evaluation, leading to insight into the strengths and weaknesses of a programme of e-learning and, in turn, to a plan of action for enhancement. This can be of value even if it does not proceed to a full, formal label process. Furthermore, the E-xcellence framework can be incorporated, either fully or in part, into the formal quality processes of an institution. The E-xcellence manual acts as a concise introduction to the key issues an institution faces when introducing e-learning, drawing from the experience of practitioners.
A final illustration of the flexibility of E-xcellence has been its adaptation into the OpenupEd quality label for MOOCs (Rosewell & Jansen, 2014; Jansen, Rosewell & Kear, 2017). OpenupEd (http://openuped.eu/) offers a self-assessment, review and label modelled on E-xcellence. Benchmarks, although aligned to E-xcellence, are tailored for MOOCs, and institutional level concerns are separated from those specific to a single MOOC. OpenupEd can therefore offer a lightweight consideration of 11 benchmarks at the level of an individual MOOC while retaining the holistic approach of E-xcellence through a periodic review of 21 benchmarks at institutional level.

3. Method
We analysed self-assessments, action plans and final reports from nineteen reviews that led to the award of the E-xcellence label in the period 2009-2016.

Since the E-xcellence framework has been updated several times, the content and number of benchmarks has changed somewhat. In this paper, all benchmarks are referred to the current, third edition benchmarks (Kear, et al., 2016). In most cases there is a close correspondence between benchmarks of different editions, although there have been additions and some cases where benchmarks have been divided or merged. In this paper we give benchmarks short titles; the full benchmarks can be found in the E-xcellence manual at http://e-xcellencelabel.eadtu.eu/tools/manual.

First we consider institutional self-assessments. For each benchmark, we counted the number of institutional reviews where that benchmark was judged at a low level. Early reviews judged benchmarks on a four-point scale running from ‘Not achieved’ to ‘Fully achieved’; from 2013 a five-point scale has been used running from ‘Not adequate in the majority of aspects’ to ‘Excellent in all aspects’. We considered the lowest two categories of both scales to mean the benchmark was ‘problematic’, and we use this combined count in further analysis.

Next we consider action plans. For each benchmark we counted the number of institutional ‘roadmaps’ (action plans) that listed a planned action for that benchmark. Although most action plans gave some indication of timescale for planned actions, for analysis we have counted all actions regardless of timescale.

We also obtained a summary of the above counts by grouping them into the six broad topic areas used in the E-xcellence framework. Since the number of benchmarks in each topic area varies, we have scaled the counts by the number of benchmarks in each topic area to produce a ‘relative count’.

4. Findings
In this section we present the quantitative analyses of data from the institutions’ self-assessments and from their roadmaps for improvement. We also compare these two sets of data.

Figure 1 shows the results from the self-assessments, grouped into the six areas that form the E-xcellence framework. This shows that the areas which are most commonly judged as problematic are Strategic Management, Curriculum Design and Staff Support. Student Support is much less commonly judged as problematic.
Figure 1: Relative count of benchmarks rated as problematic in institutional self-assessments, grouped into the six areas of the E-xcellence framework. The raw count is scaled by the total number of benchmarks in each area.

There is variation in the assessments for individual benchmarks within each of these broad areas. Looking at benchmarks individually (Figure 2) shows that Workload management (Benchmark 29, in Staff Support) is the benchmark most commonly rated as problematic. Note that this refers to managing the workload of staff, not students.

The development of Academic communities (Benchmark 9, in Curriculum Design) is the next most problematic, and this same concern may also be reflected in self-assessments for Social media (Benchmark 33, in Student Support). The issue of an E-learning strategy (Benchmark 1, Strategic Management) is also highlighted as problematic.
Some benchmarks are shown with zero scores in Figure 2, meaning that all institutions viewed them as unproblematic (that is, already largely or fully achieved, or already adequate or excellent). For example, Reliability and security (Benchmark 20, in Course Delivery) was not rated as problematic by any institution, although other benchmarks in this area, such as Technical infrastructure (Benchmark 19) and Performance monitoring (Benchmark 21) received non-zero scores. Note that Use of OER (Benchmark 13, in Course Design) has a zero score; this benchmark was added to the 2nd edition and had no counterpart in the initial version of E-xcellence.

Notably, all benchmarks in the area of Student Support, with the exception of Social media (Benchmark 33), were judged unproblematic. These are Course information (Benchmark 31), Student guidelines (Benchmark 32), Administrative support (Benchmark 34) and Learning resources (Benchmark 35).

We now move on to consider the data from the institutions’ roadmaps for improvement. Figure 3 shows the overall results from the roadmaps; these have again been grouped into the six areas of the E-xcellence framework. Figure 3 shows that the planned actions were most commonly in Strategic Management, Curriculum Design and Staff Support.
Figure 3: Relative count of actions for benchmarks noted in institutional roadmaps, grouped into the six areas of the E-xcellence framework. The raw count is scaled by the total number of benchmarks in each area.

The pattern for roadmap actions (Figure 3) closely reflects the pattern that emerged from the self-assessments (Figure 1), except that a relatively high number of actions were noted for benchmarks in Student Support, even though this area had rarely been judged problematic in the self-assessments. This issue will be discussed later in the paper.
At the level of individual benchmarks (Figure 4), there are both similarities and differences to the pattern shown in the self-assessments.

Some benchmarks feature similarly: benchmarks associated with *E-learning strategy* (Benchmark 1, in *Strategic Management*), *Workload management* (Benchmark 29, in *Staff Support*) and *Academic communities* (Benchmark 9, in *Curriculum Design*) have high numbers of actions in roadmaps, as well as appearing problematic from the self-assessment scores.

However, other benchmarks differ on the two measures. The largest number of roadmap actions was for *Interactivity* (Benchmark 14, in *Course Design*), although this benchmark was not commonly judged problematic in the self-assessments (see Figure 2). In the area of *Strategic Management*, *Integrated systems* (Benchmark 4) has a relatively high number of actions, although it was not commonly judged problematic in self-assessments. In the area of *Student Support*, there are relatively high numbers of actions recorded for *Course information* (Benchmark 31), *Student guidelines* (Benchmark 32) and *Administrative support* (Benchmark 34), even though these benchmarks were never counted as problematic in the self-assessments. On the other hand, *Social media* (Benchmark 33) stood out as problematic in self-assessments, but does not have a particularly high number of actions in roadmaps.

**Figure 4:** Count of actions for individual benchmarks noted in institutional roadmaps
5. Discussion

The E-xcellence framework and process was designed as a method for assessing and improving quality. Because of its use of specific benchmarks, grouped in a clear framework, it enables particular issues related to quality to be identified and addressed. When this analysis is carried out across a set of HEIs, an overarching view of the issues can be obtained in order to identify which aspects of e-learning and blended learning are particularly challenging to HEIs and, in contrast, which aspects have become successful ‘business as usual’.

This paper has presented findings from an analysis of E-xcellence reviews at several HEIs across and beyond Europe. Based on data from the institutions’ self-assessments and roadmaps, the analysis has identified several key issues that institutions find problematic when implementing e-learning or blended learning. These are: strategy; staff workload; academic community; and interactivity. Two of these (strategy and staff workload) are institutional; the other two (academic community and interactivity) are more student-facing. The analysis has also shown that the more practical and technical aspects, such as providing information for students, and technical infrastructure, are relatively unproblematic. It is encouraging that these ‘building blocks’ of quality e-learning are in place.

Looking in more detail at the results of the analysis, and particularly comparing the two sources of data (self-assessments and roadmaps), raises further considerations about the issues identified and the E-xcellence process itself. One might assume that benchmarks that are frequently scored as problematic would lead to planned actions listed in the roadmap, and conversely that benchmarks that were scored as unproblematic would have few or no actions planned against them. To a large extent this is the pattern seen. For example, E-learning strategy (Benchmark 1, in Strategic Management), Workload management (Benchmark 29, in Staff Support) and Academic communities (Benchmark 9, in Curriculum Design) are highlighted by being frequently scored as problematic in self-assessments and also by having high numbers of actions in roadmaps.

In other areas however, the two views of the data are not consistent. Most notably, there are relatively high numbers of roadmap actions recorded in the Student Support area: for Course information (Benchmark 31), Student guidelines (Benchmark 32) and Administrative support (Benchmark 34) even though these benchmarks had not been scored as problematic in the self-assessments. There are a large number of actions noted for Interactivity (Benchmark 14, in Curriculum Design), which is a benchmark that is not highlighted as problematic in self-assessments.

It may be that these inconsistencies are a by-product of the way institutions complete an E-xcellence review. The institution may find it relatively straightforward to fill in a roadmap with actions which are already planned or underway. These may be responses to issues that are well-known and have had some initial work done on them, and are thus not scored as problematic in self-assessments, even though further actions are planned. It may also be that practitioners find it relatively easy to do ‘more of the same’ and more difficult to engage with new challenges. For example, the provision of Course information (Benchmark 31, Student Support) and Student guidelines (Benchmark 32, Student Support) is ‘business as usual’ for any HEI and a basic level of provision is easily achieved with static web pages; however, improvement in terms of accuracy, scope and ease of use by students may still be worth the effort. Situations like this could lead to a benchmark being rated as unproblematic in self-assessments, yet still attracting actions for further improvement.

A similar pattern is seen with Interactivity (Benchmark 14, in Curriculum Design) and Range of e-learning tools (Benchmark 22, in Course Delivery). Improvements here are core concerns for many e-learning
practitioners who wish to move away from e-learning as transmissive content delivery to something that better uses the affordances of the medium. It is perhaps not surprising that they should seek to improve quality in these areas even if current provision is not seen as problematic.

There could also be benchmarks where there are issues highlighted as problematic in a self-assessments that are not yet widely acknowledged by the institution and where no plans have yet solidified that can be committed to a roadmap. Social media (Benchmark 33, in Student Support) may be one example. In this specific case, it may be that institutions have held back from actions in a fast-moving area, particularly as during the period covered by these reviews there was a shift from the provision of ‘walled garden’ institutional social spaces to public sites such as Facebook.

More worrying would be to see evidence of issues frequently assessed as problematic, but for which few improvement actions are planned; there is little evidence of this in the current data.

There are limitations to the work presented here. The data comes from a relatively small number of reviews and it is therefore not possible to gain a sense of whether issues have changed over time, or whether the issues faced by different categories of HEI might differ. There also seems to be considerable variation in the way institutions portray themselves in self-assessments: at the extremes, one HEI rated 28 of 35 benchmarks as problematic and another rated none. External reviewers may note in their report where they feel self-assessments are unrealistic, but the data presented here has taken the self-assessment scores at face-value since we are not attempting to compare different institutions. It is tempting to speculate on what might lead an institution to overvalue or undervalue its e-learning provision. There is a mix of internal and external pressures at play: for example, judging aspects ‘excellent’ may present the institution in a good light externally, but internally may undermine any call for investment in further improvements.

Ossiannilsson et al. (2015) reviewed a number of quality frameworks for e-learning. They found that most reflected a similar range of concerns which could be considered under three very broad headings (Services, Products and Management), but that these could also be viewed in the six areas used by E-xcellence. This suggests that, although the work here is framed in terms of E-xcellence, it is of broader applicability. It also suggests there would be value in future work that combines data from several frameworks.

6. Conclusion

An E-xcellence self-assessment and review is an opportunity for an institution to take stock of its e-learning provision, recognise its strengths and weaknesses, and plan actions that will enhance its quality of provision. The E-xcellence process results in a ‘holistic’ view of quality. This encompasses, but goes beyond, the quality of the individual e-learning resources, which is only one aspect of the whole. To achieve high quality outputs, an institution should strive for processes that are well designed and well implemented.

This paper, by looking at evidence from past E-xcellence reviews, suggests that HEIs introducing e-learning have faced challenges in broad areas of Strategic Management, Curriculum Design and Staff Support. The areas of Course Design and Course Delivery – where attention might be directed if taking a narrow view of the quality of individual learning resources – are seen as less problematic.

At a more detailed level, particular issues are managing staff workload, developing an institutional strategy for e-learning, and building an online academic community for students. The provision of reliable IT systems and hardware is unproblematic. Many HEIs are also planning actions to improve the interactivity of learning resources and to increase the range of e-learning tools provided by their institutional VLE.
In summary, this study has given a picture of the issues that have proved to be challenging for HEIs moving into e-learning. We hope this will be of use to other HEIs, and educational policy makers more generally.

7. References


From Conception to Implementation: A New Educational Leadership Degree Program Designed to Increase Learning Flexibility and Internationalisation

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Abstract
The Finnish education system has been a focal point for international interest following its successful results in PISA and other international comparisons. As a result, there has been much interest in what it is that makes the Finnish system different and whether it is possible to implement some of these elements into other educational contexts. This has resulted in demand for Finnish teacher education and educational leaders who understand the Finnish system.

In response to this international demand for education degree programs, Tampere University of Applied Sciences conceived the idea of a Master’s Degree program in Educational Leadership. This distance education program would be offered in English in a blended format that would allow the participating students to continue with their careers and embed their learning into their professional roles as educational leaders and change agents.

This paper traces the development of this new degree program from conception to implementation, through the process of program and course design. It examines how a multidisciplinary team from the School of Vocational Teacher Education and the School of Business were brought together to find synergies and new pedagogical and technical solutions. There have been a number of drivers for this change, including the desire for more flexible learning opportunities and the internationalization of the student intake. The program seeks to make effective use of technology-enhanced distance learning, while still upholding a commitment to participatory pedagogy within a social constructivist, authentic learning framework.

Keywords: online, blended, internationalisation, learning design, participatory pedagogy, authentic learning, Finland.

1. Introduction
This paper describes the conception, design and initial implementation of a new Master’s Degree in Educational Leadership (MEL) at Tampere University of Applied Sciences (TAMK), Finland. Using a narrative format, it seeks to capture the decisions, processes, challenges and successes of creating not only a new degree program but also a program that is offered and implemented in an entirely new way for the university.

Finland enjoys an outstanding global reputation in the field of education, primarily driven by its record in international measures such as the Organization for Economic Co-operation and Development (OECD) Program for International Student Assessment (PISA) examinations (OECD, 2010).
There has been considerable international interest in the Finnish education system and there appears to be some consensus among researchers (Sahlberg, 2011. Hargreaves, 2012. Ripley, 2013) that the following factors contribute towards Finnish success:

- Professional teachers who are highly qualified who have autonomy and trust.
- Collaboration between teachers and schools rather than competition.
- Inclusion and equality within the education system and society.
- Relatively little standardized testing.
- A generally held public belief that education benefits society and the individual.

As a result, many educational leaders and policy makers have sought to find ways to transfer this success to their own context. This has led to international demand for Finnish teacher education programs and for programs that train educational managers and leaders to better understand and implement ideas from the Finnish system. To support such initiatives the Finnish Government has established organizations such as Future Learning Finland (Rautakoura, 2013) to assist Higher Education Providers in this mission to commoditize Finnish education.

### 1.1 Background and Context

The Universities of Applied Sciences in Finland are tasked with the provision of vocational higher education in a range of specializations. At TAMK, these include areas such as Engineering, Forestry, Business, Health Sciences, Vocational Teacher Education, Culture and Media. There is a legislative requirement for all universities of applied science to have close links with employers, local society and the regional business community. Thus, the traditional focus of the university has been the provision of face-to-face vocational higher education degrees for Finns to meet local and national employment requirements. This history and focus and the additional fact that, until very recently Finland has had no tuition fees for studies, has meant that there have been few drivers for the implementation of online or distance learning programs.

However, the situation has been changing, declining public funding due to austerity driven economic policies has resulted in the need for all Finnish higher education institutions to obtain a greater proportion of their funding from other sources. This has led to the introduction of tuition fees for degree programs for students from outside the European Union (EU) and European Economic Area (EEA) as well as the promotion of commercial education activities, both domestically and internationally.

Historically the traditional industry of Finland was forestry and paper production; however, this has been greatly impacted by the increased use of digital technologies and its importance has declined. Some of the impact of this decline was absorbed by the emergence of Nokia, and Finland was quite successful in adapting to a knowledge based economy, particularly in the field of mobile and digital technologies. However, the collapse of Nokia following the launch of the iPhone and the global financial crisis of 2007 - 2008, led to the recognition of the need to take advantage of other Finnish areas of expertise, especially its reputation for education.

The response has been a call to diversify the student intake and more fully internationalise educational programs, to offer more programs in English with greater flexibility for participation other than just full time face-to-face tuition. The Finnish government has been active in encouraging educational
institutions to commercialize their educational offerings and undertake a process of productization ("Can the Finnish educational model become an export product?", 2013).

At a global level, there has been a greater awareness of the possibilities of online and distance education and the opportunities offered by highly developed digital networked communications technologies. The media interest and hype generated by the ‘Year of MOOC’ (New York Times, 2012) further increased public and institutional awareness of the possibilities that technology enhanced learning might offer.

2. Conception

2.1 Need for the program

It is against this background that TAMK created a new subdivision called TAMK Global Education in February 2013 to offer international commercial education services. The first wholly commercial international program was called 21st Century Educators, which was a fully online teacher development program offered in English (Curcher, Teräs & Leikomaa, 2012. Curcher & Teräs, 2013. Teräs, 2016)

Although this continues to be a popular and innovative program, it also became very clear that there was demand for a degree program that focussed on educational leadership. Indeed, many of the graduates from 21st Century Educators were promoted at work or moved jobs to leadership positions and they spoke of the need for an educational development program to support this.

There were many informal discussions in TAMK during 2014 and then formal meetings in 2015 to explore how TAMK might offer a program that would meet such needs. In 2016, it was agreed that a new program would be offered from the School of Business and Services as a part of their MBA degrees offering, with a specialization in educational leadership. The initial plan was that the new program would consist of existing modules from both the MBA and 21st Century Educators programs.

2.2 A new approach

As the course design team was brought together, it quickly became clear that simply repurposing modules from existing programs would not meet the required objectives of the program and that a new approach would be needed.

The business courses for the existing MBA programs were designed for students who lived in Finland and were able to attend the campus in person every few weeks for intensive study days and then work independently between face-to-face meetings. Although many of these independent activities are available on the University’s Moodle based learning management system (LMS), they were not designed specifically as online distance learning activities.

The education courses were specifically designed for an online distance learning context, but were aimed more specifically at in-service teachers who wanted to improve their practice, rather than educational leaders involved in planning, project management and other leadership roles.

Courses in educational leadership are available from other universities in Finland, but require full time attendance at the university for the duration of the program and therefore require participants to take study leave or leave of absence in order to participate in the program.
There is also a legal requirement in Finland that applicants to master’s level degree programs at a University of Applied Sciences must have completed a minimum of three years of work experience since the completion of their bachelor’s degree. This requirement also makes it more likely that participants on the program will be in full time employment, possibly already in positions of leadership and on a career path, therefore the option of taking time away from work to attend full time study is unlikely.

Based on this it was decided that the program would take a completely new approach for TAMK, one that would build on existing courses and expertise but also offer a program that would meet the needs of the participants. With this in mind the first planning meetings focussed on profiling our potential students, their possible backgrounds and the constraints they might have with regard to participation and success on the program.

The option of offering a fully online program was considered. However, it was recognized as advantageous for participants to visit Finland to have an experience of Finnish education. Also, given the pedagogy and learning theories that form a foundation of the program, it was finally decided to adopt a blended approach. It was decided that students would attend three compulsory intensive study weeks in Finland at the start of each of the first three semesters, with an optional fourth intensive week for those who require further support during the thesis writing stage of their degree.

3. Design
3.1 Interdisciplinary approach
By September 2016 the decision to offer a blended program of 90 European Credit Transfer System (ECTS) credits over a minimum 18-month period starting in September 2017 had been made. The objective was to build as much as possible on existing expertise and materials while at the same time explore opportunities for innovative pedagogies and technologies. Team members from the School of Vocational Teacher Education and School of Business and Services were brought together to begin the work of designing and then constructing the courses.

The 21st Century Educators teacher development program was developed in 2011 around the pillars of authentic e-learning, collaboration, participation (Herrington et al. 2010), progressive enquiry (Hakkarainen et al. 1999) and the use of social technologies (Teräs & Myllyla, 2011). It was the desire of the team that this would continue to be the case with the new program. Although there have been many developments in online learning since 2005, especially with regard to communications technologies, it is still very often the case that these factors are an afterthought in learning design, with the focus remaining on instruction and delivery of content:

Most attempts at online learning... [are] based on delivering repurposed content to students via the Internet. Communication, collaboration, community and construction are afterthoughts graded onto modern correspondence courses. Despite the low---level interactivity that accompanies clicking the mouse and checking email, there is little interaction between the hearts and minds of learners (Stager, 2005, p.3)

The new program was designed to move away from this instructionist model of learning described by Stager above and instead bring together what Becker (2012) called “...a mashup of learning theories...”. Becker argues that by embracing “multiple new theories of learning...weaved together to inform a more learning-or learner-centered experience” (Becker, 2012, p.2) we can move away from courses...
focused on content mastery and instructionism. He contends that by blending learning theories from constructivist thinkers like Seymour Papert (1991) with social constructivist computer mediated problem based learning (CMC-PBL) and the connectivist ideas of George Siemens (2005), we can start to fully realise the benefits of networked learning and knowledge construction.

In this paradigm, the diversity of participants is a benefit rather than a challenge. Instead of perceiving a diverse group of learners with different prior learning experiences and skill sets, at different levels, as a problem, this becomes an advantage to the program and the learners. This might be framed as a form of networked heutagogy. In this model, the distributed knowledge within the group becomes a learning resource and the course facilitator is transformed into a fellow learner, supporting, coaching and mediating within the group.

To facilitate the design process, resources and materials from Gilly Salmons ‘Carpe Diem’ workshop model were utilised (Salmon, 2016). The result of this work was the program design shown in Figure 1 in late 2016. With this in place and a program description written and agreed by senior management, the program was offered in the TAMK 2017 program offering with the application period opening in January 2017.

![TAMK Master in Educational Leadership](image)

Figure 1: The course structure of the MEL Program

3.2 Course descriptions, learning outcomes and course design

The next stage was to move from program design to course design, the first step being the writing of course descriptions and learning outcomes and content details for each of the courses and then quality assurance (QA) approval for the program from the QA committee and senior management.

Although the individual faculty responsible for each course undertook this work, there was still collaboration within the course team to ensure that a common terminology and understanding of pedagogy was maintained. When these descriptions and outcomes had QA approval work could begin on individual course design and construction.
To support the teaching faculty to transition their practice and materials to the new blended model, support hours from an instructional designer were provided. The instructional designer worked individually with faculty team members to help them explore and realise suitable approaches and different design strategies in their various content areas.

The various demands of subject content was recognised and designed into activities and resources. Some content areas, such as financial management remained closer to the instructor/content transfer model, with the use of short videos and then online exercises using spreadsheets. Other subjects, such as project management and leadership, adopted a hybrid approach that used case studies and then asynchronous discussion and reflection. In the courses sourced from the school of education fewer design changes and support was needed as collaborative participatory pedagogy had been practiced for some time. Here the transition was to move away from the lens of classroom practitioner focussed on the facilitation of learning, to the new lens of an educational leader with broader leadership and management responsibilities.

The constraints of this paper do not allow us to examine in detail the process that took place in each of the twelve courses, but there is the possibility that it will be examined and explored in future papers.

### 3.3 Tutoring

During the QA process, concerns had been expressed over the higher possibility of student attrition during an online course and worries about the efficacy of online learning. In order to address these concerns, it was proposed that the allocation of an Online Tutor would significantly reduce attrition risk and help students adapt to being participatory online learners, working within a collaborative learning community.

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![Salmon’s Five Stage Model framework for supported online learning](https://example.com/Salmon_model.png)

**Figure 2:** Salmon’s Five Stage Model framework for supported online learning (Salmon, 2016).
An attempt was made to model aspects of the practice described in Salmon (2011) as e-moderating with the support aspects of the UK Open University’s roles for course tutors. The course teachers would still be responsible for course content, marking and grading, and provision of feedback to students. In Salmon’s Five Stage Model shown in Figure 2, this includes both the technical support and e-moderating support through Stage 1 and Stage 2, plus the e-moderating support from Stage 3.

The online tutor role on the TAMK MEL program is to enable students to be successful by supporting, guiding and monitoring their progress across the whole program rather than individual courses. This would include aspects such as collaboration or technology problems, as well as any personal or professional issues that might arise during the program.

This is a new role within the University and at the time of writing the exact role of the tutor and the type of support required is still emerging. It is envisioned that the tutor role will evolve over time and it is possible that it will move beyond the concept of the teacher’s online presence to focus on a real Pedagogy of Care (Noddings, 1984/2003. Adams & Rose, 2014. Rose, 2017.)

4. Implementation of the program
4.1 Marketing and application period
The program was promoted on the University’s and Finnish education websites, on social media, and at educational exhibitions and conferences, through the fall of 2016. This included a Facebook live session with members of the course team that received about 1800 views.

The course team developed an appropriate pre-task to be completed as a part of the admission procedure in order to select the most suitable participants. The admissions period ran from 10 – 25th January 2017 during which applicants had to submit an application form and submit their answer to a pre-task question.

4.2 Selection
Places on the program were limited to 25 participants because of resource and funding constraints. The aim of the selection process was to find the applicants who were best suited to the program and most likely to become the educational change agents targeted by the program.

In late January and early February 2017, the selection process began for the oversubscribed 2017 intake. First, the admissions department screened out the applicants who did not meet the stated entry requirement academically or by virtue of lack of work experience. Then a team of four faculty from both schools read and graded the pre-tasks based on a grading rubric, in a blind, double marking process. From this process, a ‘long list’ of candidates for interview was produced. Over a four day period all these candidates were then interviewed in a recorded video conference by a team of two faculty, one from each school and blind scored by each staff member. These scores were then combined with the scores from the pre-task to provide the final short list of 25 applicants who would receive an offer of a place on the program. A waiting list was also established so that if an offer was not accepted, the next candidate was offered a place.

During the recruitment process every effort was made to make it explicitly clear that the program was not a traditional ‘lecture and exam’ instructivist program. The materials used in marketing and promotion of the program emphasised this and candidates were questioned in the interview to checked that they understood the consequences of this for their participation and learning.
The figure below shows the demographics of those finally selected onto the program.

![Participants](image)

**Figure 3**: Location and sector of selected MEL participants.

### 4.3 Flexibility and workload

To increase the flexibility of the program for participants in terms of workload and duration, two alternative pathways were developed and are show below.

Figure 4 shows the original 3 semester, 18-month program, with 30 ECTS credits of study per semester.

![MEL Study Plan A: 1.5 years](image)

**Figure 4**: The eighteen-month study plan

Figure 5 shows the alternative plan that may take between 2 and 2.5 years to complete, 4 - 5 semesters, depending upon thesis completion. This has a workload of 15 ECTS credits per semester in the first year and a more flexible approach to workload once the thesis is started.
The Bologna agreement indicates that the typical amount of student work required to earn a single ECTS credit is 26.7 hours in Finland. Simple multiplication of the ECTS credit for each module gives an indication of the demanding intensity of this program. Given that, as an institution of vocational higher education, the participants are invariably working full time and have family and personal commitments, there is no doubt that this is a very demanding program. In order to provide some flexible pathways to meet the various student needs and situations, it was decided to make this workload explicit from the outset and provide a lower intensity pathway for those who felt it more appropriate to take a slightly longer and less intense study path.

4.4 Intensive week

The main objectives of this first intensive week of the program were as follows:

- Socialisation in order to introduce the participants to TAMK, each other and the faculty and staff involved in the program.
- Develop relationships of trust, openness, collaboration and communication to encourage the formation of a community of practice.
- Explore motivations for participation using the Reiss Motivation Profile.
- Develop the participants’ digital literacy skills with regard to the tools and technologies that would be used during the program.
- Ensure that students fully understood the collaborative, networked, participatory nature of the program.

These objectives were a higher priority than any coverage of the content of the courses and are based on Salmon’s (2016) Five Stage model shown in Figure 2. As can be seen in this model, socialisation, motivation and ensuring familiarity with the digital tools required for access, are foundational. When these are in place, it is possible to move onto the higher levels of knowledge exchange (Stage 3) knowledge construction (Stage 4) and development (Stage 5). All participants completed a Reiss Motivation Profile survey, (Reiss, 2000) to enable better understanding of their own motivations during
the course and in their educational leadership roles. The composition of small group for collaborative work was also partially informed by the results of these surveys.

![Figure 6: The Community Puzzle (Pallooff & Pratt, 1999).](image)

It was considered important to establish a community based on collaborative learning, honest interaction, clear set goals and mutually negotiated guidelines as described in Pallooff and Pratt’s (1999) description of the community puzzle shown in Figure 6.

Given the international diversity of the group, it was felt to be essential for the intensive week to have a distinctly Finnish flavour and also reflect the overall pedagogical approach of the program. To this end, a number of visits to local schools, colleges and education providers were arranged where participants focussed on the learning environments they experienced. This particularly gave the overseas participants a valuable initial insight into the realities of the Finnish education system.

The intensive week also included social activities specifically designed to develop collaborative and participatory understanding and skills, such as the preparation and cooking of a shared dinner, coordinated by students from the University’s School of Hospitality and the inevitable Finnish sauna evening complete with swimming in the lake.

Finally, and in accordance with Salmon’s Five Stage Model, time was spent gaining a working knowledge of some of the technologies that would be used during the program and sharing expertise. The survey of participants’ prior experience of online and distance learning during the intensive week revealed the following results shown in Figure 7.
5. **Conclusions**

Tampere University of Applied Sciences has now implemented its first postgraduate blended distance program. At the time of writing, we are in the second week of online delivery following the first intensive week. The MBA in Educational Leadership is underway with a very diverse cohort of 25 international participants representing many different sectors of education and training.

The initial feedback taken at the end of the intensive week in September 2017 from both faculty and the participants is very positive. It was clear that strong relationships of trust had been developed between participants and the faculty. One example of proof of that was that students had independently arranged a weekend in Lapland on the weekend prior to the next intensive week in January 2018 and almost half of the students committed to that. The community of practice relationships and sharing and collaboration in practice is also seen within the social media groups that students have created. Exploration of this is beyond the scope of this current paper but may well be investigated and explored in future publications.

The planning phase for the 2018 intake to the program is already underway, including reflection and discussions about how we can further improve the recruitment, selection and admissions process.

The initial program design and subsequent course design and implementation has demonstrated the proof of concept for a blended MBA degree program in educational leadership. The implementation is being undertaken as an organic responsive process that will continue to improve and develop the learning experiences through an iterative process of feedback and development. The hope is that this program continues to develop, the lessons learned can be applied to other programs offered by TAMK to further increase the internationalisation and flexibility of the programs offered by the university.
6. References


Increasing online interaction for learning among Blended Distance learners: A case of Activity Theory based Methodology for B.Ed external programme at Makerere University.

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Abstract
This article examines the contribution of activity theory in studying online interactions among distance learners at Makerere University while using the Makerere University eLearning Environment (MUELE). The aim of the study is therefore twofold. First, to establish how MUELE can be used to improve interactions for learning on the blended Bachelor of Education (B.Ed) programme at Makerere University. Secondly, to utilise the Activity Theory (AT) as a lens or framework to interrogate other social - cultural factors influencing usage of MUELE for online interactions. The methods used for data collection were observation of the interaction logs which were got from the online forums within the groups and open forums plus interviews of both the students and facilitators. This data was analysed through transcription and thematization. The Activity Theory principle of contradictions and tensions was then used to explain the social cultural factors influencing the platform usage and online interactions using MUELE. The results of the study indicate that MUELE can assist in increasing interaction among distance learners given its affordances coupled with specially designed activities that enable collaborative learning. However, the maximum utilisation of MUELE has been constrained by other factors within the activity system like, user competencies, institutional culture, ICT and eLearning policies, staff motivation etc. The study therefore concludes that activity theory can be useful not only in understanding how to improve interaction among students, but also assists in exposing the underlying contradictions within the activity system which affect interactions.

Keywords: activity system, blended learning, interaction and learning management system.
1. Background and Context

Interaction is very central in teaching and learning processes as it assists in demisfying difficult concepts through sharing of divergent understandings. Student interactions enhances learning as they assist them to construct their own knowledge. In a classroom setting, these interactions happen naturally unlike in an Open and Distance Learning (ODL) programme where students are separated both in time and space. This may require careful integration of interaction opportunities within the course design so as to foster learning. One of the main barriers to learning in ODL at Makerere University is limited opportunities for interaction among students. This is because students are geographically dispersed from their peers and there is low integration of ICT in the teaching and learning processes. This limitation is likely to affect students’ learning outcomes since dialogue and communication among learners has always been found very central for filling knowledge gaps (Picciano, 2002). Peer interaction is fundamental in ODL for offering both social and academic support due to limited face to face interaction between students and their lecturer as this ODL mode of study entails separation of the teacher from the learner most of the time. This separation creates a transactional distance which has to be bridged with interaction of the student with the tutors, peers and content (Moore, 1993; Anderson, 2003).

The Bachelor of Education (B.Ed) programme at Makerere University is administered using the ODL mode of study were students attend two weeks face to face sessions and then do self - study. By the structure of the programme, there are no formally organised interactive groups among students while off campus for both social and academic support. This brings fears that this situation is likely to affect their learning outcomes as they miss out on the benefits of collaborative learning. Students are however, encouraged to form study groups to continue working together while off campus. According to Nabushawo (2014) these study groups have not been effective in fostering the intended interactions among students due to their scattered nature. In 2016, the university approved the eLearning and Distance Education policy and henceforth incorporated the eLearning component in the teaching and learning processes and currently the University is running blended programmes. Based on this background, the study attempts to find a way of improving interaction among B.Ed students at Makerere University through the use of ubiquitous technologies available and accessible to students like the institutional Learning Management System (LMS). This LMS is called Makerere University E-Learning Environment (MUELE). It was therefore anticipated that the utilization of MUELE can create possibilities of increasing interaction and hence learning outcomes.

1.2 Purpose of the study

To explore hoe MUELE can increase interaction for learning among the B.Ed students through the lenses of activity theory

The study was therefore guided by the following research questions;

1.2.1 How can MUELE be used for improving Interaction for learning among the B.Ed students at Makerere University?
1.2.2 How useful is activity theory in interrogating the factors that influence students’ interactions using MUELE?
2. Literature Review

2.1 Learning Management Systems (LMS) and Student Interactions

Learning Management Systems are web-based classrooms or platforms that enable educators and learners to have continuous access to course materials, interactive activities and network among classmates (Lonn & Teasley, 2009). The LMS holds a lot of promise for ODL to enhance interaction for learning since the web can afford interaction in many modalities like face to face, video, audio and computer conferencing (Anderson, 2003). These technologies are ideal for ODL because of their capacity to support independent study in terms of time and space. According to Ng’ambi & Lombe, (2012) LMS provides an environment that allows knowledge building to take place through collective sharing of opinions, resources and experiences, thus students educate one another. This is possible through the use of interactive features such as threaded discussions, video conferencing, and discussion forums. This raft of teaching and learning tools embedded in the LMS enable students to engage and support each other (Griffin & Rankine, 2010).

2.2 Makerere University E-learning Environment (MUELE) and its Affordances

MUELE is developed from Moodle which is a free and open-source software learning management system. Makerere University a Learning Management System commonly known as MUELE. It’s developed from Moodle which is a free and open-source software learning management system written in PHP and distributed under the GNU General Public License. Previously, this platform was only accessible on desk tops and laptops but with incorporation of the Moodle mobile app in the system, MUELE can be accessed on any mobile device. Developed on pedagogical principles, Moodle is used for blended learning, distance education, flipped classroom and other e-learning projects in schools, universities, workplaces and other sectors. It also uses constructivist and social constructionist approach to education, emphasizing that learners can also contribute to the educational experiences through an environment for learning communities. In this this case, MUELE has been developed to help educators to create online courses with a focus on interaction and collaborative construction of knowledge through various channels like discussion forums, emails, messaging etc. This therefore means that as a platform MUELE can ensure interaction among students. MUELE was thought to be effective in increasing interaction among B.Ed students while off campus because it can be accessed by all registered students anywhere as long as they are connected to the internet.

Using Bower (2008) affordance analysis framework MUELE affordances were identified. These included media, temporal and navigational affordances which facilitate and foster student interactions among educators and learners. Such environments allow knowledge building through collective sharing of opinions, resources and experiences. MUELE has been designed to enable students contribute to the educational experiences through various channels like discussion forums, emails, messaging etc.

MUELE can afford students view-ability, read-ability and write-ability which enables them to view and read the tasks and activities given by the lecturer and then be able to discuss with peers by writing back. This facilitation of knowledge exchange and interaction fosters learning among students. Specifically, the temporal affordances of MUELE which include accessibility enables students to access the LMS anytime anywhere to interact and make their contributions to any tasks and activities given by the lecturer. Additionally, this unlimited access to MUELE enables both Synchronous and asynchronous interaction to take place making the experience even friendlier in ODL because of flexibility. On the other hand, the navigational affordances of browse-ability, link-ability and search ability also enable students to browse other sections of the resources by moving back and forth, linking to other sections within the resource or other resources. This
easy access to information and resources enables meaningful interaction and richer discussions which promotes deep learning.

However, in spite of these affordances, MUELE is still underutilised for teaching and learning purposes (Najjuma & Mulumba, 2015). The platform is mainly used as repository for course materials but rarely used for engaging students into interactive activities that foster learning. There is therefore need to interrogate the socio-cultural issues surrounding the use of MUELE for interactions among both students and staff at Makerere University. The Activity Theory (AT) therefore emerges as an appropriate theoretical framework and methodology for investigating these issues since it analyses socio-cultural aspects of human actions within the activity system. The theory examines learning as a social practice and activity (Engestrom, 2000).

Unlike other learning theories, AT attempts to go beyond the surface of just appreciating that the student has access to MUELE. It interrogates other underlying tensions and contradictions that can influence the usage of MUELE for online interactions among B.Ed students. It does so by looking at the context, tools, content and community (Hodgkinson and Deacon, 2013).

2.3 Theoretical Framework

Activity Theory (AT) investigates human activity in a social setting like workplaces or schools (Parks, 2001). According to Engerstrom, (1987), AT provides a theoretical tool for understanding conflicts and contradictions both between and within the components of the activity system. Its rooted in Vygotskian philosophy of mediated learning which is the subtle social interaction between the teacher and learner in the enrichment of the students learning experience (Presslen & Kossulln, 1992). Tools of instruction are employed to scaffold learning which may be physical or psychological for instance the use of technology to enhance learning. However, while utilising the tools for teaching and learning, collaboration is necessary between students with the community, content and teachers. In e-learning for example, the goal directed activities include cooperation, discussions, reflection and collaboration. According to Bagarukayo et al (2016) Collaboration and interaction are important for effective learning since they lead to intellectual development.

Engestrom’s model below, helps us is to understanding how different aspects of the activity system work together to impact an activity. Each one plays a role in the activity system. For example in order to reach the intended outcome you have deal with the object which is also called the problem space (Russel, 2001). In this case the object is limited interaction among the B.Ed students. This object is worked upon by the subjects through the use of artefacts or tools. In this case the lecturer and the students are the subjects working together on the object which is limited interaction using the tool like MUELE. The activity is further mediated by tools physically manipulating it or conceptually influencing behavior (Mwanza, 2001). In this case MUELE and its features are the tools which are to be used to improve interaction among the B.Ed students Other artefacts may include teaching/learning resources, course content, learner activities plus any other relevant information. The community also mediates learning since its an environment in which the activity takes place i.e university. This may include the B.Ed lecturers, B.Ed students and MUELE administrators. These communities always have rules that influence human actions in the activity system. According to Russel, (2001) they shape the interactions of the subject and tools with the object. For example the University ICT and E-Learning policies influence MUELE activities like online etiquette, schedules, deadlines etc. The teaching and learning policies also affects the online interactions. Finally an activity normally also features a division of labour among different players. For instance in our case, the B.Ed lecturers teaches and gives activities, B.Ed students learn by engaging into interactive activities while the
System administrators ensure that MUELE is working well to enable the teaching and learning activities to take place.

According to Engerstrom (1987), whereas the subjects acts on the object in order to transform it using mediating art facts to arrive at specific outcomes, the rules of the system mediate between the subject and community and the object. For instance the online interactions proposed designed by the lecturers for the students will be guided by the ICT and E learning policies of the university.

Based on this study, AT is illustrated in the model below;

3. Approaches and Methods

3.1 Affordance analysis eLearning design framework

This study used the Affordance analysis eLearning design framework. This was chosen because it could help in matching tasks with technologies to construct e-learning task designs. This study was done among students offering a course titled Policy planning and implementation on the B.Ed programme. The following steps are followed while employing this framework:

i. Identifying the educational goal – In this study, our goal was to improve interaction among the distance learners offering blended B.Ed. programme at Makerere University.

ii. Postulate suitable learning tasks – These are tasks which are in line with the educational goal and could foster interaction among the learners. For example, a task that required them to share individual ideas as well as comment on each other’s submissions.

iii. Determine affordance requirements of the task – In this case, to establish the affordances needed to provide the desired interactions. For instance, media, temporal and navigational affordances.

iv. Determine available affordances – Depending on the context, determine the technology affordances. In this case determine medias that can afford the interactions to support the learning task.
v. **E-Learning task design** — Here we synergise the affordances of the learning tasks and the affordances of the tool. Different studies have shown that if there is a mismatch between affordances of the task and those of the tool, can lead to learner frustration.

**Learning Task / Activity**
Learners were randomly divided into groups of five. The lecturer posted the reading materials and the task on LMS. The task required each learner to share their understanding of the concept of Social policy by posting their contributions to the group forum. The groups were expected to discuss the different opinions from members and thereafter make a one-page summary and post it in the open forum for other groups to access their ideas. It was a requirement that each student comments on at least two group submissions. The weaver of each group finally made a one-page summary after getting feedback from other groups in the open forum and submitted it for assessment to the lecturer through the official submission system on the LMS. The activity structure was adopted from Mayende, Prinz, Isabwe, and Muyinda (2016).

Given that this course is part of the courses required to be done in their programme, the facilitator, with emphasis, informed the learners that their submission will attract a mark. The marks are divided as follows. This group assignment contributed 20% of the final coursework mark. Students earned marks for individual submissions (5%) and groups also earned marks for their preliminary submissions (5%) and final submissions (10%). They later did a take home assignment which contributed (20%). Therefore, the group assignment score of 20% plus the take home assignment of 20% contributed 40% as a continuous assessment mark. The final course examination contributed 60%, which was then added to the 40% from the continuous assessment to give 100%. This therefore encouraged students to submit their individual contributions, which is a precursor to better interactions in the group processes.

**Affordance requirements of the task and tool**
The study endeavored to appreciate the learning context to carefully select and utilize the technologies for carrying out the given tasks. In this case, the task required the technology or tool that possessed media, temporal and navigational affordances to facilitate and foster student interaction. LMS could afford view-ability, read-ability and write-ability which enabled students to view and read the tasks and activities given by the lecturer and then be able to write back. This facilitation of knowledge exchange and interaction fostered learning among students. Specifically, the temporal affordances of LMS included accessibility to the LMS anytime anywhere, for students to interact and make their contributions to the group activities. This unlimited access to LMS enabled both synchronous and asynchronous interaction to take place, making the learning experience friendly and flexible.

The navigational affordances found with LMS included features like browse-ability, link-ability and search-ability. These also enabled students to browse other sections of the resources by moving back and forth, linking to other sections within the resource or other resources. This easy access to information and resources enables meaningful interaction and richer discussions, which promotes deep learning. MUELE was therefore found to be an appropriate tool to improve interaction among the blended distance learners because it had the required affordances for the task.

The affordance requirement of the task was to improve interaction among the blended B.Ed. students at Makerere University. On the other hand, the affordance requirement of the tool was to enable B.Ed. students to interact online using MUELE. Given that all registered students had access to MUELE, it was found to be the most appropriate tool to use to improve interaction among distance learners. This enabled the students to access course materials and activities anywhere anytime.
3.2 Methods
This study was done among students offering a course titled Policy planning and implementation on the B.Ed. programme of Makerere University. This course was offered in the second semester of 2016 to 54 students. Qualitative data collection methods were data like semi-structured interviews and observation of the interaction logs within the groups and open forums. Students specifically filled a questionnaire which measured their former ICT skills, policies, ICT infrastructure, their attitudes towards online study, structure of online activities, quality of interactions, user experiences, motivation, challenges etc. Data was then transcribed and validated by a second person. This data was then analysed through creation of themes. The information from the log files was then combined with group interviews and other field notes to determine the extent to which MUELE can improve interaction among the B.Ed students using activity theory lens. Following the AT methodology, student interviews were content analysed to determine tensions which emerged as a result of introducing online interactions on the programme and how they are likely to influence MUELE usage.

4. Discussion of findings

4.1 Research Question 1

How can MUELE be used for increasing interaction for learning among the B.Ed students at Makerere University?

The study endeavoured to appreciate the learning context so as to carefully select and utilise the technologies for carrying out the given tasks. According to Jonassen et al (2005) there is need to first determine the requirements of the task before technological affordances for effective implementation of the e-learning design.

The affordance requirement of the task was to improve interaction among the blended B.ED students at Makerere University using MUELE. On the other hand the affordance requirement of the tool was to enable B.Ed students to interact online using MUELE.

In this case, the task required the technology or tool that possessed media, temporal and navigational affordances so as to facilitate and foster student interactions. MUELE could afford students these affordances since it possessed software features such as view-ability, read-ability and write-ability which enabled students to view and read the tasks and activities given by the lecturer and then be able to write back their ideas. This facilitation of knowledge exchange and interaction fostered learning among students. Specifically, the temporal affordances of MUELE included accessibility which enabled students to access the LMS anytime anywhere to interact and make their contributions to the group activities. This unlimited access to MUELE enabled both Synchronous and asynchronous interaction to take place making the experience even friendlier due to flexibility. The navigational affordances were also found with MUELE which comprised features like browse-ability, link-ability and search –ability. These also enabled students to browse other sections of the resources by moving back and forth, linking to other sections within the resource or other resources. This easy access to information and resources enables meaningful interaction and richer discussions which promotes deep learning.

All these MUELE affordances enabled students to read through the course materials, share individual ideas about the tasks and activities given, comment on each other’s work and make refined summaries for assessment. This component of self and peer evaluation through comments on other students’ submissions
is also useful for promoting critical reflection. However, all in all, the structuring of activities for students from individual to group and then open forum, fostered interaction among students. Individual submissions at group level help in refining ideas before submission to the open forum. The feedback from other groups after submission to the open forum helps to improve and sharpen ideas before final submission for assessment. This iterant process of interactions at various levels fosters learning. To ensure active participation assessment was integrated in the learning process where marks were attached to individual submissions.

4.2 Research Question 2

**How can Activity Theory be used to interrogate social - cultural factors influencing the usage of MUELE for online interactions?**

The interviews with students and facilitators were analysed to establish the tensions and contradictions both between and within the components of the activity system as a results of using MUELE to improve online interaction among students. While making analysis, a number of contradictions were revealed.

**Contradiction one: within the subjects**

Subjects are actors engaged in the activities in the system. In this case the lecturer and the students are the main actors working together on the object (Limited interaction) to achieve the expected outcome (Increased interaction). When the students were interviewed about their experiences in using MUELE to do interactive activities, most of them expressed positive views. Nevertheless some of them expressed sceptism with the effectiveness of the online study due limited online skills by both the learners and the facilitators. The study established that due to limited online facilitation skills by lecturers, MUELE platform has been relegated as repository for courses and notes. This is contrary to the pedagogical approach of social constructivism which is embedded in the platform. The subjects (Lecturers) are instead using MUELE for instructivist purposes of documentation and posting notes as opposed to promoting collaborating learning (Najjuma & Mulumba, 2014).

Additionally, the other tension revealed by the study among the subjects (lecturers) was related to time spent on attending to students online compared to face to face discussion. Managing online interactions is demanding especially if you have a large number of students under your guidance. This extra responsibility brings tension in the activity system where lecturers’ are not motivated for extra effort and time spent online. One of the lecturers had this to say

“It’s convenient for me to facilitate a face to face discussion group with all the students in attendance than doing it online since it requires more time and effort and besides the university does not consider the time I spend online with students”

**Contradiction two: Within tools**

The other tension which was revealed from the data was related to mediational means. The tools employed were conceptual tools like the MUELE software and course designs while the physical tools included computers and other resources. Effective online interaction however means careful deployment of conceptual tools which involve the careful design of the course with learning tasks and activities which foster interaction. This is because the way the course tasks and activities are designed influences student’s participation in the forum and consequently learning processes. This new pedagogy therefore brings tension
or contradiction since it requires lecturers to prepare their lessons differently from the conventional way they are used to. The lecturers are still preparing the learning activities the conventional way because they are easy to design compared to the online activities. On the other hand, the study also revealed limited online facilitation and learning skills hence making the lecturers to continue using the instructivist methods as opposed to social constructivism. One lecturer had this to say;

“Online activities require a lot of time to prepare compared to face to face activities. Our time and effort has to be fully compensated if we have to adopt online facilitation”

Contradiction three: Rules

Activity systems always have Rules which are broadly understood not only as formal, explicit rules but also as unwritten like norms, routines, values etc. For example, all academic activities at Makerere University are governed by the teaching and learning policies. All online activities on MUELE are guided by the Open, Distance and ELearning policy. The study found out that there is a contraction in that as much as the eLearning policy stipulates that all academic programmes must have an online presence, very few courses have been uploaded on MUELE. Those that have been uploaded have not been designed as online programmes to facilitate independent study. Similarly, as much as MUELE is moodle platform developed on pedagogical principles of social constructivism, there are limited online interactions for learning purposes. This is again due to absence of well-designed courses with interactive activities to promote collaborative learning.

On the other hand, for students to be able to interact with others, they had to be registered and open an account with MUELE. The norms for online discussions were also provided to them for both synchronous and asynchronous interactions. These schedules and routines according to students’ interviews, became very demanding while doing the activities because they for the ad to log in almost every day and also keep to the deadlines set for each activity. This according to some students did not only disrupt their other obligations but also quite rigid hence going against the principles of ODL.

One student had this to say;

“I enrolled on a Distance Education programme because I am a busy person man and wanted a flexible course structure which can enable me to study as well as attend to my other obligations. But now, blending the programme has made it unfriendly because of the requirements and deadlines associated with e-learning.”

Contradiction Four: Division of labour

Using the lens of Activity Theory, you realise that people take on different roles in the activity system. While using MUELE to increase interaction several practitioners were involved in the teaching and learning processes to ensure that systems and tools are working well. In our case study, the following people were involved; the lecturers (designing the course), students (Learning and interacting), system administrators and e-learning administrators (ensuring that MUELE is working and up to date). Tensions were reported by students when it came to group work. Many reported challenges associated with online group work as opposed to individual. Some students are free riders making others doing more work than what is allocated to every member of the group. The interviews also revealed that due to poor cooperation within the groups a lot of work was done individually than interactive. This was mainly because of different goals of group
members. While others wanted to excel, there are those who just want to fulfil the required task as long as they pass.

One student said;

“I did not benefit much from the online group work because there were no meaningful interactions as my peers did not post serious contributions after researching. Some posted for the sake of being seen to have participated.”

5. Limitations of Activity Theory

Activity theory tends to ignore the individual subject and instead focuses on the activity system. However when designing tasks and activities for our students, we need to observe that students learn differently or rather have different learning styles which have to be put into consideration Cerbin (2011).

Important to note also is that Activity theory focuses on localised and social practice which at times cannot be used for generalisation of reality on other contexts.

The study looked at only one course unit on the B.Ed programme “Policy planning and Management”, consideration should be made for other course units too.

6. Conclusion and Recommendations

Based on the explored literature, one can confirm that the activity theory enables a researcher to investigate a problem from a socio-cultural angle leading to a better understanding of the phenomenon. This knowledge gives guidance on the right tools to employ to solve the problem, the way they should be deployed as well as the likely challenges to be encountered as you try to mitigate the problem.

We conclude that MUELE can assist in improving learner interactions among the B.Ed students because of the rich interactions exhibited by students on the platform. These were mainly facilitated by the media, temporal and navigational affordances of MUELE. The rich interactions were also facilitated by well-structured interactive activities posted by the instructor. The way the activities were set up and organised enhanced student engagement and also enabled multiple feedbacks from both individuals and groups. Similarly, the fact that the course was graded, learners were also motivated to participate in the online discussion forums coupled with an attachment of marks to contributions.

Through the lens of AT, we able to see beyond the surface and appreciate the underlying tensions and shortcomings of the interventions while trying to improve teaching and learning processes. For example, effective online interactions among students depends on the structural design of the course and its activities. The tools (MUELE) alone do not increase interaction instead it has a lot to do with the pedagogical design of the course. Similarly, low motivation of staff and limited user skills has influenced usability of MUELE at Makerere University.

However as observed from the results in spite of these interventions, there were tensions and contradictions within the activity system which affected students’ interactions and therefore need to be handled so as to ensure smooth online interactions on MUELE. The issue of motivation was strongly raised by the lecturers because of the immense work and time that goes into preparations for online studies. As the Makerere University embraces e-learning, there is need to think of how to facilitate online tutors technically and financially.
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8. References


Integrating working students in Higher Education (HE): a case study

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Abstract
As lifelong learning is essential for the future of our society the EU set an ambitious target: 15% of the population aged 25-64 should be taking part in continuous education by 2020. So flexible learning approaches for a diverse student population are central in the institutional policy of the University of Antwerp. The focus of this paper will be on a specific target group: mature students in higher education who combine a full time job with their study programme.

Almost a decade ago the University of Antwerp adopted an inclusive approach in order to meet the requirements of working students and founded the Centre for Work and Studying (Centrum WeST) in close co-operation with the Open University in Flanders. The centre operates directly under the Department of Education and aims at removing any institutional, social and personal barriers that prevent working students to have equal opportunities of study. As the Centre actively promotes and supports blended curriculum development the University of Antwerp now offers 25 inclusive and innovative bachelor and master programmes, fit for working students but also beneficial to regular students. To date the centre remains unique in Flanders. So its career counsellors inform students about flexible learning paths offered by the University of Antwerp but also by other Flemish institutions.

Only by providing a flexible and inclusive institutional model universities can play a crucial part in a society that gives priority to upgrading the skills and knowledge of all its citizens within the European framework of lifelong learning.

Keywords: lifelong learning, higher education, working students, career guidance
Introduction
The promotion of lifelong learning and social inclusion is high on the policy agenda of the European Union. Strategic frameworks such as Education and Training 2020 (ET 2020) aim at widening access in higher education (HE). These frameworks are also beneficial to those who are traditionally underrepresented or excluded (European Commission/EACEA/Eurydice, 2015). It will also increase the chances and opportunities for those who struggle to (re)enter HE. One of these groups is working students: students who combine work and studies.

Demand is high for lifelong learning (LLL). The amount of adult learners in HE is increasing steadily, especially one group: working students. In Flanders the number of working students in HE increased by 20% in the last 5 years (Vlaams Parlement, 2017). Even though supply of eligible and well-adjusted programmes are limited and sometimes lack the necessary flexibility. It is therefore important to get a clear overview on the target group in order to develop tailor-made programmes which cater for their specific needs.

One of the main obstacles for working students is a lack of employer support or conflicts with their work schedule. These obstacles hamper the promotion of a diverse student body. Low participation rates in lifelong learning/adult learning also lower competitiveness and undermine Europe’s potential to generate smart growth (European Commission, 2012). It is therefore essential to create flexible, innovative learning approaches and delivery methods in order to improve quality and relevance while expanding student numbers.

In this paper we will focus on the target group: working students. First, we will give a short overview of some of the strategic frameworks concerning lifelong learning which are related to the issue of combining work and studies in HE. Secondly, we will provide a clear definition of working students and look at some of the challenges they face. Afterwards we will shift our focus to our in-house experience. We will discuss the diversity policy at the University of Antwerp and how it is implemented through e.g. career counselling and the creation of flexible learning paths. Finally, we will give some figures related to working students at the University of Antwerp, the implementation and adoption of an inclusive approach and how such a policy can be beneficial to regular students.

Literature review

2.1 Inclusion and diversity in higher education

In general, EU countries face three main challenges in raising higher education attainment levels i.e. broadening access to higher education, reducing dropout rates and improving the quality of higher education. Lifelong learning, inclusion and diversity hold part of the answer. The Leuven/Louvain-la-Neuve Communiqué (2009), the Council Resolution on a renewed European agenda for adult learning (2011) and the Europe 2020 strategy for smart, sustainable and inclusive growth stress the importance of implementing lifelong learning policies in the higher education sector. They are key elements in response to a rapidly changing economic situation, to demographic ageing and to the broader economic and social strategy of the European Union (European Commission, 2010).

In 2009, ET 2020 set four common EU objectives to address challenges in education and training systems by 2020. One of which was making lifelong learning and mobility a reality. It also entailed some EU benchmarks
for 2020 on tertiary education and adult learning (Eurydice, 2011). Some are in reach or have already been obtained (e.g. at least 40% of people aged 30-34 should have completed some form of higher education: EU average: 39.1% and Flanders 47.1%) but other benchmarks are still far off target (e.g. at least 15% of adults should participate in lifelong learning (EU average 10.7% and Flanders: 7.1%) (Eurostat, 2016a/b). Adult learners are also far more likely to participate in non-formal learning activities than in formal training, which means that these newly obtained skills are mostly acquired through short term programmes related to in-house competences. These are also less likely to be transferable.

Obtaining a degree at a traditional higher education institution at a later age still remains an arduous task seeing that provisions are often limited. Younger students often outperform part-time students and older students. Distance learning activities can offer a good alternative but some mature students are hesitant to enrol because of concerns regarding costs, lack of contact with instructor and fellow students … (Pozdnyakova & Pozdnyakov, 2017). The Adult Education Survey (Eurostat, 2011) shows that during the last 12 months preceding the interview, as little as 2 % of all adults in the EU participated in a formal or non-formal learning activity with distance learning. Another pathway which remains open is the validation of non-formal and informal learning (e.g. work experience). Validation can be provided by HEI or public employment services (European Commission/EACEA/Eurydice, 2015).

2.2 Working students: a definition

General terms such as ‘non-traditional’, ‘second chance’, ‘adult’, ‘mature’ and ‘working’ students often overlap within a European context (Panacci, 2017). They refer to either older students (older than 23-25-30 years), students who did not participate in any form of formal education in the previous year or students who combine work and studies (as an employee, with a student employment or with an apprenticeship).

Combining work and studies is not per definition an obstacle or negative. Some researchers even describe positive returns from student employment. After graduation these students have a lower unemployment risk, a shorter job-search duration, a higher wage effects and a greater job responsibility (Geel & Backes-Gellner, 2012). In these cases it acts as a signalling function. Other researchers find only moderate positive effects if work is in the same field of study or claim that the effect is smaller and statistically insignificant in later years (Häkkinen, 2006). Baert, Rotsaert, Verhaest and Omey (2016) found through experiment that neither form of student employment (related or unrelated) enhanced initial recruitment decisions.

These research results offer a diffuse view concerning the effect of student jobs. There is also a significant difference between a student job and employment. General employment is often an essential part of a person’s identity. In this paper we will also focus more on the target group of working students who combine work (i.e. general employment) with a study. In order to be eligible for additional provisions at the University of Antwerp, working students should hold at least a part-time job (50%), not a student employment. No requirements were set regarding age or minimum credits.

2.3 Issues faced by working students

The decision-making process of working students is often based on a cost and benefits analysis for the whole family unit (Gill, Hayes & Senior, 2015). Working students are not in a position where they can put their job
on hold, seeing that it is often their only source of income. Taking in account all these constraints, students who combine work and studies often have a higher intrinsic motivation than traditional students (Baptista, 2011). Callender and Feldman (2009) identified six discrete though often overlapping groups: ‘delayed traditional students’, ‘late starters’ following a life changing event, single parents, ‘careerists’, ‘escapees’ and ‘personal growers’. Even though they are highly motivated, combining work and study appears to have in general a negative effect on academic progression and completion. Moulin, Doray, Laplante and Street (2013) found that there is a critical threshold of 24 hours of work a week, beyond which negative effects in terms of non-completion start to appear. They find no negative effects arising from not working vs working a few hours. Triventi (2014) also found a negative correlation for low-intensity work once accounted for unobserved heterogeneity.

The commitment of multiple roles, such as employment, family, and financial responsibilities generate higher levels of stress and anxiety (Lin, 2016; Sahari, Yusup, Affidah & Aiza, 2013). It can also have a negative effect on mental and physical health (da Luz, da Silva, Turte, Lopes & Fischer, 2012; Stone, 2014). Combining work and studies requires good stamina, motivation, time-management and planning.

As mentioned earlier, working students are often confronted with a lack of employer support or encounter conflicts with work schedules which impede them from starting, continuing and completing HE studies. Next to work related issues, family issues, other responsibilities ... play a role in extending the duration of studies. Increasing the duration can also increase inequality and decrease diversification in HE when studying entails high financial commitments (e.g. enrolment fees) (Metcalf, 2003).

Researchers also looked at preferences of working students concerning studying, teaching methods, attitude ... These seem to be in line with traditional students but also differ on some significant issues. Working students show higher levels of engagement and put a stronger emphasis on relating classroom learning to work related experiences (Woods & Frogge, 2017). They also prefer active teaching methods to classical teaching models which facilitate interaction with teachers and students.

These research findings have important implications on an instructional level for academic staff in HEI who want to cultivate an environment adapted to and suitable for lifelong learning. A differentiated approach seems necessary in order to cater for the needs of working students. Providing flexibility in study programmes to meet individual needs, encouraging autonomy and independent learning, providing variety in format and style and supporting collaborative inquiry are essential in providing the necessary tools for success (Chen, 2014).

University of Antwerp: institutional, strategic framework

In order to guarantee an open educational market to working students the institutional strategy needs to focus on an innovative and successful transition to technology based teaching and learning. Both faculty members and administrative staff should be aware of lifelong learners’ need for flexibility and their specific learning profile.

Reaching this goal of continuing education and training for working students requires rethinking and redirecting traditional educational systems towards stimulating open and flexible learning paths that accommodate different types of learners in a supportive mutual learning environment.
Embedding concepts of widening access and lifelong learning in their institutional strategies is definitely a fundamental task for the universities. However, it is also a common goal for society as a whole to stimulate a culture of lifelong learning, which should develop incentives for working students and curriculum design fit for purpose. There is also an urgent need for debate on how lifelong learning programmes that will benefit individuals, employers and society as a whole can be funded fairly and adequately. In times of economic crisis and budget restrictions the key challenge is to find ways to open up the current educational services to a more diversified student group and to ensure further learning opportunities throughout a lifelong career.

In his policy declaration for the academic period 2008-2016 the rector of the University of Antwerp defined some explicit targets on lifelong learning:

- The number of working students should increase from 700 to 1000 (i.e. from 3 to 5% of the student population)
- Faculties should adapt more study programmes for the benefit of working students
- Faculties should develop more short post-academic programmes (20-60 ECTS)
- Faculties should integrate more courses of the Open University of The Netherlands in their study programmes, by recognizing the credits (ECTS) or by setting up joint programmes
- The national authorities should (financially) reward the university's efforts for working students.

In 2016 the newly elected rector confirmed these targets, while also assigning a specific role to distance learning as offered by the Open University alongside the traditional study programmes for working students. This strategy aims to bring more students in higher education, with improved success rates for students from disadvantaged groups.

The University of Antwerp distinguishes four interrelated core values in its vision on education, which apply to lifelong learning as well:

- **Nexus education - research.** Academic education is rooted in scientific research. University students need to acquire essential knowledge and skills to fulfil their part in society.
- **Competence-oriented education.** Students develop competences as an integrated whole of knowledge, skills and behaviours. Thanks to these competences the university graduates are able to act effectively and efficiently on an academic level in a professional environment.
- **Student-centred and activating education.** Students are seen as active and independent partners who manage their own learning. The educational programme should stimulate and support that attitude. It has an eye for specific talents and a genuine respect for different educational, professional, social, cultural or religious backgrounds and individual ambitions.
- **Internationally oriented education.** The university wants to foster an open and global vision in its students by international exchange and joint programmes. Students get the opportunity to prepare themselves for participation in scientific research at an international level.

In 2006 Antwerp University started two educational innovation projects concerning working students (in the faculties of Law and Social Sciences). The main purpose was to offer an alternative for the traditional ‘evening programmes’. Both projects expired after one year but the University of Antwerp wanted to continue its efforts for the specific needs of the working students and launched Centrum WeST, a Centre for Work and Studying, in September 2008. The centre operates directly under the Department of Education, as it provides information and guidance to students who combine a full or part time job with a degree-oriented
study programme. Within the Department of Education Centrum WeST closely co-operates with the Open
University in Antwerp.

Centrum WeST, the Centre for Work and Studying, covers five main goals:

1. widening access to higher education

The target group of the centre are students who combine their study with a regular job. Since they also have
a third aspect to consider, their family life, the combination is not obvious at all. So the aim of the centre is to
increase and sustain the motivation for lifelong learning, particularly among economically disadvantaged or
low-qualified groups, by offering information to working students through various channels (e.g. brochures,
website, newsletter, e-mail, personal appointments ...).

2. coaching and supporting working students

Besides informing working students, Centrum WeST also supports them in their study. Working students
often have not studied for a long period of time and going (back) to university might be a new environment
they are not familiar with. Problems may arise with planning the study load, IT skills, reading and writing
academic texts, etc. Therefore Centrum WeST organizes - in cooperation with other departments and
services- evening sessions and workshops to learn or refresh skills that are required for an academic study.
The centre also offers networking activities and lectures on lifelong learning related topics.

3. development of courses in blended learning in collaboration with teaching staff

In order to guarantee an open educational market to working students the institutional strategy needs to be
based on innovation and change. Therefore the University of Antwerp focuses on a successful transition to
technology based teaching and learning through its electronic platform (Blackboard), which is also used in
the evaluation process.

This system of blended learning is an interesting approach for the working students since the amount of
lectures and working sessions can be strongly reduced and the study material is developed for distant
learning and adapted for self-study. In close co-operation with the Open University of The Netherlands, the
centre promotes and supports blended course and curriculum development in all faculties in order to meet
the requirements of working students.

4. promoting the interests of lifelong learners

Centrum WeST tries to make sure that the interests of the working students are taken into account, both
through internal collaboration with different university departments and services and external contacts with
all stakeholders. Both faculty members and administrative staff should be aware of lifelong learners’ need for
flexibility and respect their specific learning profile (Huybrechts, 2012).

5. career counselling

Career management skills play an important role in the context of both flexible and lifelong learning
Callender & Feldman, (2009). So in co-operation with the Flemish Ministry of Work Centrum WeST offers
publicly funded career guidance services to employees who want to strengthen their position on the labour
market by getting an additional HE degree. A professional career counsellor can put a person’s qualifications,
experience, strengths and weaknesses in a broader perspective while also considering his interests and
educational perspectives. So Centrum WeST supports mature students in gaining a better understanding of what really matters for them personally and professionally and helps them plan the combination of work and study more efficiently.

**Working students and flexible programmes at the University of Antwerp**

In the previous section we discussed policy implications concerning working students at an institutional, strategic level. In this section we will have a closer look at how these strategic plans are translated into practice and how they affect working students. In particular we will elaborate on what students can expect of working student programmes and the main characteristics of working students. We will also focus on study success of working students and how these numbers compare with traditional students and other target groups. The figures and data used in this section are specifically related to the University of Antwerp.

Each year, a larger number of working students enrol for study programmes at the University of Antwerp. In six years, the amount almost doubled. The same can be said of the relative importance of working students (see below: figure 1). In the last academic year (2016-2017) one in twenty students was registered as a working student. Their numbers also grow faster than those of traditional students, resulting in a higher share of the total student population. It is also important to note that around 13% of the working students are ‘first-time students’, who have never enrolled in a HEI previously.

**Figure 1: Evolution: working students at the University of Antwerp**

There are also large differences in-between faculties (see next page: figures 2 and 3). Preferences of working students and the amount of (flexible) programmes offered by the faculties are the main reasons for these large fluctuations. The faculty of Medicine and Health Sciences (7.5%), the Faculty of Arts (5.5%), the Faculty of Law (6.5%) and the Faculty of Social Sciences (14.6%) stand out. They have a higher concentration of working students within the student population (more than 5%). All these faculties also have popular, flexible programmes for working students (Master of Nursing and Midwifery (MHS), Bachelor and Master of Philosophy (ART), Bachelor and Master of Laws (LAW) and Master of Instructional and Educational Sciences (SOS)). In some master programmes such as Nursing and Midwifery and Instructional and Educational Sciences working students outnumber regular students.
There are also some statistically significant differences between regular students and other target groups. Working students have on average a lower study success rate (see below: figure 4). These differences are only statistically significant for bachelor and master programmes, not for bridging programmes. Study success is especially low for working students in bachelor programmes, but these figures are negatively skewed because of the high representation of working students in the Bachelor of Laws, which only has an average success rate of 50%. Working students are in general also older (on average 32 years old) and take up less credits each year than regular students but also less than other target groups. On average they take on 44 credits each year.

Figure 4: Study success of target groups compared with traditional students
Flexible programmes for working students and the Centre for Work and Studying (Centrum WeST)

In order to combine a study with a job and a personal life, the University of Antwerp created blended learning programmes for working students. ‘Blended learning’ is a very broad term with many possible interpretations. These pathways are often a mix of different teaching methods, additional provisions … Each programme is tailor-made, which means that each one is different. These provisions for working students at the University of Antwerp will be discussed in the next paragraphs. Blended learning pathways are characterized by a reduced number of teaching hours and more independent studying. In addition, lectures are often grouped on specific days or evenings in order to increase attendance rates.

Blended learning not only varies between the programmes but even varies between the courses. Each programme is different due to its specific character. Every course has to be looked upon separately and be adjusted to its goals and needs.

No matter how the course will be translated into a blended learning project the educational approach demands some underlying technical support. Students are provided with good educational tools such as a digital learning system (Blackboard) and clear and good structured didactical material to support e-learning.

In addition, some classes are recorded and made accessible to the students through streaming video. Students have the possibility to watch the classes whenever they want and as often as they like. There is also the opportunity to watch only short bits or even a couple of classes at a time.

Since it is often difficult for working students to attend weekly classes, the teaching hours are most of the time used for exercises, explanation by the lecturer or questions from the students. The study material is also developed for or adapted to independent learning.

In some cases, faculties chose to install additional contact moments during the evening which are only available for working students. Depending on the content or approach (practical or theoretical) one or more lecture moments are added to the programme. The simple fact of meeting other (working) students is a highly motivating factor. Working students experience through the contact moments that they are part of a group.

Centrum WeST coordinated in tandem with the various faculties the development process of these adjusted programmes. Almost every faculty has one or more working student programmes and in total there are 25 such programmes at the university.

Students who combine work and studies have multiple options. One of which is the Open University of the Netherlands (OUNL) which offers innovative distance learning. OUNL is a Dutch university which has study centres all over the Netherlands and Flanders. Each Flemish university has its own study centre. Study programmes are offered in distance learning and are modular. Students are able to decide at which pace they study, when they take exams … In total 1,086 OUNL-students are registered at Flemish study centres and about one third at the study centre in Antwerp. They account for about 7% of all OUNL-students.

In general these students are older (39.5 years old) and take on a reduced study programme of 15 credits. In Flanders, psychology is the most popular field of study (35.6%). Increasing their chances in obtaining a new job is their main driving force (62%). Students choose for the OUNL for mainly two reasons. First of all because the programmes are very flexible which enable students to set their own pace and secondly because the study programme and/or the form of studying is not offered anywhere else in Flanders. Working student programmes of the University of Antwerp and flexible programmes of the Open University of the
Netherlands are complementary. They offer different pathways in obtaining a university degree. Both approaches are often focused upon when working students enquire about their possibilities to combine work and an academic study.

**Characteristics and needs of working students: implications**

It is important to note that the University of Antwerp actively chose to incorporate working student programmes (bachelor or master) in traditional bachelor and master programmes. That way the university can develop an inclusive approach. It also means that working students and other students follow most of the time the same lectures. Flexible programmes were adopted through blended learning and general exam and educational provisions were created to offer working students additional entitlements. Working students can also choose to enrol in a traditional bachelor or master programme which has not been adapted, but this often means that they have limited flexibility and entitlements.

Working students are a very heterogeneous group. They differ by age, work experience, intake, motivation ... from other students but there are also large within group differences. In order to have a better view on their specific needs the Centre for Work and Studying had a closer look at their profile. In 2014, a survey was set up to discover underlying differences within the group. It was filled in by 167 working students.

In the survey we looked at the group as a whole but also matched each time two distinct subgroups: (1) working students who enrolled in working student programmes and those who enrolled in traditional programmes, (2) working students who already obtained a master’s degree and those who didn’t and (3) working students with a high amount of work experience compared to those with less work experience.

Several statistically significant results were found. Other descriptive statistics also gave valuable information on the characteristics, motivation and needs of working students. The top two reasons which working students mentioned for enrolling at the University of Antwerp were related to practical reasons (work-home distance) and to the availability of adjusted, flexible programmes for working students. Expanding their knowledge is in most cases their highest priority, new job opportunities were scored less highly.

Several questions closed in on the needs of working students. They welcome recordings of lectures and any form of blended learning with additional contact moments during the evening. Distance learning is mainly disregarded as insufficient (64.1%). Less compulsory attendance and more financial support, even though at least 57% of the respondents used one form or the other, were scored less highly.

A majority also indicated that they were well supported by their family and friends (78%). The grade related to work support was lower (48% positive feedback). Half of the respondents (44.2%) indicated that the combination work and studies is too intensive, while only 6.7% claim that the level of difficulty of the programme is too high. Working students apply different study methods which focus on comprehension, reproduction and a critical attitude. They also try to relate their studies to their (work) situation, memorization as a study method is less popular.

When comparing different subgroups we found statistically significant results concerning the choice of programme, prior education and work experience. Working students in flexible programmes put higher emphasis on interaction/contact with other student and teachers as well as additional provisions. Proximity (distance work-home) is less of an issue. They also follow classes more often and have stronger ties with fellow students.
We also found statistically significant differences between students who already obtained a master’s degree and those who haven’t. Students without a master’s degree are driven more by new job opportunities or better working conditions. They also choose more often for flexible programmes, have more issues with finding the right study method and use summaries more often. On the other hand, working students with a master’s degree feel better prepared for the combination work and studies.

Finally, we also looked at differences between working students with more or less than five years of work experience. Working students with more experience choose for programmes which give them more job opportunities outside of their current sector. They also prefer memorizing different learning materials to other study methods.

These results are in line with previous research (see section 2) but also shows how diverse the group of working students is. It is therefore important to develop tailor-made solutions and programmes otherwise they will miss their target.

These kind of policies will not only enable working students to combine work and studies but also modernize university programmes. Modifications such as blended learning, recordings … help exploit the transformational benefits of ICTs and other new technologies to enrich teaching, improve learning experiences and support personalised learning. These benefits will not be limited to a single group: working students. They can easily be applied to all students because of the inclusive approach of the University of Antwerp.

They can also broaden access to higher education, increase participation and completion in higher education for (other) groups in society that are currently under-represented. It will also have a positive effect on dropout rates and the time it takes to complete a degree. Working students, adult learners, mature students … will be able to obtain new qualifications, up-skilling or re-skilling for employment, personal growth, or studying just for pleasure.

Conclusion

Although lifelong learning has been featuring on the educational agenda for years most European countries are a long way from realizing the 15% participation target of the European Commission. In order to guarantee an open educational market to working students the institutional strategy needs to focus on an innovative and successful transition to technology based teaching and learning.

In the twenty-first century European universities are faced with complex social and economic challenges that are generated mainly by the effects of globalisation, demographic changes and technological innovations. The resulting need for constant adaptation can only be met by universities who engage their students in lifelong learning to deal with local developments within a wider European perspective. National strategies should be developed within a European dialogue among universities which are willing to contribute to a culture of lifelong learning that meets diversified learner needs.

In recent years working students have become a specific target group, both for national governments (e.g. the decree on the financing of Flemish higher education) and for universities themselves. Changes in the landscape of higher education in recent years have created more possibilities for this target group. So European universities have adopted a very flexible system for full-time and part-time study that entails some essential LLL characteristics:
• recognition procedures for prior learning (both formal and informal)
  o Students can make use of recognition procedures for formal and non-formal prior learning. By way of these procedures students can be exempted from one or more courses of their degree programme.
• bridging programmes for access to master degrees
  o Universities can offer so-called 'bridging programmes’ for bachelors graduated at vocationally oriented institutions who want to supplement their study with a master’s degree.
• flexible study progress
  o Students can compose quite freely study programmes ranging from 3 to 66 ECTS per academic year. Students can obtain academic degrees at their own pace.

Only by building flexible and inclusive learning pathways within an educational landscape that is rapidly but successfully transformed by technology the university can fulfil its promise to a society that gives priority to upgrading the skills and knowledge of all its citizens.

References


It’s a question of balance: Assuring quality on postgraduate online programmes at Dublin City University

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Abstract
Is it feasible to rely on individual professionalism or accountability to improve quality on a national basis or do we need to put specific metrics in place to promote quality improvement? It has been proposed in some of the literature that micro managing professionals leads to compliance to standards and adjustment of behaviour which may not lead to an improvement in quality. Concentrating on narrow metrics may ignore the development of creativity, flexibility and dependability. Will anything change if it is not measured and benchmarked against best practice nationally and internationally? There appears to be a movement from welfarism and a community based no child left behind approach to a Post-modernist approach which is market led and individual centred. Some of the tools discussed recognise that improvement needs to be inclusive, to ensure authenticity. Improvement processes need to recognise that different stakeholders have contrasting requirements that must be acknowledged communicated and facilitated. These needs can be measured but improvement processes are most successful if they are facilitated, achievable and sustainable. In this paper we look at how we capture the student voice at Dublin City University, Open Education Postgraduate Programmes. We consider how TQM (Total Quality Management, Demming,1981) and The Balanced Scorecard approach ( Kaplan and Norton, 1992) might be applied to Quality Management in a Postgraduate fully online environment.

Keywords: quality control, quality assurance, student feedback.

1. Introduction - What is quality?
“Quality in the technical sense is largely a relative concept. The relative definition views quality not as an attribute of a product or service, but as something which is ascribed to ‘the quality of your essay varies between good and excellent’. Quality in this sense is about being measured against criteria. It is not an end, but a means by which the end-product is judged as being up to (or not up to) standard” offers Sallis (2014, p13). He continues by explaining what the British Standards Institution defines as quality: “What allows the label of quality to be ascribed to any product or service is that it meets the standards set for it. It must do what is claimed for it, and do what its customers expect of it.” It is “fit for purpose”. Who then decides what quality looks like in Education? This is not fixed in time and different approaches have been favoured in different eras.
1.1 Accountability

It was proposed that in the 1970’s and 1980’s educators had a responsibility to themselves as professionals, to their colleagues, to the parents of their students and to society (Poulson, 1996). This accountability fostered quality and maintained standards. This was integral to education, not an external pressure. (Gerwirtz, 1995). To whom are educators accountable? Gardner et al (2006, pp.383-398) suggest:


This led into a democratic approach to accountability, making learning institutions accountable. It was argued that a culture of accountability erodes relationships of responsibility (Biesta, 2004, p.250). Some relationships are made impossible by a culture of accountability he suggests. Biesta proposed that the relationship between educational institutions and parents is an economic one where parents are consumers of a state regulated education market with indirect accountability. The way in which parents hold the government accountable for the quality of education is by using their vote to express their satisfaction. They have no say on how that service is delivered. This promotes a culture where institutions are accountable to the public and measured using metrics like league tables and complaints procedures. Institutions are held accountable for superior performance as measured by these metrics and learn to adapt to these measures.

The financial interpretation of accountability refers to the preparation and presentation of financial documentation (Charlton ,1999). The Managerial meaning of accountability is that an organisation has a duty to present auditable accounts of all its activities. Charlton (ibid) argues that organisational practices had to adapt to be auditable. Society changed from a welfare targeted approach which values public service, equity, care and social justice to new managerialism characterised by quality assurance. (Gerwirtz, 2000)

1.2 Evidence Based Reform Models - No Child Left Behind

US congress provided $150 million per annum to adopt proven comprehensive reform models using evidence based education policies (Slavin, 2002, p.15). The thinking was that medicine and industry were reluctant adopters of scientific methods to incrementally and systematically improve standards, but that when they embraced the scientific approach, unprecedented improvements to quality followed. Likewise, he proposed, the upscaling of proven teaching methods would have an equally dramatic impact on education. In the “No child left behind” (Linn et al 2002) scheme, the Bush administration in the U.S. defined scientifically based research as rigorous, systematic and objective procedures to obtain valid knowledge. The aim of this research was to produce a progressive systematic improvement over time. Research in education should be based on replicable programmes (Slavin, 2002, pp15- 21). He further reminds us that rewards and sanctions based on test score gains can be inexact and are unreliable indicators of quality.

1.3 Performativity

Performativity is a technology, a culture and a mode of regulation that employs judgements, comparisons and displays as a means of incentive, control, attrition and change based on rewards and sanctions Ball (2003, pp. 215-228). Management responsibilities are delegated; initiative and problem solving are, highly valued. The dilemma however is who determines what is of value and what measures are valid? Ball considered that these new pedagogies of management are realised though performance review and performance related pay, consisting of controlling workers behaviour and making their emotional life public (Bernstein 1971, p.65). Management focus on quality and excellence can increase individualism and destroy
solidarities based on common professional identities and trade union affiliation. As day to day practice is engulfed in an ever-increasing array of figures and indicators the question is posed are we doing something because it is worthwhile or are we doing it because it is measured and will make us looks good? This can lead to self-doubt and anxiety. Ball (ibid) highlights that acquiring the performative information for perfect control consumes so much energy that it drastically reduces the energy available to make improvements. Judgement and authenticity can be sacrificed for impression and performance. The management of performance through inspection can produce the spectacle of cynical compliance lacking in authenticity. The role of social relationships and caring is not measurable and therefore not considered of value.

1.4 Balanced Score Card

Financial measures alone cannot capture value creating activities (Kaplan and Norton, 1992, pp.71-79). They suggested four perspectives that should be measured to satisfy different stakeholders:

The Financial Perspective: How do we appear to shareholders?

The Customer Perspective: How do we appear to customers?

Internal Business Processes Perspective: What processes must we excel at?

Learning and Growth Perspective: How can we sustain our ability to learn and grow?

A Critical Success Factor (CSF) for the successful implementation of a Balanced Scorecard (BSC) is that the measurement of all four perspectives is aligned with the vision and strategic objectives of the subject.

1.5 Total Quality Management (TQM)

Authorities in the US in the 1980’s became aware of the decline in quality of university graduates as highlighted by sectors of the economy, including business and industry. Burkhalter (1996), reports public concern for accountability in higher education, spiralling tuition fees, and decline in student performance in
standardized and professional licensing exams. One of the ways this was addressed was the introduction of Deming’s Total Quality Management (TQM). Narasimhan (1997) reports that the first application of TQM in US higher education was at Fox Valley Technical College (FVTC). The adoption of TQM principles resulted in Fox Valley becoming more efficient in areas like graduate placement, employer satisfaction with graduates, college credits being accepted for accreditation at receiving institutions and an improved learning environment. Many other institutions followed in implementing TQM. Deming advocated eight TQM principles:

1. Create constancy of purpose for improving products and services.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. End the practice of awarding business on price alone; instead, minimize total cost by working with a single supplier.
5. Improve constantly and forever every process for planning, production and service.
6. Institute training on the job.
7. Adopt and institute leadership.
8. Transformation (Powell, 1995)

As a methodology, TQM attempts to promote quality in a team based, supportive, transformative learning environment. In the UK TQM projects started at South Bank University, University of Ulster, Aston University, and Wolverhampton University (Doherty, 1994). TQM principles and core concepts were implemented through the attainment of critical success factors as described by Daniel (1961). The Kanji (1998b) Business Excellence model can be used to derive the critical success factors for the development of higher education. Kanji’s model is made of four principles: delight the customer; management by fact; people-based management; and continuous improvement. Kanji’s model is based on the proposition that to achieve high customer satisfaction level (delight the customer), the organisation had to improve continuously all aspects of its operation (continuous improvement); this can be achieved through leadership by making decisions on objective evidence of what was happening (management by fact) and by involving all employees in quality improvement activities (people-based management), leading ultimately to business success.

Kanji Business Excellence Model (1986)

Implementation in an educational environment is not easily achieved.
TQM goes fails when:
- Lack of strong commitment from management.
- Insufficient support.
- Failure to recognise all costs.
- Lack of manpower to achieve complex changes.
- Implementation is confined to administrative functions and supporting activities. (Wolverton, 1993)

Margarida Saraiva (2006) points out the following obstacles:

1. Some educators consider TQM to be an “out of place”, administrative philosophy.
2. Rotation of the top management with a consequent lack of consistency.
3. The reward and recognition system in place in the higher education institutions – career progression in education is connected to the time dedicated to research rather than teaching.
4. High levels of bureaucracy and resistance of people to changes in the higher education system restrict the progresses of TQM implementation.
5. Lack of time given by top management.
6. Insufficient time, training and funds. Lack of a perceived and accepted institutional mission.
7. Reluctance to delegate authority.
8. Resistance to working in teams.
9. Teachers’ concerns that the changes might hamper their career progress.

The benefits of successful TQM implementation in an educational context are highlighted by Saraviva are:

- Helping higher education to focus on the appropriate market needs.
- Helping higher education get excellence in quality in across a range of areas.
- Producing systems to lead to high quality performance.
- Examining and removing non-productive aspects of the higher education system.
- Developing accomplishment measures.
- Developing a teamwork approach resolution of problems.

### 1.6 Distance Learning

In distance education self-discipline and self-regulation are key to progress. Due to a shift to online education, the instructor’s role has become more of a facilitator than a traditional lecturer. Therefore, the traditional professor-centred educational environment and this student-centred online educational environment will have many differences. (Yang 2005, pp.1-16) The focus of the institution centres on how the students learning can be facilitated. Lowry (1989) points out “self-directed learning, another central concept in adult education, suggests that the locus of control in learning lies with the adult learner, who may initiate learning with or without assistance from others. Characteristics of self-directed learners include independence, willingness to take initiative, persistence in learning, self-discipline, self-confidence, and the desire to learn more. Mature students can organize time, develop plans for completion, enjoy learning, and remain goal-oriented. Self-directed learning has been confined to the informal learning situation until recently. (Cercone 2008, p137-159.) Advances in technology are such that self-directed learning is worthwhile as well as possible, and educators should encourage this type of learning in the formal classroom (Merriam & Caffarella, 1999). Self-evaluation should be implanted in this process “In the spirit of...
collaboration and reflection, evaluation of student progress and performance should not fall to the instructor alone. Students should be encouraged to comment on each other’s work. Self-evaluation should be embedded in performance evaluation. Quality and quantity of participation should be a measure of overall student performance.” (Palloff & Pratt 2000)

1.7 The Irish Context

In an Irish context, O’ Brien et al (2013, pp.377-393) recognise the value of incorporating TQM values in improving quality in education through implementing self-evaluation. The constraints due to the decimation of middle management in education because of cutbacks, has been highlighted by McNamara and O’ Hara (2012 pp.79-97) who recognise that educators will prioritise essential tasks rather than those seen as optional. Developing a culture of self-evaluation faces structural obstacles. Nonetheless, where a self-evaluation process is facilitator led and incorporates claims made by Ishikawa (1985) that quality improvement systems should include better working relationships, improved communications and improved human relations, progress can be made. Critical success factors include having the facilitator lead the participants through the process in a focussed way. It is important to put process outcomes in place that ensure continual engagement and team building. Goals need to be possible to achieve in available time frames. National participation reporting should be incorporated to encourage benchmarking and to recognise milestones.

1.8 DCU Connected Postgraduate Masters Programmes Quality Control Process

![Quality Control at DCU Open Education Postgraduate Program](image-url)
**Figure 1. – The Foley Framework -Stakeholder Quality Standards and Evaluation Criteria**

<table>
<thead>
<tr>
<th>Stakeholder 1 Students</th>
<th>Quality Standard</th>
<th>Evaluation Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admission Needs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td>Academic Requirements</td>
<td>Honours Degree in Cognate Subject/ Relevant experience over 5 years at Managerial level reviewed by qualified Internal panel</td>
</tr>
<tr>
<td>Cost</td>
<td>Admission Fee</td>
<td>Reviewed Internally annually and compared to competing offerings</td>
</tr>
<tr>
<td>Relevant Curriculum</td>
<td>Current Topics relevant to the Qualification</td>
<td>Modules refreshed on five yearly process Reviewed annually by Subject Leaders</td>
</tr>
<tr>
<td>Contemporary Learning Material</td>
<td>Notes and text relevant and Interesting</td>
<td>Material refreshed on rotating three yearly process: Year 1 Full Update, Year 2 Links and references refreshed Year 3 Partial update. Reviewed by Subject Leader.</td>
</tr>
<tr>
<td>Technological Effectiveness</td>
<td>State of the art Tools and Techniques used</td>
<td>Effectiveness monitored on a weekly basis. Students surveyed annually to identify levels of satisfaction</td>
</tr>
<tr>
<td><strong>Maintenance Needs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sufficient Support</td>
<td>24-hour turnaround on queries</td>
<td>Online Forums and Email monitoring</td>
</tr>
<tr>
<td>Constructive Feedback</td>
<td>Likert scale used</td>
<td>Student satisfaction questionnaires Feedback Monitored by 3rd Party monitors</td>
</tr>
<tr>
<td>Flexible Learning</td>
<td>Opportunity to adjust learning to individual timetable</td>
<td>Online end of year qualitative feedback sessions</td>
</tr>
<tr>
<td><strong>Graduate Attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accreditation</td>
<td>Recognition by International Educational Institutions, employers and industry bodies</td>
<td>Bologna Process of European University Qualifications framework, Auditing process by 3rd Parties Association to Advance Collegiate Schools of Business (AACSB) accreditation.</td>
</tr>
<tr>
<td>Qualification</td>
<td>Nationally recognised qualifications</td>
<td>Qualifications ranked on the National Framework of Qualifications (NFQ) As rated by Quality and Qualifications Ireland(QQI)</td>
</tr>
<tr>
<td>Learning Outcomes</td>
<td>Assurance of Learning (AOL)</td>
<td>Samples collected and subject to spot check by auditors</td>
</tr>
<tr>
<td>Career Advice-</td>
<td>Job Ready Graduates</td>
<td>Employers offering students meaningful, lucrative post qualification career opportunities</td>
</tr>
<tr>
<td>Stakeholder 2. Staff</td>
<td></td>
<td></td>
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<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Health &amp; Safety</td>
<td>Safe and Healthy Work Environment</td>
<td>Accident/ Near miss Reporting &amp; Documentation</td>
</tr>
<tr>
<td>Resources</td>
<td>Tools to carry out responsibilities</td>
<td>Repair &amp; Maintenance Schedule Documented</td>
</tr>
<tr>
<td>Training &amp; Development</td>
<td>Opportunities for CPD</td>
<td>In house, certifiable training available at all levels, in a wide range of topic areas</td>
</tr>
<tr>
<td>Progression</td>
<td>Internal promotion</td>
<td>Notification of Campus-wide opportunities</td>
</tr>
<tr>
<td>Remuneration</td>
<td>Market rate recompense</td>
<td>Annual Review- Performance Management Development System (PMDS) Process</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stakeholder 3. School (University)</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Transparency</td>
<td>Open Documented processes</td>
<td>Audit Trail Quality Review - Periodic Programmatic Review (PPR) Process Benchmarking</td>
</tr>
<tr>
<td>Financial viability</td>
<td>Break even or better provision</td>
<td>Financial Metrics and Record Keeping monitored by Finance</td>
</tr>
<tr>
<td>Governance &amp; regulation</td>
<td>Marks &amp; Standard Processes</td>
<td>Exit awards verified by Progression and Awards boards in collaboration with Registry</td>
</tr>
<tr>
<td>Control compliance</td>
<td>Best International Practise</td>
<td>Changes reviewed by University Committees</td>
</tr>
<tr>
<td>Mission</td>
<td>Excellence awards</td>
<td>Good practice and outstanding achievement recognised by President awards</td>
</tr>
<tr>
<td>Contribution</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Stakeholder 4. Society</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizens</td>
<td>Responsible, capable graduates</td>
<td>Alumni awards</td>
</tr>
<tr>
<td>Research</td>
<td>Public Discussion</td>
<td>Public Academic Engagement, Massive Open Online Courses</td>
</tr>
<tr>
<td>Lifelong Learning</td>
<td>Learning Platforms</td>
<td>Provision of opportunities to fill learning requirements of society</td>
</tr>
</tbody>
</table>
1.9 Capturing the Student Voice

Student Surveys

All Postgraduate Programme participants are requested to complete an online survey by module and are advised that their responses will be anonymised. In advance of the research, ethical approval is requested from DCU’s Research committee and no research is initiated until this approval has been received. Participants can indicate their requirement for a copy of the findings by indicated this request on a tick box √. The questionnaire is fully completed online. It begins with some general background questions to profile the sample. The questions for quantitative analysis take the form of scored responses on a Likert Scale from 1-5, 1 representing very satisfied and 5 representing very unsatisfied. The results from individual submissions are then aggregated anonymously to produce general patterns or trends of student satisfaction levels, under relevant categories. These results highlight both areas of excellence to be built upon and weak areas which require remedial action.

Figure 2 Student Satisfaction Survey - DCU Open Education Postgraduate Programmes -

Likert Scale: 1=Very Satisfied, 5=Not Satisfied

<table>
<thead>
<tr>
<th></th>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
<th>Module 4</th>
<th>Module 5</th>
<th>Module 6</th>
<th>Module 7</th>
<th>Module 8</th>
<th>Module 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>How satisfied with online tutorial support through the discussion forums</td>
<td>1.5</td>
<td>2.86</td>
<td>1.875</td>
<td>2.33</td>
<td>2.5</td>
<td>2</td>
<td>2</td>
<td>2.5</td>
<td>1.5</td>
</tr>
<tr>
<td>How satisfied with timetabling of the online tutorials?</td>
<td>1.6</td>
<td>2.64</td>
<td>2.25</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>How satisfied were you with the relevance of the assignments</td>
<td>1.9</td>
<td>1.29</td>
<td>1.375</td>
<td>1.67</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td>2</td>
</tr>
<tr>
<td>How satisfied were you with timetabling of submission</td>
<td>1.5</td>
<td>1.71</td>
<td>1.75</td>
<td>2.33</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Satisfaction with the fairness of tutor marking</td>
<td>2</td>
<td>2.14</td>
<td>2.0</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1.5</td>
<td>1.6</td>
</tr>
</tbody>
</table>
Focus Groups

All Postgraduate students are invited to attend a focus group online. At the appointed time (7.00pm), the focus group facilitator welcomes participants, explaining that the purpose of the research which is to continually improve the quality of the offering to future students and seek by means of an online poll, their permission to record the discussion. Having got their permission, the facilitator starts recording the session. The facilitator is a person who was not involved in delivering the module to safeguard from biasing the discussion. The role of the facilitator is to drill down by means of discussion and questioning into the operation of the module to elicit rich data as to how participants perceived the learning environment created for them. The questions posed by the facilitator to stimulate the discussion include:

- In your opinion, what were the strengths of this module?
- In your opinion, what were the weaknesses of this module?
- Please describe any difficulties that you have encountered while taking this module.
- Have you any advice/comments to make on this module that you would give to students taking this module next year?
- Have you any suggestions for improving this module?
- What did you find most useful about your tutor?
- What was least helpful about the course delivery?

The research recording is transcribed coded and analysed for themes and indicators to improve the learning experience for these mature life-long learners, in the future

<table>
<thead>
<tr>
<th>Please indicate your level of satisfaction with the quality of tutor comments</th>
<th>2.3</th>
<th>2.21</th>
<th>1.75</th>
<th>1.67</th>
<th>2.00</th>
<th>3.00</th>
<th>1.5</th>
<th>1.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response Rate</td>
<td>15%</td>
<td>18%</td>
<td>17%</td>
<td>10%</td>
<td>13%</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Conclusions
Taking a view from the balcony (Heifetz& Linsky, 2002) educators constantly strive to continually improve the quality of academic offerings to keep them contemporary, current and relevant to the needs of a constantly evolving environment. A tension exists between establishing metrics to drive continuous improvement and developing students holistically to encourage resilience, creativity, flexibility and problem solving. Tools like Total Quality Management and the Balanced Score card, recognise that a variety of competing stakeholders have requirements from the Education System. Over-emphasis on scorekeeping can lead to a performativity or compliance on what is measurable to the neglect of the values and learning outcomes we seek to inspire which are less tangible. However, both are necessary and by involving students, academics, industry representatives and external experts in the quality process of Dublin City University Open Education Postgraduate Programmes, we strive to do both. It’s a question of balance.
3. References


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Vancouver.


Main features of the Mobile Digital Resources (MDR) Conceptual Model and its influence on motivation of higher education students with special educational needs

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Abstract  
Six different partners take part in this European research project for improving higher education quality in Jordan using mobile technologies (mEQUITY, project number 561527-EPP-1-2015-1-BG-EPPKA2-CBHE-JP): the University of Jordan (UJ), Jordan; the Plovdiv University “Paisii Hilendarski” (PU), Bulgaria; the Ravensbourne Higher Education Institution (RAVE), United Kingdom; the Jordan University of Science and Technology (JUST), Jordan; the Universidad Nacional de Educación a Distancia (UNED), Spain; and the Princess Sumaya University for Technology (PSUT), Jordan.

The aim of this project is the development of digital learning resources for mobile devices, which responds to the requirements of modernization and accessibility of Jordan higher education in order to improve the educational integration of disadvantaged students or groups in risk whose needs or socioeconomic status significantly constrain their possibilities for receiving a suitable education.

The use of educational digital resources teaching-learning process and the variable measured: motivation.
According to the objectives and the hypotheses of the project, motivation is an important variable to be measured in all the groups taking part in the project, as educational digital resources may increase motivation and self-esteem in disabled groups of people thus improving the reaching-learning process. We will be able to evaluate how the features of the MDR conceptual model of digital mobile resources increased motivation and self-esteem in students with special educational needs and socio-economic disadvantaged.

**Keywords:** e-learning, motivation, special educational needs, mobile devices

### 1. Introduction

For quite some time there has been a global concern for providing high quality education to people at risk of social exclusion (due to disability or other social issues) either by removing physical barriers that prevent access to different places or by getting rid of barriers within the educational field that are not concerned with or address the specific needs that this part of the population may have, and that are not involved in the development of the necessary skills and abilities.

Technology is an innovative element that eases the teaching-learning process, as Kon and Dela Vega (2014: 2) point out: technology “assists in the right of people with special needs for enjoying a suitable quality of life”. A series of technological developments have gradually appeared and nowadays they are part of all spheres of society as well as the educational field. The integration of information and communication technologies into educational practices can enhance the teaching-learning process and increase the educational success of students. In this sense, this paper is based on the following premises:

- Several researches consider technology applied to education as a key tool to promote equity in education.
- In the same sense, physical access to technology (and the development of digital competences needed in today's society) should be considered a right of every human being (Prefasi et al., 2010).
- It is necessary not only the students to be trained in the use of technology; teachers should not only be proficient in its normal use in order to get a high quality education in today's society, as well they must be able to use these technologies in the area and the population to which they are addressed and to whom they teach.
- The University- considered as one of the most important institutions for the educational system- must be aware of the need for training higher education students in digital skills; as well it must also be an institution that pays particular attention to the different needs of all students.

The European Research project mEQUITY (PROJECT Number 561527-EPP-1-2015-1-BG-EPPKA2-CBHE-JP) aims to design and develop an adapted curriculum in the degree of engineering, based on digital learning resources for mobile devices that ease the teaching-learning process for the target population. It responds to the requirements of modernization and accessibility of Jordan higher education in order to improve the educational integration of disadvantaged students - groups at risk whose special needs or disadvantaged socioeconomic status significantly constrain their possibilities for receiving a suitable education. Currently we are in the halfway point of the project, which ends in 2018.

The partners involved in the mEQUITY project are:

- Plovdiv University “Paisii Hilendarski” (PU), Bulgaria.
Its global objective is to improve Jordan’s higher education, thus enhancing the educational integration of disadvantages students – groups at risk with special needs or disadvantaged socioeconomic status.

The specific objectives of the project are:

- To create digital educational resources for mobile devices, for improving, among other variables, motivation of higher education disadvantaged students – groups at risk whose ethno-cultural features, special needs or socioeconomic status significantly restrain their possibilities of obtaining a suitable education.
- To analyze the needs of users in different contexts and curricula in Jordan. This study is aimed at evaluating the degree of use of these technologies by specific groups of students and, by learning about their needs, at opening new educational opportunities in the teaching-learning process since it can influence the motivation of these users.
- To design digital resources (MDR Models) as motivational tools for supporting the educational features of mobile technology in order to adapt them to the learning conditions of disadvantaged groups.
- To develop and adapt mobile applications and digital educational resources. This objective tackles the need of using m-learning in different subjects for encouraging motivation of users and for fulfilling the educational needs of the disadvantaged groups which the project is addressed to.

The hypothesis which is the basis of this phase of the project is: the use of educational digital resources, mobile devices, and augmented reality et al. in the teaching-learning process increases motivation of students with special educational needs and enhances its performance, thus improving quality within the educational system. The addressees of the project are:

- General Secondary Schools for Children with Special Needs
- Higher Council for Affairs of persons with Disabilities
- Deanship of Students Affairs at each partner University
- Gaza refugees camp
- Nazik Al Hariri welfare center for special Education
- Teachers and education specialists working in the aforementioned institutions

This research wishes to contribute in getting rid of barriers and prejudices found in the integration of technology for improving education and motivation of people at risk of exclusion, whom this research project is addressed to. It is sought that all students, irrespective of their personal circumstances and abilities, benefit from better education and that teachers see technology as a source of possibilities and resources.

From that point on, it is necessary to establish a sound theoretical framework for the variable researched, motivation in education using digital resources; it will be necessary to specifically analyze the MDR model in terms of its design and structure as the main element of this research.
2. Motivation and the MDR model

The MDR model is based on the design and use of digital educational resources, mobile devices and augmented reality, on how they affect the teaching-learning process and, in this case, the variable researched: motivation in education. Undoubtedly, motivation is one of the main elements in the improvement of the teaching-learning process and for teachers and students to achieve educational success. Zenteno & Mortera (2011) point out different researches where there is a direct correlation between motivation and the use of technology in education, as well as other factors of direct influence on the improvement of learning such as self-efficiency. Some authors (Amar, 2006) state that technology applied to education favors students’ learning, fosters their interest and creativity, improves their ability to solve problems, enhances group work, and reinforces students’ self-esteem; all these factors contributing to increase motivation in students. In general - and especially the ones designed for the MDR Model - the use of mobile devices and digital resources in education lead to innovative solutions to cover the needs of the groups at risk taking part in this research, since these devices provide resources for teachers to make complex presentations for improving understanding and study of the subjects according to the educational needs of the students.

Intelligent mobile devices – the tools used in this project – are, among other features, flexible and specific, basic for them to be adapted to the educational needs of the users whom this project is addressed to as these tools give students the freedom and autonomy they need to overcome limitations of time and space. As well, students can use these technologies both in the classroom and outside it and access a large amount of resources.

Another important feature of mobile devices - and therefore of the digital model we present in this paper - is that the use of these technologies does not require great technical knowledge, thus facilitating learning the subject in a simple way and improving the acquisition of digital competences, as well as fostering innovation in the teaching-learning process. An example of this is Augmented Reality used in the MDR model.

Augmented reality (RA) is an important part of the MDR model. It is based on intuitive perceptions and personal preferences, and offers many opportunities to generate interest and motivation in the long term. This type of innovative learning makes students enthusiastically accept with a proactive attitude the subject to study through the use of everything related to technology (Díez, 2012). They lead to greater motivation for actively participating in the learning process, an important improvement in memorizing school materials and, due to the use of more senses, facilitating learning of the disadvantaged and making education more effective.

Nevertheless it is important to point out that motivation in education is a complex process where many interacting factors converge, so it is important to use a single approach and open in the educational community a debate on its scope (Broc, 2006).

The MDR model is based on active learning where students discover, process and apply the information received. As Green and Casale-Giannola (2011) state, for achieving meaningful learning active learning must take place - with students working, judging things on their own, and testing their skills, all based on a reflection on their own knowledge. Therefore, active learning allows students to be part of their own learning process and increase their motivation (Montes & Vallejo, 2016).

As well, we must say that the MDR model has been developed with an electronic learning platform, DIPSEIL (http://env.dipseil.net/v3), which enables designing, developing and offering educational resources, being one of its main features to ensure support to students when necessary and as much as necessary, for them...
to deal with real work in a problem-based learning context. Thus, according to the needs and abilities of the students, a series of educational modules / courses in the electronic learning platform DIPSEIL have been developed and adapted.

3. The research project

For the development of the research project we start from the hypothesis that the use of digital educational resources with mobile devices - for which the MDR model has been created - improves motivation of disadvantaged students. Based on this assumption, motivation is the variable that we are going to measure and we have to do it from two perspectives: the one from the student that interacts with the educational resources of the model MDR and the perspective of the teacher that advises and guides the teaching and learning process.

The first step was to carry out an analysis of needs. For this purpose the partners responsible for each scenario carried out an analysis to detect the educational needs, the use and what addressees know in the different scenarios which the project is addressed to in order to design the MDR model based on the results of this analysis.

Once created, the model was introduced to partners, to teachers, to specialists in training of the different scenarios and to higher education students of the partner universities. The next step was the evaluation of the MDR model. In order to collect data on which the evaluation of the MDR model would be based, an online questionnaire titled "Questionnaire on the MDR conceptual model" - on the features of the MDR model adapted to each scenario or population which it was addressed to - was created for gathering information.

The questionnaire used consists of 20 questions, 19 of which are closed and one open. Closed questions are measured by a four-point scale where each participant shows their opinion (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) and the open question has been created for each participant to explain and describe the features they would improve. For selecting the sample, an intentional non-probabilistic sampling has been used.

4. Results

As aforementioned, the objective of the project is to create digital educational resources for mobile devices to improve, among other elements, motivation of disadvantaged students. For this purpose hereunder are shown the results of the evaluation of the intermediate stage of the project, summarized in the following chart with data of the 19 closed questions on the x-axis and the score of each question on the y-axis measured by a four-point scale (1 = totally disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

The scaled results obtained with the questions in this part are shown in the following figure:
In general data received shows a very high satisfaction with the MDR model, scoring in all items a mean above 3 in a four point scale for the closed questions. The open questions have scored high as well.

Questions which have score the highest (all with a mean between 4 and 3.6) are:

- Question 19. The MDR model benefits and makes it easy for those groups at risk in the different scenarios of the project. (Mean: 3.78).
- Question 2. The MDR model allows, by means of mobile devices, the implementation of knowledge and expertise defined in the objectives of the training program. (Mean: 3.7).
- Question 1. The MDR conceptual model has been design based on the activities that are carried out by teachers and at-risk students (Mean: 3.65).
- Question 8. The MDR model contributes to knowledge and integration of skills and competences in different fields of expertise. (Mean: 3.65).
- Question 16. Education with mobile devices eliminates spatial barriers between students of the different scenarios. (Mean: 3.65).
- Question 3. The MDR model allows the implementation of correct methods and techniques suitable for the training of the different groups of addressees (Mean: 3.61).
- Question 12. The MDR model allows carrying out interesting and creative activities. (Mean: 3.61).
- Question 18. Training through mobile devices (MDR) benefits education of people outside the labor market (Mean: 3.61).

Questions which have score between 3.5 and 3 are:

- Question 6. The MDR model promotes interactivity by the education with mobile devices of students in the different scenarios in the project. (Mean: 3.43).
• Question 7. To apply augmented reality with the use of mobile devices during the teaching process, allows applying specific approaches based on modern pedagogical theories and their practical application. (Mean: 3.43).

• Question 14. The MDR model fosters self-esteem in the different disadvantaged groups (Mean: 3.43).

• Question 11. The MDR model boost interest of students in studying and class attendance (Mean: 3.35).

• Question 15. The MDR model boosts socialization and personal satisfaction of students in the different scenarios of the project. (Mean: 3.3).

According to data respondents consider that the MDR model has been very well designed, based on the activities carried out and taking into account the specific features of the groups at risk, a factor of influence on improving teaching and increasing motivation in students. It also highlights the importance of students’ satisfaction with this MDR model.

High scores have been given to how this model shows them new knowledge that otherwise would be complicated for their understanding, and these scores point out that - on the respondents opinion - this system promotes interactivity in education and an active participation of all those involved.

Data collected highlights that the MDR model can boost students' interest in studying the subject and attending class. The results also point out that the MDR model can promote self-esteem and motivation among disadvantaged groups, as well as the development of competences and skills in different areas of specialization. In addition they show that the respondents considered that the learning activities and objectives of the MDR model have been properly planned.

At present the project is in the pilot phase, where the different variables of the hypothesis of the project will be analyzed - among them motivation of the students both from the point of view of the students themselves and from their teachers, to be measured in two different moments: before the use of the mobile devices and after it.

Data collected from the aforementioned questionnaire will be compared with the results obtained in the following phases of the mEQUITY project. Subsequently, the corresponding statistical analyzes will be carried out and it will be possible to verify whether the hypotheses of the project are fulfilled, thus being able to compare the results and gather feedback from them.

5. Conclusions

According to the results obtained in this phase of the project, we can say that teachers, partners, specialists at training and students think the MDR model is effective and has a great educational potential for students as well as for all those involved in this research. As per data, especially the open questions, we can say that the respondents consider the MDR model to be attractive and useful, being a motivating element in the teaching-learning process for this group in particular.

The results show and reinforce the idea that the MDR model will foster motivation among disadvantaged groups and, in turn, it will promote the development of competences and skills in different areas of educational expertise, while favoring the acquisition of specific competences as well as interactivity, self-esteem, interest in study and class attendance.
A coherent and suitable pedagogical design of the programs is basic for creating knowledge among students, thus favoring high quality learning. Therefore it has been positively valued that the design and application of the programs through the DMR model were adapted to the different areas of study, something that will facilitate their work and improve motivation. It has been sought that teachers work with content within the curriculum but it is also essential that the pedagogical design assists on the development of effective learning strategies, elements that have been taken into account in this model and that the respondents have valued very highly.

The MDR model was designed and planned for it to keep a balance that guaranteed teaching of all subjects while creating learning situations that would encourage the use of strategies and skills, allowing the implementation of knowledge through mobile devices. According to the results obtained, and analyzed in the previous section, this premise has been fulfilled in this phase of the project, although it is necessary to ensure that this objective has been reached in other phases of the research.

In conclusion, this model - and in particular the technologies used in the educational field - is designed to favor students' learning, foster their interest and improve their ability to solve problems, reinforce their self-esteem, and thus contribute to increasing motivation of students.

6. Acknowledgement
The authors acknowledge the support of UNED’s School of Industrial Engineering, especially for the financing of the e-learning research project through the 2017 Call for Aid to support teaching and research activities in the different departments of the School, and the UNED School of Education as well as the European project mEquity (Improving Higher Education Quality in Jordan using Mobile Technologies for Better Integration of Disadvantaged Groups to Socio-economic Diversity), Erasmus+ Capacity Building in Higher Education 2015 nº 561527-EPP-1-2015-1-BG-EPPKA2-CBHE-JP. Likewise, we would like to acknowledge the mRIDGE project (Using mobile technology to improve policy Reform for Inclusion of Disadvantaged Groups in Education), Erasmus+ Forward-Looking Cooperation 2015 nº 562113-EPP-1-2015-1-BG-EPPKA3-PI-FORWARD) for its partial support.

7. References


MicroMasters: the pursuit of the Holy Grail in online learning

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Abstract  
In the MOOC world new concepts hatch every month, trying to find the Holy Grail of online learning. Last year edX adopted the new MIT concept of a MicroMasters credential: a series of graduate level courses offered by top universities to advance their career. The credential is credit-eligible and can accelerate a Master’s Degree if the learner is admitted.

Delft University of Technology (TU Delft) decided to join this new development after an extensive elaboration on TU Delft’s online course design, educational and assessment policies, involvement of stakeholders inside and outside the organization and the underlying business model.

The aim of this paper is to describe the lessons learnt in this process (adoption, development and running of the MicroMaster), its implications on TU Delft’s ambitions in open and online learning and the effect on campus programme admission and enrolment. This paper will focus on the Solar Energy Engineering MicroMasters, a programme of four MOOCs and a capstone project. Learners following the whole programme and successfully finish their exam receive a MicroMasters credential. Learners who apply to the Master of Science program Sustainable Energy Technology (SET) or the Master of Science program Electrical Engineering (track: Electrical Power Engineering) holding this credential, can send a formal ECTS waiver request to get accepted for part of the on campus Master Programme at TU Delft. Add the abstract you submitted here.

Keywords: MOOC, MicroMasters, open education, online education, accreditation, inverted admission, credits.

1. Introduction  
In the area of Open Educational Resources, MOOCs were seen as a new way to expand access to education. However, empirical data indicates that the highest percentage of MOOC learners already have a high level of education (Rohs & Ganz, 2015). In fact, many Higher Educational Institutions identify as institutional strategy using MOOCs (1) for reputation / visibility reasons (e.g., student recruitment, marketing potential / reach new student), (2) as innovation area (e.g., improve quality of on campus offering, contribute to the transition to more flexible and online education, improve teaching), or (3) responding to the demands of learners and societies (Jansen, Schuwer, Teixeira & Aydin, 2015). Moreover, the necessity of having a sustainable business model is continuously forcing the MOOC providers to set clearly their product services in order to take competitive advantage. Besides this competition between MOOC providers, inside a specific provider we also
have institutions/people trying to have strong marketing campaigns of their courses so they can be the frontrunners in a specific topic. Within the scope of this MOOC context, edX created the MicroMasters credential, a series of Master’s-level credit-eligible courses which aim to help learners to advance their careers or/and may be applied to accelerate a Master’s Degree.

2. MicroMasters
The first MicroMasters was launched in October 2015 on the topic of Supply Chain Management (SCM), where learners could do fully online on the edX platform the equivalent of one semester and finish the master’s degree on campus, without the need to attend the full course on campus (MIT News, 2016). This is seen by edX as an “inverted admissions” process because universities can gather more information about their learners when compared to the typical admission proceedings. Moreover, this product is also focused on learners who are only interested in pursuing a professional career, by doing only the different MOOCs of the MicroMasters programme.

This MIT MicroMasters is composed by five courses and a final capstone exam. The courses have a time effort of eight to ten hours per week and the duration can vary from 8 weeks to 11 weeks. MIT considered the first run as a successful experience with “over 127,000 students enrolled in at least one course and more than 7,000 have signed up for verified ID certificates in at least one course.” (MIT News, 2016). From more than 1,100 learners who finished all five courses, 622 succeed in the capstone exam, allowing them to apply to the master’s degree (MIT News, 2017). The full MicroMasters program of SCM costs $1350 per learner.

After this first trial, in September 2016 edX launched 19 MicroMasters programmes from 14 universities (edX, 2016). One of these programmes was the International Hospitality Management (IHM) MicroMasters from The Hong Kong Polytechnic University, formed by four 6 week courses and a final comprehensive exam (Qiu, 2017). In June 16th 2017 IHM MicroMasters had 24,182 enrolments with 203 verified learners. The full MicroMasters program from IHM costs $600 per learner.

### Table 1: Comparison of two MicroMasters Programmes

<table>
<thead>
<tr>
<th></th>
<th>SCM (MIT)</th>
<th>IHM (Hong Kong PU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of courses</td>
<td>5 MOOCs + 1 Proctored Exam</td>
<td>4 MOOCs + 1 Proctored Exam</td>
</tr>
<tr>
<td>Extension of MOOCs</td>
<td>8 – 11 weeks</td>
<td>6 weeks</td>
</tr>
<tr>
<td>Average cost</td>
<td>$225</td>
<td>$120</td>
</tr>
</tbody>
</table>

From this two examples we can see that it is possible to find different approaches according to the institution. So how does it fit in TUDelft?

3. Open and Online Learning at TUDelft
In 2013 TU Delft started to offer online courses for a global population through its Massive Open Online Courses (MOOCs). In 2014 the TU Delft Extension School for Open and Online Education was launched. The programme has a mission to educate the world and improve education. The objectives are:

- to deliver high quality open & online education (O2E) to the world;
- to improve education; and
- to grow academic output
The portfolio of the Extension School consists of different types of courses and series of courses. The focus is on working professionals. This means shorter courses that are flexible, have a manageable workload per week next to their work and offer directly applicable knowledge or skills for their job.

To structure this, we defined different products:

- **OpenCourseWare**: course materials of our regular campus courses shared online with an open license.
- **MOOCs**: all the DelftX MOOCs offered via edX platform.
- **Professional Education**: online courses targeted at the working professional.
- **Online Academic Courses**: the online variants of regular campus courses.

The MicroMasters concept is a hybrid product, hard to fit into one of the products. It is identified as a MOOC, nonetheless the principles TU Delft defends in a MOOC (material released under an open license with no restricted areas to access to content or activities). In addition, it was important to provide a more supportive learning experience to the ID verified learners, similar to what we offer in our ProfEds and Academic Online Courses, since we were offering a program with the development of a learning community for ID verified learners in mind.

4. **Initial results from TU Delft’s MicroMasters**

In the process of moving forward with a MicroMasters, the decision was clear by defining it as a pilot. This way TU Delft has the opportunity to evaluate if it fits with the online programme goals. Since we are talking about a new and very specific product, a big number of stakeholders were involved in the process.

The Extension School has a dean and a director of education who are responsible for online education. They have a mandate to make decision regarding online education. Because the MicroMasters provide students with a weaver for campus courses, it has to go through all decision and approval processes for campus programmes. The biggest discussion was on the setup of the assessment: how to align the rules and regulations of the Examination Board with the flexible online learning experience we want to offer in our MOOCs. During the involvement of all stakeholders, it was decided to move forward with the Solar Energy Engineering (SEE) MicroMasters, which consists in 4 courses and 1 capstone project.

Looking at the 4 products offered by TU Delft, the MicroMaster could be considered as a combination of MOOC, but with a cohort area similar to what is offered in an Academic Online Course, since the learning experience aims to be more supportive for the ID verified learners. In a regular MOOC there is no distinction in the way we address the audit learners and the ID verified learners. Another relevant aspect for the business model of the MicroMasters is the inverted admission process for campus course. Due to this fact and the extra online support given by the course team, both considered as an added value to the product, the program of SEE costs, in total, $1,400 per learner. As comparison, EU students pay 2,000 euro tuition fee per year, while non-EU students pay 15,000 euro per year.

<table>
<thead>
<tr>
<th>Number of courses</th>
<th>SCM (MIT)</th>
<th>IHM (Hong Kong PU)</th>
<th>SEE (TUDelft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension of MOOCs (weeks)</td>
<td>5 MOOCs + 1 Proctored Exam</td>
<td>4 MOOCs + 1 Proctored Exam</td>
<td>4 MOOCs + 1 Project capstone</td>
</tr>
<tr>
<td></td>
<td>8 – 11 weeks</td>
<td>6 weeks</td>
<td>11 weeks</td>
</tr>
</tbody>
</table>

Table 2: Comparison of the previous MicroMasters Programme, with TU Delft
Once again we see different approaches in the three institutions. In our case, the decisions which led to these differences were mainly to align with what we offer in our campus course. Thus, this had a strong impact in the way the course design was set.

### 4.1 Course Design

At TU Delft, there are two major principles when we are creating our MOOCs:

- The content should be released under a CC-BY-NC-SA 4.0 license
- All learners should have the same learning experience

Our MicroMasters courses have a weekly structure, with several topics to study with video lectures and exercises. The exercises had a formative and summative approach, since they had multiple attempts for learners to practice and counted 15% for the final grade. The weekly exercises had only one deadline in the end of the course, although we recommended their completion on a weekly basis to help keep the pace.

With the introduction of the MicroMasters and the Professional Certificate, the edX platform started to have more options for differentiated content. As a result, we can find in edX courses areas which are restricted to the ID verified learners, such as specific videos, case studies, papers, textbooks, discussion forums, live events, proctored exam, and many more. This can also lead to differentiation in assessment, for instance, an activity can be set as peer-review for the audit learners and staff graded for the ID verified learners, which means that in the first case the feedback is provided by the fellow students, while in the second case from the course team.

When designing the first SEE course the main differentiation aspect was the extra support provided to learners. There were 4 areas considered in this support, where only the ID verified learners had access: (1) exclusive discussion forums, (2) a webinar, (3) additional support before the final exam, (4) personalized emails to help learners in self-regulation.

From the initial survey the personalized emails and the support before the final exam were seen as the most important, followed by the webinar, and finally the exclusive discussion forums (Figure 1).

![Access to an exclusive forum section](image)
![A webinar with the course team](image)
![Additional support before the final exam](image)
![Personalized emails to support learning](image)

**Figure 1:** Importance of additional services. Means with 95% confidence intervals (N=36-46).

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When it comes to the satisfaction of these services, the learners identified in the post-survey the webinar with the highest level, followed by the exclusive discussion forums and the additional support before the final exam. The service with the lowest level of satisfaction was the one identified as the most important in the pre-survey: personalised e-mails (Figure 2).

![Figure 2: Satisfaction with additional services. Means with 95% confidence intervals (N=18-21).](image)

Specifically, for the personalised e-mails, we created an e-moderation document guide where learners’ activities and performance were monitored. Based on this e-moderation guide, specific e-mails were sent to learners in the end of weeks 1, 2, 6, and 9, based on their activity in the course. From the initial results we decided to provide more personalised emails: weeks 1 and 3 to give feedback about their activity inside the course (active/non-active), week 5 about their performance, week 7 about their progress, and week 9 about their performance on the practice exam.

Besides the support, another aspect covered was the assessment. In the development of online courses, TU Delft has the concern to have graded activities spread throughout the course, in order to help learners keep the pace in their learning activities. With the inverted admission process for campus, the faculty’s examination board and the educational advisors had a role in this discussion of the MOOC course design, because it should fit the necessary requirements to get ECTS credits for campus. One of the requirements was the introduction of a proctored exam with more weight in the final grade. In order to match these requirements and the usual course design of our MOOCs, the final solution was to have the weekly assessed activities with 15% weight in final grade, 5% in the practice exam and 80% in the Proctored Exam (Picture 3), all with the same deadlines, with a passing grade of 65%. The course team also decided to restrict the proctored exam to the ID verified learners, giving the audit learners no access to a final assessed activity, which was criticized by some learners.

![Picture 3: Grading scheme. Passing grade 65%. Weight: 15% weekly exercises, 5% practice exam, 80% proctored exam](image)
Finally, the MicroMasters courses have the duration of 11 weeks, which is longer than a typical MOOC offered by TU Delft. In addition, the time effort per week is also higher, with the learners saying that, in average, they spent more than 10 hours, which, according to the pre-survey, is more than they intended (Figure 4). The decision of having a weight of 15% in the final grade for the weekly assessed activities seems to have been a reasonable choice due to the difference of hours available and the real time they needed. If the weekly graded activities had a bigger impact, probably the ID verified learners would have felt more pressure and, consequently, the number of drop-out would have been bigger. On the other hand, a higher weight for the weekly exercises, similar to what happens in the majority of TU Delft’s MOOCs, could have led to a more continuous learning process for our learners, with benefits in the final results.

![Figure 4: Comparison between hours available (N=1443, blue), hours spent (N=47, black) and time effort per week in the course description (grey).](image)

With these changes in the course design, we can consider it as a hybrid model of the Online Academic Courses and MOOCs.

5. Conclusions
The first course of the MicroMasters programme has finished and the second one is about to start, still 9 months until we can judge the full potential of the programme.

When looking at the results of the first SEE course, we can consider it as a successful pilot, still with adjustments to do, in order to fine tune this product with the current products TU Delft offers.

Concerning the Course Design, the lessons learned allowed us to fine tune how we wanted to provide the necessary support during the course and do small adjustments in what is offered. The webinars will be available for all learners, which is more in line with the approach we have in all our MOOCs, and have the exam support section opened from the start, so that learners can have the necessary support from the beginning.

This was the first time we connected an online programme to a campus programme. Although the process wasn’t easy and smooth, we managed to succeed and get approval. This opens the way for more innovative initiatives connecting the online learners with campus programmes.
6. References


MOOCs, Open Access repositories: new ways to embed learning in professional networks

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Abstract
In this paper I will discuss how Open Access repositories developed in the context of large networks such as Europeana and the delivery format of MOOCs can together offer a promising new strategy to connect learning to professional networks. I will present a development template for networked MOOC creation using Open Access resources for learner-centered experiences.

In the digital world, large-scale repositories aim to bring scientific resources as well as results together in a way that facilitates and optimizes access. These repositories prove not only highly successful to share scientific results, they are also an ideal means to connect to the professional field, as is clearly shown in Europeana, where the initiative comes from the participating Cultural Heritage institutions (Libraries, Archives, Galleries, Museums, ...) but where many of the users are situated in the academic field, be it researchers or students.

However, in classical training curricula these resources are often only used when needed and for very specific needs, e.g. a casual research into a particular set of documents needed to write a paper or assignment. They are as such not basic components in the development of learning strategies for the students. In the best scenario, they are part of the delivery or teaching strategy. In fact, for most students these large repositories – part of the so-called “digital library” at their institution, are just extra learning materials, tools that they quite passively use to find information.

Keywords: OER, Open Access, Digital Repositories, MOOCs, Learner-centred design.

1. Introduction
When MOOCs hit the market in 2011 (with some precursors dating back to 2008), they were heavily debated, with adamant proponents and detractors alike (see and for a more recent studies Gasevic 2014 and Mazoue 2014). An important aspect of the MOOCs, - and in our view one of the more important ones – was often overlooked. Yes, it had to do with the word “Open”. Of course, one of the most hotly debated items was exactly whether MOOCs offer Open content yes or no. In most cases the “Open” just meant “Open registration for everybody” which isn’t really a big thing. However Open also meant that they were very different from the former generation of online learning platforms, the VLE’s or Learning management systems. Those were all in a sense “closed”, that they were mostly institutional and aimed to serve an audience of pre-registered students. The “Open” in MOOCs in this sense also means that these courses were not bound by the institution they belong to and in fact were offered in an openly accessible, neutral space.

What we want to discuss today is whether we can expand a little that thought and asses how MOOCs can transcend the institutional boundaries in interesting ways. Rightly, the literature has put forward that MOOCs shouldn’t just stick to posting recorded university lectures online but rather use the opportunity to try out new, more adapted formats of teaching and learning. There are many studies stressing this
pedagogical aspect. But what about the institutional take on this? One of the key elements that while education is a highly regulated matter, the MOOC sphere has not so many rules ... yet. There is a much higher freedom in the way you conceive, deliver, transmit a MOOC. This means there is an opportunity there to maximize the benefits that a truly online course could bring. But before looking too much into the course itself, one should consider another important property of MOOCs: it is a different product than a university lecture and handbook. It requires a different production process. When we look into that, it shows that typically production of a MOOC involves way more than just the professor and his assistants. It requires a team of professionals, for the scenario, scripts, recording, video editing, sound production etc. Ideally, it also involves educational experts to determine the right interaction formats and support for learning.

So, while most university courses are simply conceived of and taught by the professors and their assistants, the MOOCs are the result of an organisational effort by the universities. This has led many universities who ventured into larger scale MOOC deployment to setup specific support organizations and develop expertise.

And it is here that a major innovation has come into play, of far more importance than the direct pedagogical innovation in an individual course; As the platform is involved, many larger MOOC providers have brought together universities authoring MOOCs on their platform to share experiences and to develop jointly new functionalities. In this way, we are only seeing the beginning of real development of the formats and tools deployed to deliver MOOCs.

But also on the content creation side this innovation can be considered. As MOOCs are generally delivered within larger networks and MOOC courses reach larger audiences, it makes sense to do what never ever has been managed before in university education: to actually collaborate with peers in the creation of course materials, and collaborate on the quality assessment (see e.g. the interesting study Léon et al. 2016).

EADTU as an organisation of distance teaching universities has been keenly aware of this aspect from the very beginning, doing important work on quality assessment, now also for MOOCs (Rosewell & Jansen 2014). The next step is to create and develop MOOCs jointly with stakeholders.

2. Interactional expertise

When designing a MOOC for a post-university audience, as many MOOCs happen to be in reality (Christensen 2013), and certainly when one has the stated goal to serve a professional field, one should keep in mind the specific relation that this audience has to the subject matter. One of the successes of MOOCs is that people find extra knowledge, which they happen to need in their profession, and was not part of their initial training or specialism. For example, a software developer might want to learn a new programming language to better be able to use new tools; or a humanities researcher wants to learn about big data methods used in another field to improve his own research. This is also one of the reason why many MOOC users cherry pick the contents of MOOC courses: they just take in what they need. There are many professional situations today where you need to know something from a neighbouring field more deeply, to be able to interact with these specialists, not so much to do their work yourself. But you need to have a professional interchange, requiring you to master the vocabulary. An IT manager might want to learn more about cybersecurity to be able to hire the right expertise. A librarian might want to learn about copyrights since he needs to assess a publication strategy. A museum curator wants to learn about 3D applications, not to actually be able to make those applications, but to be able to write a tender for companies to build a solution for the museum.

This means you need to acquire a proficiency to understand a field without being able to perform in it. It is what Collins & Evans call interactional expertise (Collins et al. 2006, Collins & Evans 2008). While more
traditional MOOCs based on university courses like Programming 101 are rather suitable for bachelor level education, the bulk of the MOOC success lies in the Master, postgraduate and professional training level. For the latter, focussing on transfer of interactional expertise is key. This has some consequences though. While in many cases a master course for a specific discipline will highlight and discuss fine nuances in concepts, while BA level courses aim for clarity in the presentation, for these post-academic courses, that target professionals who do not necessarily have the bachelor level of the domain of the course, a certain mix is required. A librarian who needs knowledge on Intellectual property rights would not be served by an advanced MA course for law students, but equally not by the sheer entry level of a bachelor course. They need very specific, advanced information, but presented with an introductory clarity. More importantly, the kind of knowledge valuable to a professional network is partly different from the abstract theoretical knowledge taught in university classes. On the work floor, there is a lot of so called tacit knowledge that is highly valuable for business operations (Collins 2010). Part of the reason to co-develop MOOCs with people from the professional domain has to do with capturing and transmitting this tacit knowledge.

3. The Europeana Space MOOC example
Europeana Space was a EU CIP funded project (http://www.europeana-space.eu/) in which we ran pilots and demonstrators to showcase creative reuse of Cultural Heritage content (see Truyen 2016, Truyen et al. 2016a, Truyen et al. 2016b). The pilots were on TV, photography, dance, games, open & hybrid publishing and museums. The project involved the development of demonstrators, using the Europeana – and similar – API’s and the our own Espace portal (http://www.espaceportal.eu), which allows user interaction with the contents. We then invited GLAM professionals, people from cultural heritage institutions, teachers, educators as well as developers to 6 hackathons (http://www.europeana-space.eu/hackathons-home/) where during a three-day event they could use the content to make new apps aiming for a creative business potential. One of the outputs of the project was the actual launch of new businesses. One of the main goals was also to target education, and we developed both a portal (http://www.europeana-space.eu/education/) and a MOOC, which started October 2016 and is now running for the second year.

The MOOC has Modules for the different topics (such as Photography, TV, Dance, Museums) and two extra modules, one on IP for the Cultural Entrepreneur and one on Creative Marketing. Users are segmented in 3 groups: a general audience (with in mind teachers and students), GLAM professionals and cultural entrepreneurs, and in third instance app developers. The content was built with this in mind. For the professional groups, we could easily reuse documents that were developed for the EU funded project; most effort went in to designing the course materials for the first group. The added value of the MOOC course for this group was the direct contact with professionals and professional networks. In the exit survey this was one of the aspects which was valued most.

4. How to create a consortium-based MOOC
A model that maximizes the network possibilities in MOOC design is the networked learning framework model (Brouns et al. 2014). While the standard production cycle of an institutional university lecture MOOC consists of a MOOC development team working with the professor to run through the script, converting classes into modules, writing out the transcripts of the video lectures, making the recordings, designing assignments like quizzes and forum discussions etc., collaborative design of a MOOC starts earlier and requires a longer preparatory phase. This involves the following steps, outlined below.

1. Building a consortium
A community-based MOOC that wants to be relevant for a particular professional domain should be built with a consortium that represents the different relevant actors in the field. In our example case, we brought together museums, curators, designers, scholars, creative entrepreneurs, IP specialists and business modelling specialists together to build a course that allowed to cover the relevant aspects of starting creative projects for the GLAM sector. Theoretically, this concept is based on the notion of “Communities of Practice” (Wenger 2000, 2011, Wenger et al. 2002). Knowledge is something developed and sustained by communities that share practices that give meaning to concepts. It is also recognized in literature that the context of the learner on the other hand will influence the learning (Hood et al. 2015). Universities are well placed to function as the hub and initiator of such a network. It also helps universities to embed their research in the uptake field and maintain contact with alumni.

2. Determining the course audience and language

While a recorded university lecture was essentially designed for the university enrolled students, this puts many of the first-generation MOOCs at odds with their audience, which are predominantly post-university people that are already in the professional field. They have totally different needs than a sheer introduction to the field, or specialized research classes. They need expert knowledge that is often at the side and complimentary to their own specialism. E.g. an engineer might want to learn more about patent rights and is looking for a MOOC on IP management. This engineer has no need for legal research (advanced university classes) neither for a novice legal student introduction. He needs information that is professional, comes from the work of law firms serving that legal market for engineering.

Determining the audience also means making language choices. For this MOOC, we opted to only provide English language materials. However, there was a demand for more languages. We did not have sufficient resources to translate the course in other languages, but we did translate key materials that we put on our educational portal in support: http://www.europeana-space.eu/education/mooc/. Videos are provided with subtitles that can be auto-translated, or people can contribute their own translations.

3. Identifying adapted pedagogies

Much has been said about the pedagogies of xMOOCs, and much criticism has been vented on just posting university lectures as online courses. In reality MOOC providers have been offering a rich diversity of pedagogical formats, experimenting with the flexibility of online delivery and ICT solutions (Guàrdia et al. 2013a, Bali 2014, Smith et al. 2017). While not the topic of this paper, let’s highlight here that it is important to develop a common understanding of possible pedagogies that would fit the audience the MOOC is aiming at. In particular, using powerful media such as video requires specific attention to maximize pedagogical effect (Guo et al. 2014). Also, when a MOOC targets learners outside of formal education, some support or guidance needs to be conceived of for fostering self-learning with MOOC participants (Gutiérrez-Rojas et al. 2014). Which is why a typical MOOC addressing such an audience clearly defines how the offered contents should be used to succeed in learning. A layer of meta-cognitive information should be included.

For the Espace MOOC, not only collaborative design (see Zheng et al. 2015, Yousef et al. 2014a, Yousef et al. 2015) of the contents but also collaborative learning was envisioned, aiming for co-creation activities. An interesting study about such methodology is explained in several recent studies (Håklev, S., Sharma, K., Slotta, J., & Dillenbourg, P. 2017, Håklev, S., & Slotta, J. D. 2017 and Hammid, N., Haddadi, L., & Bouarab-Dahmani, F. 2017) – which were not available when we designed our course, but it matches very well what we were aiming for.
4. Defining the course contents

The course contents must be directly relevant, concise and fit to the demands of the core identified audience. It is important that the language is accessible, meaning that new terminology should be clearly explained. It might be handy to provide a kind of lexicon so as to make sure students get the right understanding of key concepts. But first and foremost, it requires an insight in where in the professional network the knowledge creation takes place, and what are the dissemination mechanisms. The added value of a consortium-build MOOC is that you can get to knowledge that normally is not spread to the network and is manages at one of the stakeholders. Making sure that knowledge is shared between say, the academia and the businesses involved, or between the stakeholder (e.g. patients and caretakers) and the researchers (pharmacologists, healthcare professionals, doctors, ..) is vital to give the MOOC real added value over a traditional university course.

5. Distribution of tasks

After the contents are identified, a production plan needs to be setup and a course development coordinator should assign tasks to the different parties. A Gannt chart is helpful to make sure everyone knows what to do when, and software can be used for this mini project management (such as Basecamp or Trello).

6. Development of module creation templates

A template should be made of how a course module should be structured, as students like consistency between modules in a course. Typically, one would define a playbook like:

- Introductory texts
- Video clips
- Quizzes to support the video clips
- Assignments
- Forum discussions
- Further reading

It is important to make some very specific rules about how quizzes should be conceived (number of questions, type of questions, ..) to make sure evaluation and monitoring of the course is balanced and comparable. We also agreed upon a grading system, on the average length of videos and other standard procedures for a MOOC. The specific aspect in our case was the template that had to be circulated write early on as many of the teams would produce their own video materials.

7. Scheduling the course production

This is not to be underestimated since you will be working in a multi-institutional context with all people who have a filled agenda. Our experience shows that this proves to be the hardest part: getting contributions from partners in time. Collaborative course production requires a project management approach.

8. Quality assessment of the contributions

When content is sourced from different providers for one course, there always is a risk that quality levels are not uniform throughout the course. Making sure that the user experience is the same throughout the learning experience require a strict quality monitoring protocol for e.g. the produced video’s and text
materials. When working in a multinational framework agreeing to a language standard and a uniform language review is essential.

9. Test run with stakeholders

This kind of MOOCs are best, since they do not stem from university courses that have run for ages already in the auditoria, but are newly developed, they are best run in advance in a closed environment with key test persons so as to validate the contents. We often do this with university students. A quality assessment methodology can be deployed for this.

10. Announcement of the MOOC

One advantage of these kinds of MOOC is that the promotion of the MOOC can rely not solely on the marketing of the university and the MOOC platform, but also on the stakeholder network involved. This enables both a larger and a more specific reach. MOOCs that are built with input from professional networks also attract an audience that had more focused people.

11. Embedding the MOOC in the network

It is vital to make sure the course contents are not limited to what is in the MOOC. You should breakout to your network, to your external content. Studies have demonstrated the impact of external tools on the MOOC (Alario-Hoyos et al. 2013a). In this sense, a MOOC works best if it links to activities on Social media and if the assignments bring users in contact with the professional field one is servicing. Making sure that network websites and social media sites also track the traffic that is generated by the MOOC is key.

12. Run and of the MOOC

In our experience, it was not necessary that all contributing partners were active during the run of the MOOC. One teaching assistant at the university was part-time monitoring the forums and when needed she asked experts from the partner pools to chime in.

As usual, it is best to run a survey at the start of the MOOC, and one at the end. In this case, we used it to make cohorts of the students: we wanted to know which MOOC students were professionals of the field (in this case GLAM professionals), which ones were software developers, and who were teachers and students, besides trying to know what the more general audience looked like. This allowed us to make more adequate communications for these different target groups and to assess the evaluations accordingly. It also allows you to tap into the knowledge of the participating professionals to help out other students.

Anyone can register for a MOOC, and that is its charm. However, by carefully monitoring how the user group is segmented, in relation to the subject, one can take advantage of the structure of the user community to empower students. Seasoned professionals can help novice users, which in many cases, in a MOOC, are just professionals from a related field. In our case it was nice to discover that librarians, museum curators, historians were interacting with the same course contents as teachers, students on the one hand and creative designers and software developers on the other.

And let this be the real reason we are engaging in MOOCs. One of the big advantages of MOOCs is that people register with a real name and mail-address, and are keen to share who they are. Compare it to the big advance Facebook made over the anonymous internet: you actually know who you are dealing with.
databases of MOOC users are in this sense an incredibly valuable asset for MOOC providers, and in particular valuable for the professional networks who, together with universities, offer MOOCs.

13. Monitoring of the MOOC

So much has been published already on the value of analytics in this context that we will not dwell on this here (see e.g. Drachsler, H., & Kalz, M. 2016, Khalil, M., & Ebner, M. 2016), but of course all benefits apply to this specific MOOC context also. In particular when long-term community building is part of the goal, as it should be in the context of MOOCs built by a stakeholder consortium, then analytics of user and item performance are key to see how the reception field is evolving over time.

14. Evaluation

Based on the surveys and the experience during the run it is always good to plan a structured evaluation moment and reporting with the partnership, to see whether modifications to the course setup are necessary or if the different modules are still deemed balanced. As many MOOC students do not take full course but pick the modules they are interested in – we choose for a self-paced format – usage statistics can show which modules tract the most students and the reason could be researched. A very important strategy is the self-learning that these analytics offer to reflect on the effectiveness of the deployment teaching pedagogy (Bartoletti 2016). MOOCs offer a beneficial environment to setup test environments to support an evidence-based approach to course evaluation (Belleflamme, P., & Jacqmin, J. 2016, pp. 6-7).

15. Content adjustments and knowledge development

On the basis of the evaluation MOOCs should be updated, and it is our experience from previous MOOCs that after 3 years a major overhaul is often required. This depends of course of the field and the contents. But it goes much farther than just making a better edition of a course. A properly stakeholder community embedded MOOC will evolve its knowledge on the basis of the dynamics of the contributing partners, and stay much closer in touch with evolutions in the field than a classic introductory university course.

16. Building the community

The afterlife of the MOOC run is building the community of users around it, by keeping the social media alive in between runs. This has proven very successful with our MOOC pilot, as MOOC students popped up as members in participating organisations later on. This way, a longer time sustainability model develops for the MOOC.

17. Crowdsourcing the next releases

The community around the course should be activated to take part in the further development of contents of the course, so that it becomes a dynamic, community supported learning hub. Several studies highlight how this can be done for MOOCs (Alario-Hoyos et al. 2013b, Barbosa et al. 2013, Clougherty Jr, R. J., & Popova, V. 2013, Williams et al. 2015, Prpic, J. et al. 2017). Crowdsourcing new content is part of the sustainability plan of the Espace MOOC, but an approach still has to be defined and we are studying the right technical implementation.
5. Conclusions
In this paper, we discussed how MOOCs can be collaboratively create by building a consortium that involves stakeholders. By going through the different steps we took in deploying our pilot MOOC Europeana Space, which was based on a EU funded project, we proposed a playbook to develop such MOOCs, and try to highlight the benefits of collaborating on the MOOC production, something that takes both the “Online” ad well as the “Open” character of the MOOC to the next level. We did not implement crowdsourcing yet, but there is mounting evidence from literature that this is the road ahead.

6. References


MOOC – supporting continued vocational training

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Abstract
Researchers have been interested in Massive Open Online Courses (MOOCs) from different viewpoints - the engagement and motivations of students, course completion and retention rates as well as course designs. MOOCs attract a wide range of people from different backgrounds, all of whom have different aims. The main focus of the majority of research on MOOCs has concerned university or further education courses. However, researcher interest in the utilisation of MOOCs for continued vocational training has been low.

The aim of this paper is to discuss how MOOC learning can support the learning of working life skills and knowledge by a workforce. This research focuses on two MOOCs called “Nearly zero-energy buildings” and “Sustainable energy solutions,” which are new EU level topics in the energy and building sector but not yet widely established as courses in education institutions. We are especially interested in students who are employed full-time or part-time and what motivates them, which learning methods, materials and assignments appeal to and benefit them the most. In addition, our aim is to find out what kind of continued vocational training method MOOC is. The data consist of Moodle analytics, student feedback, questionnaire data and interviews with both students and employers. Self-determination theory (SDT) is used as the theory for the study and identifies three innate human needs – competence, relatedness, autonomy – that have to be nurtured from within a learning environment in order to ensure the optimal functioning and growth of students.

Keywords: MOOC, motivation, engagement, continued vocational training, Self-Determination Theory (SDT)

1. Introduction
Over the past years, Massive Open Online Courses (MOOCs) have been the subject of several researches. At the European level, MOOCs have been defined as “courses designed for large numbers of participants that can be accessed by anyone, anywhere as long as they have an internet connection, are open to everyone without entry qualifications, and offer a full/complete course experience online for free” (OpenupEd, 2015). MOOC studies have covered, for example the interest, engagement, motivations and autonomy of MOOC students, disengagement, course completion and retention rates as well as course designs (Hew, 2016; de Freitas, Morgan & Gibson, 2015; Macleod, Haywood, Woodgate, & Alkhatnai, 2015; Veletsians, Colleier, & Schneider, 2015; Bayne & Ross, 2014; Khalil & Ebner, 2014; Jordan, 2013). The majority of research on MOOCs has focused on university and further education courses. However, researcher interest in the utilisation of MOOCs for continued vocational training has been low.

The aim of our study is to find out how MOOC learning can support the learning of working life skills and knowledge by a workforce. We are especially interested in students who have full-time or part-time jobs and what motivates them, which learning methods, materials and assignment appeal to and benefit them the most. Furthermore, we aim to find out what kind of a continued vocational training method MOOC is. We use the student-teacher dialectic framework within the self-determination theory (SDT) as a background theory model for our analysis. The framework draws attention to the quality of student engagement in a learning situation in order to strengthen the students’ inner learning motivation (Reeve 2009). SDT has been applied to researches in different educational sectors and education levels, including some MOOCs (see Zuan, 2016). However, we did not find any research where the Student-teacher dialectic framework within SDT has been used as such in MOOCs.
Our research focuses on two pilot MOOC courses: “Nearly zero-energy buildings” and “Sustainable energy solutions”. These courses are developed in an ongoing three-year (2015-2018), EU-funded project by expert teams, which consist of teachers, senior lecturers and online pedagogy and educational technology experts from 10 Finnish Universities of Applied Sciences. In addition, some energy sector experts from building and energy sector companies have been involved with the course content planning. Both the above-mentioned courses have different 1-3 ECTS sub-courses (MOOC modules), which can be studied separately. For this particular research project, we have chosen four modules that are ready and hence available for everybody free of charge on the moodle.amk.fi platform; Module 1: Energy efficiency of building, Module 2: Energy efficiency calculation, Module 3: Energy efficiency requirements and Module 4: Solar energy. The course topics are new in the energy and building sectors, as the need for them has arisen due to the new EU directives. Building and energy experts such as building inspectors, designers and architects in all parts of Finland need continued vocational training. The MOOCs we research have been developed to fulfil this educational gap. Some of the MOOC participants are part-time or full-time employees from the building and energy sector, and they are the target group of our study.

2. Overview of MOOCs

Various types of MOOCs have been suggested depending on the learning approach in the course. These are e.g. xMOOCs, cMOOCs and sMOOCs. xMOOCs tend to have a more traditional teacher-centred learning approach with content presented through short video lectures and learning tested through quizzes. cMOOCs emphasise creation, creativity, autonomy, and social networked learning. (Siemens, 2012; Clow, 2013.) sMOOCs stress intercreativity to work towards collective intelligence (Acedo & Cano, 2016; Brouns et al., 2015). Clark (2013) has defined the following taxonomy for MOOCs from the pedagogical perspective: tramferMOOCs, madeMOOCs, synchMOOCs, asynchMOOCs, adaptiveMOOCs, groupMOOCs, connectivistMOOCs and miniMOOCs. According to this taxonomy, madeMOOCs tend to be of a more vocational nature, and Clark has therefore named them as VOOCs (Vocational Open Online Courses), some of which, according to Clark (2014), are already available in the UK. Also, large MOOC providers, such as Udacity, Coursera and EdX, seem to provide MOOC courses which target working professionals. In this study, we use the general concept of MOOCs even though our MOOCs are very similar to xMOOCs. They include video lectures, reading materials, and the videos are available as pdf files. Evaluation consists of automatically evaluated multiple choice quizzes, short answer questions where participants are asked to answer in one or two words or numbers, written reports and some peer reviewing tasks. There is no starting date nor a deadline for submitting assignments. In each module there is a discussion forum where participants can ask questions.

Even though the enrolment rate into MOOCs is high, the average MOOC course completion rates are low. Multiple reasons for student drop-outs have been suggested as e.g. lack of time, starting late, unrealistic expectations, course difficulty and lack of support, feelings of isolation and the lack of interaction, insufficient background knowledge, lack of digital or learning skills, and earlier bad experiences. (Khalil & Ebner, 2014; Onah, Sinclair, & Boyatt, 2014.) However, it should be realised that the completion rate is not a relevant metric to measure student engagement in MOOCs (Hew, 2016). Nor does it mean that MOOCs are ineffective (Rai & Chunrao, 2016). Students may e.g. only be interested in particular topics or materials (Wang & Baker, 2015).

Gamage, Perera, and Fernando (2014) identified the following 10 factors that lead to effective learning in MOOCs: interaction, collaboration, motivation, network community, pedagogy, assessment, content/material, technology, support for learners, and usability. According to Rai and Chunrao (2016), personal factors have a more significant effect on students’ success and failure in online learning than the external environment.

3. Motivation and Engagement

Motivation to participate in MOOCs is one of the most important factors that may prevent students from completing a MOOC (Khalil & Ebner, 2014). In addition, student engagement can influence student retention (Hew, 2016; Xiong et al, 2015). Motivation is significantly predictive of student course engagement. In turn, engagement is a strong predictor of retention. If students are not engaged, motivated and committed
enough, they might drop out even before the first assignment is due (de Freitas et al, 2015). Motivation is a force that energizes and directs behaviour (Reeve, 2009). Motivation concerns aspects of activation and intention, like energy, direction, persistence and equifinality (Ryan & Deci, 2000). Factors like future economic benefit, development of personal and professional identity, challenge and achievement as well as enjoyment and fun might influence students’ motivation to learn (Yuan & Powell, 2013).

According to self-determination theory, motivation is either intrinsic or extrinsic. Intrinsically motivated people inherently seek out new challenges, are keen to learn and exercise their capacities and explore different matters. People who have extrinsic motivation perform an activity in order to obtain some outcome separated from the activity itself (Ryan & Deci, 2000). Extrinsic motivation can vary greatly in the degree to which it is autonomous.

In virtual environments, motivational factors, such as interest, enjoyment and clear goals, are important influences on students’ motivation (Ainley & Armatas, 2006). Belanger and Thornton (2013) identified the following factors that affect students’ motivation in MOOCs:

- To support lifelong learning
- To gain an understanding of the subject matter, with no particular expectation for completion or achievement
- For fun, entertainment, social experience and intellectual stimulation
- Convenience, often in conjunction with barriers to traditional education options
- To experience or explore online education

Engagement is a complex phenomenon that involves both observable and unobservable psychological events and positive emotions (Appleton, Christenson, & Furlong, 2008). In a learning situation, a student can be engaged in a particular learning activity or in a particular course (Reeve, 2012). Cassidy, Breakwell, and Bailey (2013) identified workload, task design, level and nature of facilitation as the main factors that have an impact on student engagement in MOOC. Anderson, Huttenlocher, Kleinberg, and Leskovec (2014) conceptualised five styles of student engagement in MOOCs: viewers, solvers, all-rounders, collectors and bystanders.

Motivation and engagement are inherently linked, influencing one another. Those researchers who have interest in motivation most often pay attention to engagement as an outcome of motivational processes. In turn, those who study engagement investigate motivation more like a source of engagement. Motivation is more subjectively experienced when engagement is more objectively observed. (Reeve, 2009.)

4. Student-Teacher Dialectic Framework Within Self-Determination Theory

As a background theory model for our research data analysis, we used the student-teacher dialectic framework within self-determination theory (SDT). We are interested in our target group's motivation in MOOCs, and SDT focuses on the relationship between the students’ motivation and the learning environment that in our case is an MOOC. Even though the framework uses the viewpoint of classroom affordances, we wish to find what similar and different features the framework can offer in the MOOC environment. SDT should anyhow apply across learning contexts at all levels of education and across diverse cultures (Niemiec & Ryan, 2009).

Figure 1 describes a dialectical relationship between a student's motivation and the learning environment within a SDT perspective. The high quality of students' motivation and engagement arises both from inherent and acquired sources of motivation. Students' inherent sources of motivation include intrinsic motivation and three psychological needs of autonomy, competence and relatedness. Competence refers to a person's effectiveness to perform a skill or task. Autonomy is the feeling as though they have power over their behaviour like control over their learning activities. Relatedness refers to the need to both feel like a part of a group as well as feeling connected with others within the same group. (Ryan & Deci, 2000.) Students' acquired sources of motivation include self-endorsed values, intrinsic goals and personal aspirations that are internalised through cultural experience and self-reflections, and vary from student to student. In addition, they include students' different individual orientations and their cause and effect relationship. (Reeve, 2012.)
Every learning environment has specific external features, such as learning goals and structures, different types of materials and assignments, rewards and feedback systems (Reeve, 2012). Educational practices that support a student’s satisfaction of autonomy, competence and relatedness are associated with greater intrinsic motivation and autonomous types of extrinsic motivation. Both the teacher’s orientation and specific aspects of learning tasks are perceived as autonomy supportive, and are therefore conducive to a student’s intrinsic motivation. Students tend to learn better and are more creative when intrinsically motivated, particularly on tasks requiring conceptual understanding. The way in which learning tasks are introduced affects the student’s satisfaction of autonomy and competence, and therefore has an influence on the student’s learning. The student’s competence can be supported by introducing learning activities that are optimally challenging and allow students to test and to expand their capabilities. Students will only engage and personally value activities they can understand and master. It is also important that students are provided with the appropriate tools and feedback to promote success and feelings of efficacy, thus providing relevant information on how to master the tasks at hand. (Niemiec & Ryan, 2009.)

Other classroom influences are interpersonal relationships, including e.g. those with teachers, peers and study-related groups, like workplaces and communities as well as social and cultural forces, such as values and learning climate. External events and interpersonal relationships provide students with opportunities, hindrances and an overall climate in which their self-motivation grows. The important factor in the learning environment is the quality of the teacher’s motivating style, whether it is autonomy supportive or controlling. (Reeve, 2012.)

5. Research data and questions

Our research data consists of Moodle analytics from all four MOOC course module participants (157 altogether), including each module’s performance measures (percentage of watched materials and submitted assignments). In each course module, there was a section for the course feedback, which 38 out of 157 total number of students answered. We also conducted a questionnaire to all 157 course modules participants. Only 17 students answered it. Finally, we interviewed 12 full-time or part-time employees and 7 employer representatives from energy and building sector companies, whose employees are participating in one of the four MOOC modules. For the interview, we chose participants among those employee participants who had a company email address. We recorded the interviews and transcribed them afterwards.
We analysed all of the above-mentioned data using the student-teacher dialectic framework within SDT as an analysing matrix. We specifically looked for factors that represented different aspects of students' motivation i.e. autonomy, competence, relatedness, learning goals and orientations as well as learning environment features. Only six full-time or part-time course module participants answered our questionnaire. As the answers to the questionnaire, as well as comments given as part of the course feedback, were very similar to what we learned from the interviews, we have therefore chosen to combine these results for reporting purposes.

Our research questions are:

RQ 1 What motivates full-time and part-time employees to participate in MOOCs? In Figure 1, this question is related to the quality of the student's motivation.

RQ 2 What learning methods and materials appeal most to full-time and part-time employed MOOC students? In Figure 1, this question is related to learning environment.

RQ 3 What kind of a continued training method is a MOOC?

6. Results

In Table 1, we present each course module's participant percentages of performance measures taken from Moodle. The numbers in each section represent the number of students. The total number of students mentioned in Table 1 is the number of registered participants in a module by the time of our Moodle analytics (15.8.2017). The total number of registered participants to all four modules was 157 by that time. Participants could choose what modules they study, and therefore the amount of all registered students and the number of participants in each course module differs, as not all participants have chosen all the modules. Modules 1 and 4 have so far had the most participants.

As shown in Table 1, the course completion rate of each module is somehow low. Only one student in module 2 and seven in module 4 have completed the whole course. The number of those who have not yet even opened the first page is high: 58 % (64 out of 110 participants) in module 1 (Energy efficiency of building), 45 % (21 out of 46 participants) in module 2 (Energy efficiency calculation), 65 % (13 out of 20 participants) in module 3 (Energy efficiency requirements) and 56 % (76 out of 134 participants) in module 4 (Solar energy). The conclusion is that the motivation to complete the course differs. There are two extremities: students either study the whole course or drop out without ever opening the course. Some students are just browsing the material and bouncing from one site and assignment to another without any intent on completing the course.

Table 1 Performance measure of MOOC modules, number of students

<table>
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<th>Module</th>
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<th>1-20 %</th>
<th>21-40 %</th>
<th>41-60%</th>
<th>61-80%</th>
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Our first research question was: RQ 1 What motivates full-time and part-time employees to participate in MOOCs?

All of our interviewees registered into the courses by their own choice. Our interviewees’ (employees) motivation to participate in MOOCs arises from the desire to learn. We asked them about the reason for their participation in MOOCs, and all of them mentioned that the course contents are relevant to their present or future work. Therefore, they want to deepen their knowledge and skills. Some have a general interest in the energy field. Some interviewees also showed personal interest in the course topics. They need the information at home or during their leisure time. Some mentioned that they want to share the knowledge with their customers.

- **HS2M**: I enrolled to gain new information, because the world is changing rapidly and therefore I need to stay “on top of the waves” in order to know what is new and up-and-coming.
- **HS4M**: This interests both me and the citizens who make inquiries, and therefore I need to be up to date.
- **HS7M**: It gives me background information and know-how in my research, priority to research purposes, but I also have general interests in the topic.
- **HS5F**: I have always been interested in developing myself and this course seemed to handle actual matters, so I decided to participate.

Some interviewees (employees) mentioned that they were already familiar with the course content and would therefore like to have had more profound information. That may be considered as a competence factor, but it also relates to classroom affordances, as the content did not challenge them enough.

- **HS6F**: I browsed some of the course content and did some assignments. Nevertheless, as there was nothing new for me, I was not motivated to continue.

Independent learning is a very important factor to full-time and part-time employees. Online learning requires self-directed learning competence. Nearly all interviewees (employees) had previous experience in online learning, and they felt competent enough to study by themselves. We identified several components supporting the autonomy such as free timetables, studying at their own pace, the power to decide what materials to study and what not to study, and the possibility to do the assignments, watch videos and read the material as many times as they wanted.

- **HS1M**: I really liked this way of studying, because I was able to study whenever I had time to do it.
- **HS2M**: In my opinion, it is good that the timetable is flexible so that it is not compulsory to study certain materials at a given time. I appreciate that I can choose my study pace.
- **HS11F**: I would not suppose that in a free course there is somebody guiding you all the time. At the workplace, you must be self-directed, if you cannot perform independently, things do not work. Therefore, it is good that it is a self-directed course.

The data shows that students with strong autonomy want to set the learning outcome on their own, and the learning outcomes are related to their intrinsic goals like a new job. We asked, “How will you benefit from the knowledge and skills you gained from the course?” Most of them answered, “In my present work,”, “I want to search for new working possibilities. I hope I can use the knowledge to my benefit in my future workplace.”

In the original student-teacher dialectic framework within SDT, the learning environment has specific external features, such as learning goals and structure. It seems that in a MOOC environment, the students set these features themselves, and they arise from the students’ intrinsic goals.

The interviewees (employees) also mentioned some aspects that narrowed their autonomy, and because of that, their studying slowed down. These aspects were e.g. lack of instructions or insufficient instructions, unclear structure of the course, nobody from whom to ask, no technical help, inadequate skills to use the learning platform, and the fact that the course material was not always available when students would have had time to study. All mentioned that the lack of time slowed down the progress of studying or blocked it completely.

- **HS11F**: It was frustrating because there were unclear instructions on how long the assignments are, and you had to click many times to get the necessary material for the assignment.
HS3F My employer said that there is an interesting course, please take a look at it. Well, I just wanted to have the learning material and use it as a handbook. But I don’t have time to even open it.

HS10M: From my point of view, it would have been easier if all the materials and assignments had been available when the course started, as I would have had time to study back then. Now, the situation at work and during my leisure time is such that I cannot invest time in studying.

All students had sufficient competencies and skills to complete the courses. Not all had the same level of technical competence, but they assured us that while studying the content, they also learned how to use the learning platform. Regarding relatedness, it seems that the MOOCs are suitable for those who have strong autonomy. A majority of the students mentioned that they had no need to be connected with other students. Some interviewees (employees) claimed that interaction was not needed between the other students, but interaction with the teacher would have been desirable in some cases, e.g. live online video sessions.

HS2M For a strong-minded person like me, it is better to study on my own. I do not need the presence of a teacher nor other students.

HS4M I did not need any interaction and was not interested in participating in the discussions. It depends probably on the character of the person.

HS10M I did not miss interaction with the other students but more with the educators.

HS10M: Maybe a discussion forum to ask questions, to get answers and instructions.

HS7M: I would have expected more online video sessions.

On the other hand, some interviewees said it would have been nice to have had interaction with the other students.

HS7M I would have liked to have had interaction. It would have clarified the studies and it would have been easier to follow the pace of the other students.

There were a couple of participants from the same company, but they did not have time during the work to discuss course-related issues.

HS8M: A colleague is in the same course, but we are overbooked at this moment, so I have to study at home late in the evening. So, my colleague isn’t around anymore.

Our second research question was: RQ2 What learning methods and materials appeal most to full-time and part-time employed MOOC students?

The attitude towards using video as learning material was contractual: interviewees (employees) either liked them or considered them monotonous. Those who liked them said it was an easy way to get information, that videos make learning move alive and were easy to use. Some interviewees said that it is useful to have the videos in text-format as a PDF file as well, as it made reviewing the video easier. Some mainly watched the videos only. The interviewees said that the right length for a video to be watched in one sitting during the workday is approximately 10 – 20 minutes. Few participants would have liked to have more links to energy and building sector-related extra materials that could have been studied independently.

HS9F Video material is practically the same as the lecture. Remotely, it is good that you can watch them whenever it is convenient to me. That kind of material suits me very well.

HS3M The strength of the video lectures is that you can stop it and rewind backwards if you need to check something.

HS4M First I watched the video then read the text, as it is easier that way to recall the content.

HS6F I found the video material difficult to watch. I prefer text. At work, when the phone rings, it is difficult to watch videos intensively.

HS7M: I have not thoroughly studied the text-format material. I have only browsed them and checked things. Videos have been functional.

HS5F: I like reading more. Concentration may be disturbed when listening, but it depends on the person of course and how the subject/matter is presented.
Two interviewees (employees) said that it would have been nice to have some podcasts as learning material. It would have then been possible to listen to the podcasts anywhere, i.e., on the way to work. Opinions towards the assignments also varied: some interviewees (employees) liked multiple-choice quizzes, as they were easy to fill out, a good way to rehearse the content and test understanding. One would have liked to have the correct answers after the quiz in order to learn. Some found them useless and preferred assignments where more independent information retrieval is necessary. Short answer questions were good, in one interviewee’s opinion, given that the expected answer format was made clear. Some interviewees preferred multiple small assignments instead of one or two larger ones, as they are easier to finish when time is limited. One interviewee stressed that in working life, they do not write essays—they write reports and abstracts, and therefore the same terminology should be used in the courses. Some mentioned that the assignments did not serve their needs, hence they did not complete them.

HS9F: I learn better when I have to find the information by myself. On the other hand, I do not prefer very large assignments; I prefer smaller ones even though I have to make several of them.

HS10M: Sometimes, the assignment did not serve my interest or needs in the best possible way.

Nearly all interviewees (employees) liked that there was no timetable for returning assignments. One said that when studying among other things such as work timetables would have helped to complete the course sooner. Timetables would have been useful, for example, in that if students complete the assignment by a specific date, they can then participate in a particular session as a “reward”. Nonetheless, if such timetables existed, they should not be used as a condition to participate in the course. A majority of the interviewees (employees) said they did not need any certification from the studies. One mentioned that when having a permanent job, there is no need for a certificate. Interviewees’ only motivation is to learn and gain the information needed. That is a kind of sign of a participant’s intrinsic goals and motivation. One hoped that courses are credited so that it would be possible to gain a degree out of them.

HS10M: I do not need the certificate at the moment. I participate only to get the knowledge.
HS11F: Not necessarily. If someone asks what I have learned, I can say that I now know these and these matters. If you have a certificate, and you later forget most of what you have learned, what use is the certificate then?
HS8M: These kinds of courses should be credited so that you could do them in your own order along with work and little by little gain a degree out of them. So that you do not always have to be a student at an institution in order to get a degree. However, it was not my intention to participate in this course because of credits. To get information was the main reason.

Finally, our third research question: RQ3 What kind of a continued training method is a MOOC? Interviewees (employers) had a positive attitude towards employees’ continued vocational training. Some of them had external educational partners, like universities, consulting companies or vocational training institutions. Companies are investing more and more in online training. It is an easy way to train employees, especially in situations where employee work is decentralised. However, interviewees (employers) said that MOOC, as a word or study method, is not familiar to them. One of the interviewees (employers) mentioned looking for training possibilities from Coursera, but was not aware of MOOCs. The interviewee (employer) suggested that it would be useful to have one web page where information is collected, e.g., several continued vocational training courses offered by different training institutions, organised by theme or sector area.

HE6F: In some cases, I have looked for training possibilities from Coursera, if there would be something for one of our employees.
HE4M: If there is a special need to train individual employees; we search for information on national and international seminars and online courses.

One interviewee (employer) who had participated in the planning of MOOC course modules said that it is important to involve employer representatives in course content planning, as they know what is needed. Still, the challenge is whether employers have time and resources for that. When asked how employers can
support their employees’ continued vocational training, one interviewee answered that encouraging participation and giving information regarding these kinds of courses would be a good way. Nevertheless, the interviewee did stress the fact that individuals have different needs.

HE8F: It is of vital importance that employers are involved in the course planning, as they know the needs. But the question is whether they have time for that kind of work. Participation in course planning took me several hours but even more might have been needed. Anyhow, it is good to keep the link between the working life and educational institutions active so that the content is what is needed and just right. It would be good to have different experts from different places and sectors involved.

In addition, to nearly all course participants, the meaning of the word MOOC was unclear. However, their opinions towards MOOCs as a method of continued vocational training were positive. One interviewee (employee) emphasized that one advantage of online learning is that it can be done anywhere, hence there is no need to travel to the training events, e.g. from northern Finland to the southern part of Finland. Another brought up that MOOCs are a good way to advance in one’s career. Only one felt that the traditional face-to-face method is better.

HS8M: This is a great idea. Whatever the subject, if you want to learn and to gain knowledge, it is a great idea. It is possible to do everything at your own pace and in whichever way you want. This gives many people good possibilities to advance in their careers.

HS10M: Maybe, for some type of training, it would be appropriate. But I personally think that a traditional training method is better, as it provides the possibility to interact and network.

7. Conclusions
We realised that, in our study, the employed students’ motivation to participate in MOOCs is rather intrinsic and based on personal aspirations. Students have the desire to develop themselves, learn new interesting things to help them cope better in their daily work or even get a better job. These results are similar to Yan and Bowel (2013) who discovered that future economic benefits and development of personal and professional identity might influence students’ motivation to learn. Belander and Thornton (2013) identified gaining an understanding of the subject matter with no particular expectation for completion as one of the factors affecting students’ motivation in MOOCs. Belanger and Thornton (2013) also distinguished that fun and entertainment might affect students’ motivation in MOOCs. According to the student-teacher dialectic framework within SDT, these can be considered as interesting activities in a classroom. However, in this study, students did not mention these factors at all.

Students registered in the course modules by their own choice, wanted to set the learning goals by themselves and learn just what was necessary for them and what they thought their customers need to know. Students also wanted to share the information, knowledge and skills they learned with their colleagues and customers. Hence, the students’ goals were intrinsic and their values more self-endorsed. Ainley and Armatas (2006) claimed that clear goals are important influences on students’ motivation. If the students’ motivation was extrinsic, for example the course was recommended by the employer, the engagement and motivation to complete the course was not as intensive as if the motivation was intrinsic. So, it seems that in this study, the autonomy of the psychological needs, intrinsic motivation and goals, as well as personal aspirations in the student-teacher dialectic framework within SDT, are the strongest driving forces for the students.

Competence is seen as a significant motivator in a framework. All our interviewees’ jobs were somehow related to the course modules’ content matter. They had competence enough to start studying. Some felt, however, that the content was too basic. They expected to gain deeper information about the subject. Because the intrinsic goals and personal aspirations were not met, these students did not have enough interest to continue their studies. In MOOCs that are targeted to students who are working and are supposed to have diverse prior knowledge on the course content, the materials and assignments should be versatile and multi-level in order for the course to meet the needs of various participants. Otherwise, these students’ psychological need for competence might suffer.

In student-teacher dialectical framework, the relationship with the teacher and the peers is relevant. In this study, we discovered that in a MOOC environment, the psychological need of relatedness did not play a very
significant role. The reason could be that the students were more autonomy-oriented in their studying. In our study case, we found the relationship with other workers in the company and other work-related groups, e.g. the students’ customers, to be more important. Therefore, we suggest that these relationships are supported more in a MOOC learning context in continued vocational training. Classroom affordances can be seen as MOOC learning environment affordances as diverse and sufficiently challenging learning activities can enable the students to achieve their learning outcomes without the presence of teachers. In addition, good instructions for studying and a forum to ask questions will help the students to study by themselves. Videos and podcasts enrich learning and make it more interesting. That is also what the student-teacher dialectic framework within SDT requires. When it comes to the external events by the framework, the rewards of the students come from the self-set learning outcomes and the feedback from the employer and the customers.

Neither the employers nor the employees were very familiar with the MOOC as a word and a form of study before our interview. Employers stressed that the need to train employees varies between different companies: smaller ones have different needs than bigger ones. They said that MOOCs could probably solve some continued vocational training needs but at the same time, they stressed the presence of individual needs. Therefore, they would like to some extent participate in the planning of MOOC contents. That is why we suggest that when researching the usage of MOOCs in the context of continued vocational training, researchers should somehow recognise the needs of companies and regard workplaces as learning environments. Lack of time was one reason why our interviewed employees had not had the possibility to study sufficiently. If MOOCs are used in continued vocational training, it would be expedient if some time could be allocated for employees to study, even during the workday. In a workplace, the SDT's psychological need of relatedness could have more meaning if interaction between colleagues could be somehow enabled during a learning process.

Based on our study with relatively small target group, MOOCs seem to be a good model for some working individuals for continued vocational training, especially for those who do not need so much relatedness. So, VOOCs are welcome. In the future, more data is needed from the companies and organisations as well as full-time and part-time employees studying in MOOCs to gain a better understanding of this matter. Even though our data-analysing model, the student-teacher dialectic framework within SDT, is originally developed in a traditional classroom context, we could identify in it some relevant factors that fit the MOOC learning context as well. However, if this framework will be used in future researches, where the focus is on the learning of full-time and part-time employees, the working environment should then be taken into account as well. In general, for those researching MOOCs in the future, we recommend that they incorporate an understanding of the high level of different ways in which students motivate and engage. We believe this aspect to be much more insightful than a raw report of the number of students who enrolled in the courses or the number of students who obtained a certificate.

8. References


Narrative design combined with a TAM survey to achieve a multisensorial museum user-experience for people with disabilities

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Abstract
The great challenge of Museology of the XXI Century is the attention and integration of the most disadvantaged social sectors with museums. The work developed within the MUSACCES project aims to improve the relation of people with disabilities with the artistic heritage in the Prado museum trying to achieve a multisensorial user experience discovering formative narratives around the artistic elements. The application of a Technology Acceptance Model survey extended with accessibility criteria focused on collecting the interests of potential users with disabilities and determining the ease of use and the perception of utility of the technology to be used. Moreover, describing virtual tours or stories in museums is also an area of research and development. The term Narratology refers both to the study of the narrative and the structure of the same, as to the way in which it affects user’s perception, joining concepts of the area of Structuralism, Semiotics or Semiology. Participation of the expert historians and educators has been inforce in the MUSACCES project by the use of a new developed web information system, which defines a series of concepts that will serve as a structure for the construction of a semantic graph of metadata and concepts through the narratives. Currently, the system allows to manage predefined objects, such as the characters (both real and fictitious), plot events, museum works (and their associated metadata) or external references. The relationships generated through the metadata or indirectly, allow the construction of semantic graphs, with which the narratives will be constructed.

Keywords: multisensorial, user experience, Technology Acceptance Model, narratology, cultural heritage.

1. Introduction
Collectives of people with disabilities still face the problem of limitations while accessing to artistic heritage. Stressing the need for a human rights-based approach to cultural heritage matters, the response to this accessibility barriers copes into an overall context. Policies as regards disability implemented by the The Ministry of Sanidad, Política Social and Igualdad (Ministry of Health, Social Policy and Equality) of the Spanish Government are consistent with the purpose of the United Nations Convention on the rights of Persons with Disabilities, 2006, ratified by Spain in 2007, which is to promote, protect and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity. Consubstantial to the recognition of these rights is the promotion of
accessibility in all of its areas, making the enjoyment of Cultural and Artistic Heritage an indisputable part of these rights.

Accessibility is an essential right and a fundamental tool to support social inclusion, non-discrimination and equality of opportunity and treatment, especially, after ensuring accessibility to physical environments, information and communications, processes, products and services. After all, universal accessibility, as a fundamental variable for achieving equality of opportunity, it is a basic criterion in the management of public action. In Spain, the Law of Equality of Opportunity, Non-Discrimination and Universal Accessibility (LIONDAU), in force since 2003, is upheld by the principles of normalisation and an independent life. A study that applies these rights to the enjoyment of cultural heritage is entitled “Universal Accessibility to Cultural Heritage. Fundaments, Criteria and Guidelines” published by the Real Patronato sobre Discapacidad (2011), the Royal Board on Disability in the country. This document help people to consider the question of accessibility as a very relevant aspect for the revitalization of the monuments that, being accessible to all people regardless of their disabilities, are long lasting and strengthen the nature of their heritage to all of society.

In similar terms, the document on the Integrated Spanish Strategy for Culture for Everybody accessibility to Culture for Persons with Disability promotes initiatives for Accessibility and Culture for All in perfect consistency with policies channelled through the Spanish Ministry of Health, Social and Equality Policy and the Ministry of Culture (Ministerio de Cultura & Ministerio de Sanidad, Política Social e Igualdad, 2011). This ministerial document aims to promote and normalise the implementation of accessibility in all initiatives in the cultural universe, in such a way that they comply with the highest demands for quality, technology and adaptability.

As a result, Spanish society is becoming more and more aware that the inclusion of persons with disability in the different areas of social life supposes a demand for the full respect of human rights, which means putting into action the means necessary so that all citizens, independently of their functional diversity, have their needs equally covered. According to the information from the Spanish national institute of social statistics (INE) in Spain, in 2008 some four million people (9% of the national population) were able to find themselves in this situation of special accessibility, thus being at risk of exclusion, facing the impossibility of fully participating in society, or facing the risk of encountering difficulties in doing so.

2. Museology and Social Integration

One of the great challenges of 21st Century Museology is the attention to and integration of the least favoured and disconnected social sectors with our museums. Modern museology, without abandoning the fundamentals of the custody, study, research, exhibition and contemplation of collections of artistic, historical, scientific, or technical value or of any other nature, has made it a greater and more varied dynamic reality to the service to the public. The museum institutions are living spaces whose managers try to bring about a more dynamic and open participation. The interest in educating and socialising culture has endowed the museums with human resources, etc., and diverse strategies for attracting the public. However, in spite of all of these efforts, the changes introduced into society through phenomena such as multiculturalism, immigration, the economic crisis, the loss of motivation found in a significant part of young people, may give rise to social exclusion in segments of the population who would be left at the margins of the museum context and its advantages.
Pioneering experiences have taken place in Spain in recent years. During 2009 and 2010, El Museo de Bellas Artes de Murcia (MuBAM) (The Murcia Museum of Fine Arts) and the Fundación AlzheimUr held Art and Culture as Therapy workshops with groups of people with Alzheimer’s disease. In the Museo Nacional de Arte de Cataluña (The Catalonia Museum of Art) the Department of Education launched a program called “El Museo Espacio Común de Integración” (The Common Museum Space for Integration) aimed at people or a collectives who are suffering some kind of exclusion for social, physical or psychological reasons and who find it difficult to consider the museum as a personal reference. In Malaga, the program for the Transformation of the Joaquín Peinado Museum (Ronda, Malaga) has the development of skills, abilities and social capacities in people with intellectual disability as one of its main objectives by means of plastic expression. In 2011, the Museo del Prado launched an activity called “El Prado for everybody”, which aims to integrate and favour access to culture for those people who have some kind of physical, sensorial or intellectual disability and/or neurodegenerative illnesses. The activities were created from a didactic, artistic and creative focus.

3. The MUSACCES Consortium

The MUSACCES - S2015/HUM-3494 project began its progress in 2016 with the consolidation of a Consortium which operates in the Comunidad de Madrid and which proposes museology activity and social integration in an environment of interdisciplinary work, seeking to bring the Museo del Prado to collectives which face special accessibility barriers (such as blind, deaf and imprisoned people) supported by Information and Communications Technologies (ICTs). The research work is being developed by participants from multidisciplinary fields, humanists and technologists, from research groups from the Universidad Complutense de Madrid, the Universidad Nacional de Educación a Distancia (UNED) and the Universidad Autónoma de Madrid (UAM), with the collaboration of the Museo del Prado and other businesses and institutions such as Fundacion Vodafone España and Fundación ONCE.

The Research Groups participating in the project are:

- The CAPIRE+A Research Group (Cultural Heritage) brings together expert researchers in the history of art, iconography, history and documentation who work in areas related to heritage, museology, history and culture in the Middle and Modern Ages. It is based in the Department of the History of Art I (Medieval) of the Faculty of Geography and History of the Universidad Complutense de Madrid. Within the framework of the MUSACCES Consortium, CAPIRE+A (Cultural Heritage) is the Research Group Coordinator, whose direct responsibility is the scientific development of the activities program. Furthermore, the researchers who make up the Research Group work on developing the historical-artistic content for the products implemented in the Consortium.

- The CAPIRE+B Research Group (Image, iconography and iconology) is made up of researchers experts in the field of the history of art, and especially in the field of iconography. Moreover, they work in subjects related to heritage, museology, history and culture in the Middle and Modern Ages. It is based in the Department of the History of Art I (Medieval) of the Faculty of Geography and History of the Universidad Complutense de Madrid. In the Consortium its work is centred on the historical-artistic study of the chosen works for the products and its work from the analysis of significant, contextualization and study of the sources.

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1 http://www.musacces.es
• Museum R&D&C. Digital Culture and Hypermedia Museography Laboratory is made up of researchers from the Faculty of Computer Sciences at the Universidad Complutense de Madrid supported by personalities from the world of museums and other universities from Spain and around the world. The initials R&D&C mean Research & Development & Creation. The Museum R&D&C group brings its experience in doing public surveys and museological and museographic hypermedia and transmedia development to the consortium, with accessibility always in mind.

• The EARTDI (Art Applications for Social Inclusion) group works from a constructivist orientation and centred on psycho-social improvement, and focuses artistic practice from an art-therapeutic point of view on its work in collectives at risk of exclusion and in its work on gender equality. In the MUSACCES Consortium, this group is in charge of the detection of good practices, definition of needs and indicators and adaptation and suitability of the content for the reference collectives.

• The work objective of the ICONO-MUS Research Group is Musical Iconography (the analysis of the scenes of music and dance described visually in any kind of support). It is based in the Department de Musicology of the Faculty of Geography and History at the UCM. Their main contributions to the Consortium are based on the experience of the Group in cataloguing the works with musical iconography of the Museo Nacional del Prado, some of which can be seen on the Web page of the Museum and that of its group (www.imagenesmusica.es).

• The INADOC (Innovative User INteraction to Accessible Digital Objects and Collections) group of UNED is a recently created multidisciplinary group made up of teacher-researchers, experts in models for accessibility and usability, and technologies for the management of large repositories of information, the automatic processing of natural language and access to multimedia information, and experts in designing and follow up of the use of new technologies in education and measuring its quality. It works in close collaboration with the Chair of “Technology and Accessibility” UNED – Fundación Vodafone España, to which several of its members belong. In the Consortium its labour is centred on producing a model for an accessible route for each of the subjects selected and on adapting the content developed by the humanist groups to the target group profile of each didactic unit. For this reason, it is in charge of identifying didactic units accessible to every specific group of users with a diversity which contain multimedia elements associated to every accessible route.

• The SICTO Research Group (Signum imaginem caeli terraeque observare) is part of the Faculty of Geography and History at the Universidad Nacional de Educacion a Distancia (UNED). It is dedicated to research into certain aspects of the classical world by means of iconographic documentation as the interpretation of the expressions and symbolism of power, the analysis of society (costumes, ornamentation, objects, etc.), or the study of ideology and religious expression. In its work within of the Collections of Classic Art of the Museo del Prado, the interpretation of its iconographic manifestation as a testimony to history, society and life in its time, the suitability of the understanding and accessibility of this historic context to collectives with disability and specific needs (blind, deaf and dumb and imprisoned people).

• The GREIGA group which carries out Image Studies from Ancient Greece, brings together a number of researchers who work in the field of image studies and iconography in the Ancient Greek world. It is based in the Department of Art History at the Universidad Autónoma de Madrid and it is linked to ICCA, the Instituto de Ciencias de la Antigüedad (the Institute of Sciences of Antiquity) of the same university. Their contributions to the MUSACCES Consortium are the responsibility for the scientific work related to image
studies and Greek art and the development of content in the analysis and diffusion of the visual culture of Ancient Greece.

In order to ensure compliance with the established objectives, as well as guaranteeing an efficient administration of the resources in the Management Plan which allows the strategic actions as regard the working and organization to be developed with total transparency and optimizing the strategic actions as regards working and organization. Furthermore, a series of single-member bodies and commissions have been designated with specific functions which will permit a suitable coordination of a large number of professionals (around 80 researchers in total):

- Coordination and Scientific Secretariat.
- Working Commissions: made up of 6 research consortia and the management committee which supervises its work.
- Organization Commissions: the Permanent Commission which is responsible for the coordination of the strategic line of activity of the Consortium and Delegated Quality Commissions, Economic Affairs and Institutional Relations.

In the triennial plan of activities (2016-2018) eight specific objectives have been established, which are:

1. Create a state of the subject of the research into « accessible culture and tourism », as well as the different initiatives of its application to the world of museums at both the national and international level.

2. Compile and analyze the interests and needs of each of the three collectives with special accessibility as regards the artistic heritage of the Museo del Prado.

3. Organise the thematic lines, the interactive routes and the technological applications with the artistic content of the Museum which will be studied to adapt them to the products of each of the three collectives according to their interests and needs.

4. Research the thematic content, adapt the didactical units and program the technological systems necessary for the three groups with special accessibility.

5. Produce, revise and try the prototypes of the final applications, systems and exhibitions which embody the virtual routes adapted to the blind, deaf and dumb, and imprisoned users.

6. Disseminate the results among the main forums of the collectives which are the target groups of the proposals in particular and between social agents in general.

7. Carry out a follow up and draw up a qualitative and qualitative evaluation of the impact and degree of satisfaction which, in each group of the three collectives with special accessibility, have had the applications and virtual visits produced.

8. Transfer the results and innovations of the research to other national and international museography bodies and institutions from the organization of an International Congress on « Museography and Social Integration » and the publication of a monographic book on the said subject.

Throughout the first year of the project, the planned activities were centred on the development of the first two objectives and the carrying out of training activities. Thus, for objective 1, a very extensive collection of
bibliographical references has been compiled to shape the updated state of the art and carry out a survey in five languages (German, Spanish, French, English and Portuguese). For objective 2, a specific questionnaire has been produced to analyse the interests of people with disability in relation to the artistic content of the Museo del Prado. Along the first half of the second year, activities related to objectives 3 and 4 have started. Data collected from the survey has been analyzed leading to preliminary functional requisites definition. The design for mobile interaction learning experience has begun along with semantic definition of the artistic itineraries.

4. Lines of integration as regards accessibility to artistic heritage

In order to work on the lines of integration and culture for all, numerous national and international organisations have designed programs and proposals with a great wealth of pioneering results which have been made available to new projects to facilitate and promote their development. From the MUSACCES Consortium it has been decided to accept the validity and importance of all of this research, continuing the same trajectory from other prior initiatives and carrying out a small group of demo projects adapted to the most specialised context peculiarities, centred on the objective of achieving an artistic multi-sensorial approach.

4.1 Lines of accessibility for blind people

Those people who are unable to perceive images through sight have serious difficulties in enjoying the visual artistic experience. In some cases, when blindness set in after several years of normal life, the minds of these people are able to reconstruct what they perceive from past images. However, many blind people where born blind, therefore they lack the prior visual references on which to build their mental images. Visual perception may be substituted with an active participation of the artistic experience through touch senses (touching volumetric representations of works of art and reading texts written in Braille), through hearing (listening to musical passages of melodies and sounds of musical instruments), through taste (experiencing flavours related to the pictorial works) and through smell (smelling aromas that evoke that which is embodied in the pictures). This facts have been tested in MUSACCES through a specific Workshop entitled “The Museo del Prado through the 5 senses” that was carried out along the period Sept-Oct 2016. Experiencing the works of art through the other senses different from sight allows the blind people to enjoy aesthetical experiences equivalent to those of sighted people and will facilitate them access to artistic heritage from an integrated museology.

4.2 Lines of accessibility for deaf people

Those people who are unable to hear sounds clearly have difficulties in suitably receiving acoustic explanations on the artistic works in a museum, even though they have no difficulty in seeing them. Although they have no accessibility problems in the direct contemplation of the pictorial works or sculptures, this collective is able to take advantage of didactic resources without sound to help them appreciate the relevance of the said works in its cultural environment in greater detail. The Consortium tries to improve the experience of this potential visitor through the use of audio guides as an element to help them during the visit, and creating other types of interactive supports that will accompany the deaf people during their tours of the Museo del Prado.
4.3 Lines of accessibility people in prison facilities

Those people deprived of their freedom of movement as they are locked up in prison institutions are unable to visit the Museo del Prado in person to appreciate its historic - artistic heritage, unless their internment conditions allow it. Likewise, prisoners lack direct access to the Internet, or it is very restricted and controlled, making them unable to easily access the resources offered by the Museum either through its web page or through other services available on the cloud. In this order of ideas, the MUSACCES Consortium is centred on two fundamental objectives: on the one hand, it takes the Museum to the internment centres, enriching programmed Art-therapy activities; on the other hand, bring the prison institutions to the Museo del Prado. The researchers will look for novel ways of taking practical and interactive artistic experiences to the prison institutions by means of conferences, courses, training workshops, expressive and creative workshops and/or exhibition of the works of art produced by the inmates themselves.

Art-therapy is located within the so-called Creative Therapies (Martínez, 2011), it being a modality of therapeutic intervention whose application is focused on the production of images and objects through artistic means, (painting, drawing, sculpture, photography, video, installation, etc.), so that the participants are able to become aware, update or resolve their psychological problems. The essence of Art-therapy is found in the possibility of projecting, during the creative process and the work carried out, those sensations, thoughts, emotions, memories, etc., which with verbal language, they find it difficult to express. Definitively, it allows a channel of communication to be opened in which the person is able to freely express their internal processes with the intention of integrating them into their lives, rather than for aesthetic reasons.

Art-therapy mainly resorts to non-verbal communications processes (plastic arts, music and body expression) leaving the door open to more spontaneous processes than words, favouring both the expression of personal sentiments, which brings with it a prime basis for self-esteem, such as reading and recognition in the processes of others, which favours positive social exchanges. (Rodríguez, 2007: 276-277).

5. TAM-based survey: compilation and analysis of the interests and needs of disabled users

Regarding to the compilation and analysis of the interests and needs of each of the three collectives with special accessibility in relation to the artistic heritage of the Museo del Prado, a user experience survey has been developed in accordance with the TAM (Technology Acceptance Model). This model was originally developed by Davis (1993) and Davis, et al. (1989) and it is use to predict the benefits of ICTs, based on two main characteristics:

a) The Perceived Usefulness, PU, refers to the degree to which a person believes, that by using a technological system in particular, his/her performance will improve.

b) The Perceived Ease of Use, PEOU, highlights up to which degree a person believes, that by using a technological system in particular, he/she will make less effort to carry out his/her tasks.

In MUSACCES, the survey was developed to analyze the perceptions of people with disabilities regarding the use of certain ICTs that could be used for the design and development of accessible and interactive mobile learning itineraries inside and outside the Prado Museum. The qualitative study has been carried out by collecting data through an ad-hoc questionnaire, which analyzes the interests of people with disabilities in relation to the museum’s artistic content. The survey is organized in three different sections: questions about cultural and artistic personal interest, questions to achieve a socio-economic profile and questions about the ease of use, efficiency and utility of the technologies integrated in the mobile devices according to the TAM.
The validity of the content of the questionnaire has been assessed by a team of experts (psychologists and sociologists), whose evaluations have shown that most of the items were correct and adequate in comprehension and writing for the users with disabilities. Moreover, accessibility issues has been taken into account while selecting the online survey software, and the questionnaire has been completed in a LimeSurvey instance with a high degree of accessibility. The survey was launched to the community of students with functional diversity of the UNED in December 2016. For the analysis of data, the statistical software IBM SPSS was used.

5.1 Preliminary analysis of survey results

The population under study is composed of 6,571 students with disabilities enrolled at the university, with a total of 278 valid answers received, 55.8% women and 44.2% men, with a mean age of 44 years, with 34,5% reached the level of university degree or equivalent. Regarding disability, 26.3% have a recognized disability degree by the national government of over 65%, while 65.1% have a degree between 33% and 65%. Suffering different illnesses and functional problems only 36.6% of them need to use daily some kind of adaptation or assistive technology to access ICTs. Distribution of disabilities of TAM-based survey users is shown in figure 1.

![Disability distribution of survey users](image)

The preliminary analysis of the survey results show the following characteristics according to the following factors:

- **Factor 1.** Generalization in the use of mobile devices in the group of people with disabilities (through questions on the use and frequency of smartphones and tablets, its ease of use and efficiency).

  The data collected refutes other studies carried out in the country such as Fundacion Vodafone España (2016) in the sense that 92.1% of the respondents confirm using a Smartphone, or mobile of last generation and half of them, 51.1%, also uses a digital tablet form Habitual connecting daily to the Internet (60.4% of cases) and with a certain frequency (29.1%). The data obtained confirm that in addition to being easy to use devices, they are very efficient for daily life (92.8% smartphones, 74.8% tablets).

- **Factor 2.** Implications of ICT for ease of connectivity and the formation of user communities (through issues of ease of use and efficiency of Internet connection with data, NFC technology, Bluetooth and hearing-audio induction loop).
A large percentage of users confirm that mobile devices are easy (51.8% smartphones, 45.3% tablets) or very easy to use (36% smartphones, 29.9% tablets), always being the phones more easy to use than tablets. As for the Bluetooth technology, this is the easiest to use according to 60.8% of the sample, the NFC technology according to 25.5%. The audio induction loop, that is commonly used only by hearing impaired people who attach their hearing aids to have a higher quality sound and volume, reaches only 9.8%. Likewise, the answers reach similar percentages in terms of their usefulness.

- **Factor 3. Attitude towards the use of multimedia and audio-visual materials for explanatory accompaniment in the museum** (questions related to navigation on museum web pages, use of audio guides, video guides and even personal tour guides)

The perception of the usefulness of audio-guides and video-guides (45.3%, 34.5%) is greater than its ease of use (43.5%, 29.2%), logically being the first most affordable because its use is also more widespread.

- **Factor 4. Attitude towards the inclusion through ICT of gamification activities (augmented reality)**

19.8% of the sample consider that the augmented reality is easy to handle, however its use is very scarce since more than 70% of the sample recognize that they have never used a mobile app with this technology. It is relevant to point out that people who are used to use assistive technologies give more value to this technology and find it easier to use than those who do not have special limitations on accessing technology.

- **Factor 5. Attitude of people with disabilities towards virtual tours** (questions on use of virtual tours in web pages or in museum and virtual reality)

Approximately 75% of the respondents have never visited a museum virtually, although there is a high percentage of visits to the museums’ websites and their collections. For instance, 56.9% have already visited the Prado Museum website. Interestingly, people with hearing impairment are less interested in this type of visit (usually lacking subtitles or easy reading styling) than people with visual impairment, who access content more easily through screen readers.

### 6. Achieving OpenLinkedData and Artistic Narratives

In relation to the artistic learning itineraries and narratives, a critical aspect in Digital Humanities applications is the existence of corpus and data in a proper digital format. In fact, there are specific projects dedicated to obtaining information and cultural data in digital format, related to the complex processes of digitization, structuring and visualization of information on the Web (García-Serrano et al., 2015). At the same time, in recent years the information on the Web is being organized according to the paradigm of Linked Open Data (LOD), to facilitate its reuse by computer applications that support its access by different users and enriching their content through multilingualism and so on.

In this work we show the role of the data linked in the project MUSACCES. Authors have defined a first approximation to the problem and a prototype that incorporates the automatic ingestion of the open linked data of the Museum of the Prado, with the aim of facilitating the development of adaptive virtual itineraries and narratives.

#### 6.1 Open Linked Data from the Museo del Prado

The first task to be addressed with open data is to know the structure of the metadata with which the data are described. Metadata is a term coined in the 1960s to describe the characteristics of data (data about
data) and enable its retrieval and interoperability. To avoid ambiguity in the description of the data, experts use standard or defined description models, such as the CIDOC-CRM (Contextual Reference Model) defined by Doerr et al. 2007, a reference for the Prado Museum, together with the standard FRBR to model the bibliographic records of the museum.

The model of the Prado Museum\(^2\) is organized, at its highest level, around objects of knowledge such as: artwork, author, exhibition, chronological event, activity, restoration, multimedia resources and others (figure 2). In addition to this model the museum has information on the Web in the form of microdata in JSON-LD format from W3C, 2014. With the microdata, the metadata of the data contained in a web page (topics, attributes, etc.) is normalized to be searches by automated engines and other applications.

Once the open data structure is known, an automatic process called a crawler can be performed, allowing the data to be imported into a repository or to a reusable software application, such as Paths European project\(^3\) to facilitate access to Europeana repository materials.

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\(^2\) https://www.museodelprado.es/pmartwork

\(^3\) http://www.paths-project.eu/
narrative threads, corresponding with a pragmatic exposition of what happened. Related to the narratives, special mention is the DECIPHER project⁴ that developed the Curate ontology (Mulholland et al., 2012), to describe histories from museums resources and related events (cause and effect). On this ontology two software tools were developed: Storyspace⁵, for the conservation staff of works of two museums and Storyscope⁶, which already includes a model, its associated methodology and a software tool to create and publish stories about cultural heritage and museum collections (see figure 3).

In our case, although the basic concepts are defined quite similarly to the model that underlies these narrative tools (Koenitz, 2013), they are implemented in a different way and the narrative model is more ambitious, based on a relationship graph. The set of all events ordered chronologically constitutes a story. Selecting a subset of events, without chronological ordering, creates a frame. The form of presentation (textual, sign language, audio, etc.) is the mechanism used to link the elements in such a way that is accessible and understandable for the general public or with special needs. Once a frame and a shape are selected, a narrative can be constructed. Therefore narrative is the process of giving meaning to the elements (that are originally independent) of the plot through the selected form.

In order to create a narrative that is interesting and provokes an expectation in the visitors, it is necessary to have the structured open linked data along with new information to finally construct a story in which one could describe who the characters are and how they participate: What characters appear? What is the picture made for? What inspires the painting? How does the work arrive in the museum? What aspects of the historical context appear?

The answers are very diverse and can be combined in very different ways. A first approach to articulate them automatically has been implemented, called MPOC tool⁷, which is a web information system developed in the framework Laravel 5.4 and HTML5. In it already define a series of concepts that will serve as a structure for the construction of a semantic graph of metadata and concepts through the narratives. Currently, the system allows to manage predefined objects, such as the characters (both real and fictitious), plot events, museum works (and their associated metadata) or external references (such as Youtube, press, etc.). The relationships generated through the metadata or indirectly, allow the construction of semantic graphs like the one of figure 4, with which the narratives will be constructed.

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⁴ http://kmi.open.ac.uk/projects/name/decipher
⁵ http://www.eastgate.com/storyspace/
⁶ http://labs.europeana.eu/apps/Storyscope
⁷ http://catedra.lsi.uned.es/metadata/
7. Conclusions

The work developed within the MUSACCES project aims to improve the relation of people with disabilities with the artistic heritage in the Prado museum. The application of a user experience survey based on the Technology Acceptance Model has collected the interests of potential users with disabilities and determining the ease of use and the perception of utility of the technology to be used in the design of mobile learning itineraries. The first analysis refute the ease of use and efficiency that mobile devices provide to people with disabilities and the extensive use of wireless technologies and total connectivity tools (Bluetooth, NFC, GPRS), which encourage the incorporation of these technologies to accessible itineraries, promoting interactivity and navigability and some source of gamification accompanying the learning design, for instance using augmented reality. Likewise, a great interest in experiencing virtual tours appears in a global way, but more research needs to be developed to better clarify the concepts to users and to better collect their perception about virtual reality, augmented reality and similar methodologies.

In parallel, describing virtual tours or stories in museums using narratives is also an area of research and development. Participation of the expert historians and educators has been in force in the MUSACCES project by the use of a recently developed prototype of a web information system, which defines a series of concepts that will serve as a structure for the construction of a semantic graph of metadata and concepts through the narratives.

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Once Upon a Tip... A Story of MOOCs and Gamification

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Abstract
This paper discusses the future of MOOCs based on recent research and acknowledged affordances of videogame’s design. The interest in MOOCs for educational purposes has increased over the last few years, with researchers identifying key pedagogical features that make the success of these inherently powerful learning tools. However, low student motivation and high dropout rates have somehow changed the original expectations of many researchers, despite the MOOC user base doubling in 2015. So, in this study we survey recent literature looking for answers, and discuss the evidence gathered from specific MOOCs with over one thousand participants, namely, pioneering iMOOC courses at Universidade Aberta (the Portuguese Open University). Finally, we look at the gaming world and discuss some findings that may benefit the learning design of MOOCs, considering that, besides the huge appeal of these (free) courses, there are recurring shortcomings that we have to alleviate. We follow up on the tip that gamification, and other emerging strategies, such as social networking and digital storytelling, may be vital to assure a sustainable future for open education and MOOCs.

Keywords: MOOCs, learning design, open learning, games, gamification.

1. Introduction
In this paper we briefly discuss the recent history and status of Massive Open Online Courses (MOOCs), and consider the need for change towards alleviating existing shortcomings in learning design. In the wake of the Open Educational Resources (OER) movement in the beginning of this century, we witness today the emergence of MOOCs all around the globe, mostly based on the notion of “connectivism” – a term coined by George Siemens and Stephen Downes in the context of a networked and digital world (Conole, 2014; Bell, 2011). But more recently, following up on the MOOC Research Initiative study (2014), it has become apparent that MOOCs have clear shortcomings, for instance, a very high dropout rate and little evidence of student’s success in broad academic terms. So, notwithstanding the worldwide MOOC user base doubling in 2015, with a total number of students who signed up for (at least) one course reaching over 35 million\(^1\), the results seem to be unsatisfactory and there is a need to rethink the learning design of these courses, perhaps evolving towards more engaging designs that include the “gamification” of content and the use of social awareness strategies (Krause et al., 2015; Staubitz et al. 2014; Gené et al., 2014).

After the boom of 2012, the evidence on MOOCs (Lane, 2013) showed that these courses triggered a re-conceptualisation of higher education study amongst traditional universities that was previously mainly found in “open” universities. A balanced view is provided in a chapter by Tony Bates (2014), notably

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\(^1\) https://www.class-central.com/report/moocs-2015-stats
highlighting the characteristics and disruptive power of this innovation, namely, that MOOCs are forcing higher education institutions to think carefully about its approach to open education and that there are considerable differences in the design of MOOCs, reflecting different purposes and philosophies. This author argues that MOOCs, as powerful models of open education, could well replace some forms of traditional teaching (such as large lecture classes) but more likely they will remain just an alternative to other conventional education methods. A change of pace has occurred in the meantime, with MOOCs evolving from 10 weeks long courses and weekly or bi-weekly assignment deadlines to shorter courses with flexible deadlines (Shah, 2016). So MOOCs are gradually being transformed from virtual classrooms to a Netflix-like experience. Courses are now offered in a self-paced format or switched to a regular schedule with new sessions starting automatically on a bi-weekly or monthly basis (e.g. Coursera). So, if a student can’t finish a session, he/she can be transferred to a new session.

The high dropout rate in MOOCs called attention to a number of issues, perhaps one of the most salient and easier to solve is the need to support social presence. According to Shah (2016), while 40% of learners in FutureLearn MOOCs interact in their courses, less than 5% of learners tend to engage in Coursera MOOC forums. Social presence must be established and sustained in order for students to build the trust that will allow them to comfortably engage into deeper levels of social knowledge construction and group-based problem solving. However, the short duration of MOOCs and the “light” engagement of students tends to limit the opportunities for establishing a sense of trust between learners, as this likely leads to much more self-serving relationships (Siemens et al., 2015).

Many educational researchers today would define open education as a multidimensional construct of learning skills and cognitive learning results, for instance, procedural, normative and strategic knowledge, and attitude (Pivec & Dziabenko, 2004). Learning is, from this perspective, about building up knowledge, skills, beliefs and attitudes that together, form an identity as someone who is a capable consumer, and perhaps even producer of scientific knowledge. Some have even speculated that this "identity-level" is a good way for educators to think about transfer. Perhaps if students experience the development of identities as competent performers, acquiring knowledge, skills, and beliefs congruent with those valued by various scientific communities, they will take on these practices outside of formal school contexts.

On the other hand, teaching presence is somehow non-existent, and scaffolding strategies may be needed for learners to progress in MOOCs. Some of the pedagogical strategies proven in other situations may not fit to the MOOC context as they are tied to assumptions that the collaboration and/or group inquiry will happen in small groups, as in the typical classroom teaching/learning context. In this regard, face-to-face is an ideal situation to deploy and explore OERs, with the option of having the teacher as facilitator.

The current trend towards learner centred strategies and collaborative learning shows the way to MOOC designs that should incorporate factors of knowledge construction (predominantly in group activities), authentic learning, and personalized learning experience, which merges agreeably with the integration of other factors such as games, digital storytelling, science inquiry, and immersive technologies that are able to engage students in rewarding activities. There is also a need for the incorporation of social media technologies as enablers of deeper interactions among learners. Unfortunately, the pedagogical models in use by many universities fail to capture interactions that are possible via many cloud applications that are part of a student’s personal learning environment (Bidarra & Araújo, 2013).

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2 http://mfeldstein.com/mooc-discussion-forums-barriers-engagement
From this standpoint, and based on relevant research, we contemplated the benefits of solutions emanating from the realm of videogames. A current perspective, in line with our experience of MOOCs and the use of new digital media, recognizes a tendency in education that acknowledges the emergence of new learning experiences that games may turn out and seeks to understand their consequences for how we think, act, play, and learn (Shaffer et al., 2005). It has also been widely established that well-designed interactive media tools such as games, simulations, and virtual environments may provide learners with relevant and engaging paths to content mastery (Bidarra & Martins, 2010).

2. Gamification in MOOCs

We already know that games are inherently and intrinsically motivating (Connolly, Stansfield, & Hainey, 2011) and every player knows that good games provide fun, pleasure, and intense emotional rewards. From this perspective, educational game researcher James Gee (2003) shows how good game designers manage to get new players to learn their long, complex, and difficult games. A well-designed game entices players into the “reality” of the game world and keeps them there until the goals of the game have been met (Salen & Zimmerman, 2004). Gee points out that incorporating appropriate challenges that are “doable,” and other widely accepted effective learning principles that are supported by research in cognitive science, are in fact a large part of what makes good games motivating and entertaining (Gee, 2004). So, we argue that the transformation of curriculum and instruction processes must be based on the new digital media capabilities and its patterns of use by students, namely through interactive and rich content embedded in game-like learning experiences, or even using adequate serious games. These educational games should be able to coexist in environments that follow the OER model and have elevated pedagogical value (Moreno-Ger et al., 2008). As an alternative to the direct use of educational games, the process of game-thinking to engage users and solve problems in education has more recently been (re)defined as “gamification” (Zichermann & Cunningham, 2011). Under the mark “gamification” an intense public debate is spawning as well as numerous applications developing – ranging across productivity, business, health, education, computer science, and entertainment media (Krause et al., 2015; Usart & Romero, 2014; Gené et al., 2014; Vaibhav & Gupta, 2014; Corpeño et al., 2014).

Like the evolving notion of “MOOC”, “gamification” is also a relatively new concept that has acquired considerable momentum over the last years (Bidarra, Figueiredo & Natário, 2015; Kapp, 2012; Deterding et al., 2011; Lee & Hammer, 2011). It’s a concept that integrates the mechanics of gaming in non-game activities to make these more effective and enjoyable. Three general gamification principles are: mechanics (systems of goals, rules, and rewards), dynamics (the way players enact the mechanics), and emotions (the feelings generated during the gamified experience). When used in the educational field, gamification seeks to integrate game dynamics and game mechanics into learning activities, for example, using tests, quizzes, exercises, quests, badges, etc., in order to drive the intrinsic motivation and foster participation of students. In a way, educational processes have always applied gamification in learning activities when using scores (points) on marked assignments. However, these solutions are not very engaging for the students. There is a need for contributions of other education processes using tangible “game play” factors such as digital storytelling and interactive technologies, as these are able to engage students in a way that is more intense and memorable.

Many strategies have been used to revert the shortcomings of the traditional MOOC pedagogical model, which is almost exclusively a reproduction of the lecture-oriented approach. For instance, authors Usart & Romero (2014) introduced a Game-Based Learning approach in a MOOC aiming to encourage entrepreneurship based on five gamified activities during the course. The final results showed a good
perception of the MOOC value for entrepreneurship studies, and an acceptable overall degree of satisfaction with the use of games. In another experiment by Corpeño et al. (2014), gamification and Fun Theory strategies were embedded into the structure of a MOOC for technology enthusiasts, titled “Introduction to Raspberry Pi”. In order to enhance student motivation three strategies were used: a double-track scheme for managing different student type; an automatic classification of students into leagues according to their accumulated grades; and a repeated-attempt policy for quizzes and labs. A recent paper by Freire et al. (2014) reports on the integration of a more developed game as a type of MOOC activity, using the well-known eAdventure platform, while providing increased engagement and a valuable source of learning analytics. The authors found that the inclusion of a serious game had positive implications for both courses and games.

Choosing the best of two worlds, authors Gené et al. (2014) proposed a model to motivate MOOC students based on content gamification, using the most attractive and addictive elements of games but avoiding the pitfalls of pointless recreational play. Some of the features included are: ranking rating, voluntary activity (collaborative work), course progress, certification, and number of “likes” (as in social networks). Interesting to note that these authors admit that the Moodle platform already offers different types of modules and blocks that are adequate for gamification, for instance, through the use of groups, status bar, badges and quizzes. In order to enhance Moodle platform features, they installed two additional modules. The first one was called “block ranking,” and was associated with the completion of course activities. This module monitored course activities and gave points to the students if they completed HTML pages or submitted a grading assignment, in this case the points were added to the grade points. The second module was called “certificate” and allowed for the dynamic generation of certificates. Once the course was completed, depending on the conditions set by the authors, the student could then download the certificate. Along the same lines, authors (Vaibhav & Gupta, 2014) also found that if the actual learning platform has potential to be “gamified” it does not only drastically increases the user enrolment but also increases user engagement throughout the course.

In another sense, the growing open education movement is contributing to the demand for alternative certification and recognition mechanisms such as open badges. An open badge is an “online record of achievements, tracking the recipient’s communities of interaction that issued the badge and the work completed to get it” (The Mozilla Foundation and P2PU, 2012). For instance, Udacity, a well-known MOOC provider introduced the concept of “nanodegrees”, a form of micro-credentials very similar to open badges (Shen, 2014). The use of badges was also tested in the Carpe Diem MOOC (Lokuge et al. 2014) with the aim of introducing participants to a learning design process that would successfully enable teams to quickly and effectively design for learning. The findings showed that many participants were motivated by the use of digital badges making them progress through to course completion. In a previous study (2013) Sheng had already described how the game Ingress (Google) could be incorporated in a MOOC, through the use of mobile devices and augmented reality, where badges, crowd learning, seamless and geo-learning were used as gameplay elements.

Other recent experiments tested the potential of gamification within interactive environments for increasing retention and learning success (Krause et al., 2015). In a controlled experiment with 213 students majoring in psychology or computer science, researchers found that students had a significant increase of 25% in retention period and 23% higher average scores whenever the course content was gamified. As expected they also concluded that social networking elements showed a significant impact in retention and learning ability. Also Staubitz et al. (2014) found that using a leaderboard as gamification element is an advantage
when a user finds himself amongst a list of friends rather than a list of random strangers. These authors argue that social leaderboards are more motivating when students are able to visualize the competition amongst friends rather than amongst random strangers to whom the individual user cannot relate.

Another, more radical perspective, is to redefine the whole MOOC concept and put forward the position that it may be fully structured as a game (Tan, 2013). In view of the shortcomings of MOOCs, a design framework for creating a “MOOC game” is suggested by Tan (2013). Instead of just choosing to gamify some MOOC’s content, his idea was to extract some of the most crucial elements of good game design and applying them to MOOC design at macro level, not just to activities and user interactions.

3. Status of MOOC’s design

There are currently two approaches to MOOC learning design, the “connectivist” MOOC, or cMOOC - a participatory and highly interactive course - evolving from Siemens and Downes ideas (Bell, 2011). This type of course requires a continuous and high-level involvement by teachers and students. On the other hand, the more recent xMOOC is closer to a traditional e-learning course (Bates, 2014). More specifically, the xMOOC is characterized by using new technologies, such as automated peer review, programmed feedback activities, and learning pathways in which the interaction between students is not essential. There is also a fair amount of time flexibility for the students in an xMOOC so a very intense intervention on the part of teachers is not required.

Instructor oriented xMOOCs closely resemble large lecture courses as the instructor provides course content in a detailed and prescribed format, following a conventional curriculum (Pence, 2012). In a cMOOC a high level of student interaction is required, there is more flexibility, and there is no way to confirm that a given student has made the course, and thus earn a valid certificate in the end, since the infrastructure is rather open (Ahn, Weng, & Butler, 2013). In the xMOOC there is a marked learning pathway, and this lack of flexibility makes it more difficult to satisfy some of the interested public. Previous research (Rodriguez, 2012) suggests cMOOC students are mainly adult, lifelong learners not specifically concerned with the conclusion of the course. This indicates that cMOOCs may develop a large group of involved participants, but these may not show as participating actively when compared to online courses that are instructor driven (Ahn, Weng, & Butler, 2013).

By removing the collaborative component an important dimension in education is reduced, and this is a cause for quitting according to the MOOC Research Initiative (2014). Another of the major reasons for dropping out is the lack of time to study difficult subjects, and both xMOOCs and cMOOCs do not allow for periods of “suspension”. So, we think there should be a more refined approach with fewer limitations, blending the advantages of both models, and allowing for periods of unavailability of learners attention.

To address the deficiencies of typical learning designs used in MOOCs, at the Portuguese Open University (Universidade Aberta) we developed an innovative MOOC about climate change, also a pilot for the specific iMOOC pedagogical model (Coelho et al., 2015). The iMOOC is a hybrid model which incorporates elements from existing cMOOCs and xMOOCs but adds other features drawn from Universidade Aberta’s experience with online learning, such as “efolios” and “gamified” learning activities. Technically, the iMOOC is supported by two platforms - Moodle and Elgg – integrated in a seamless web interface, thus becoming a “new platform” within the university e-learning system (which is Moodle-based). The first edition of the course had more than one thousand participants, and at the time it was the largest MOOC course in Portuguese language delivered in the world.
4. From iMOOC to Aula Aberta

The iMOOC was first tested in 2013 at Universidade Aberta, consisting of a course on climate change (Coelho et al., 2015). It was followed by other instances of courses using the same model, later integrated in the ECO European project (Brouns et al., 2014), an initiative to disseminate MOOCs in Europe. The iMOOC model has some unique features that make it different from other MOOCs. The first characteristic is openness. All resources and interaction are open to visitors without forcing them to subscribe the course. In fact, after the enrolment period all users that want to access the course are allowed to do it with a visitor status. After the course ends all content remains accessible to any visitor. Secondly, before the course starts, all students must participate in a short preparation module that takes one week, where interaction technology and instructional issues are discussed. This allows them to have first hand training with the platform as online students. The prep stage is already common practice at Universidade Aberta since the inception of its virtual pedagogical model, which already prescribed this kind of preliminary module (Pereira et al., 2008). This practice attempts to greatly reduce the dropout rate because of its gradual course integration path. The third unique feature of the iMOOC is the blend of two known models. The iMOOC has the advantages of a cMOOC and those of a xMOOC, as it relies on the integration of a social network platform (Elgg) with a learning management system (Moodle). In Moodle the course is designed like an xMOOC, with the activities and the learning path structured, and in Elgg the freedom of social interaction is guaranteed, following the model of a typical cMOOC.

In iMOOC as in other MOOCs, teacher intervention must be limited otherwise the course cannot be massive. But the teacher is not away from the course either, as there is provision for “once a week” teacher feedback based on data gathered from forums, blogs, and short messages. Assessment is based on tests and assignments as usual. Essentially the tests have autocorrecting mechanisms and the assignments are peer-reviewed by three students. This way the teacher workload during the course is limited to the weekly feedback, and the students have two standard types of learning activities: tests and assignments. The students that accomplish all the activities have an informal certificate of participation. The students that request a formal certificate need to build a portfolio with the work done during the course and ask to be assessed by means of a supervised exam (requires payment).

Researchers observed that, as in most MOOCs and standard online courses, the number of page views and user actions decreases over time as expected. But in the case of the first iMOOC open course some findings were not so common: 25% of the participants had only one page view and no interventions; 4% of the participants had many page views and no messages; 40% of the participants did not post any message but had page views during the all course. This revealed a clear type of interest in the course, meaning that 40% of participants that stayed in the course just wanted to do some browsing but were not interested in grading or in activities. Another set of relevant data from the course deals with learning activities. Four activities were proposed, two tests and two assignments. The first test was completed by 9% of the participants; the assignments and other tests were taken by only 3%. The supervised exam (to get a certificate) was attended by only 0.3% of the participants. But if we consider the success rate from another perspective, we may realize that reaching the end of the course was the goal of most participants, and in this case the success rate would be 48%. It was also pointed out in that study (Coelho et al., 2015) that 50% of the students were from outside the university, and 1,5% of them enrolled in formal university courses in the following months. The study concluded that a shorter and more flexible course might decrease the dropout rate, since a long and fixed schedule of learning activities tends to reduce student time flexibility and increase dropout.

3 http://ecolearning.eu
Borrowing from the realm of videogames, it would be interesting to compare the progress of students in a MOOC with what takes place in a multiplayer online game. Let’s start by popping a trigger question: how do we compare a massive online game with a MOOC?

Firstly, in the online game a returning player is always welcome. It’s all set to continue playing where he left the game before, and eventually he may receive something extra by returning to the game, as compared to starting over from scratch. In a MOOC, a returning student would only have to face all the activities that he missed, all the interactions and discussions not followed, and any intervention by him would just reveal that he had become an outsider, by ignoring course materials and peer interaction. Recovery from a period of one week of inactivity would be very complicated for the student, as usually the best strategy is to look for another course in a following date, and take that course instead of trying to come back.

Secondly, in an online game no one can talk with everyone as the players are organized in groups, and they can talk to each other within the same stage in the game. A win-win advantage exists for all members in the group as they share resources and evolve in the game. In a MOOC the communications are global and all participants must be in the same stage of the course, furthermore, each student performance is independent of the others, there is some chaos in the process and a great deal of empathy is lost.

Thirdly, in online games normally there is some incentive to return to the game every day, for instance by making decisions and getting results after some time, as this allows for more accurate decision-making and better results. If after sometime the results are not collected, they may be gathered later without any type of compromise. In a MOOC the norm is usually a fixed schedule of activities that must be fulfilled in time to avoid losing pace and place.

Last but not least, it is not uncommon to find a global ranking of individuals and teams competing in a game, and the scoreboard is always up-to-date. This serves as a strong incentive for the players to evolve in their game play and face new challenges. Almost every task allowed in any given moment can change the ranking, and normally there are several ways to increase the number of points. In a MOOC such a ranking is not usually present, and if it exists would be updated only after the learning activities were finished. In fact, outside the period of tests and assignments there is nothing in a MOOC that a participant could do to improve the ranking in the course.

In 2017, to overcome some of the previous iMOOC limitations, we created a new course model for the recent *Aula Aberta*⁴ open educational resources programme by the Portuguese Open University, consisting in an “Introduction to Informatics” (*Introdução à Informática*, in Portuguese). This model is based on a gamified structure with video, images, auto-corrected multiple-choice questions, use of hash tags, accumulation of points and a ranking of best achievers. The *Aula Aberta* initiative started this year and is already a success story, having reached about 4000 students in just a few months. The topic areas covered in the courses are environment, maths, statistics, computer science, European studies, management, humanities, education and languages. Upon completion of each course, and having a score of 75% or more, students can get a (paid) certificate of attendance. So far, the course “Introduction to Informatics” seems to be the way ahead, having many students interacting steadily with the resources, but it’s still early for definitive results and the new model needs some further investigation.

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⁴ http://aulaberta.uab.pt/eimooc
5. Conclusions
In this paper we looked at some issues currently associated with MOOCs and surveyed recent literature looking for answers. We also examined the evidence gathered from specific MOOCs with over one thousand participants, namely, pioneering iMOOC courses at Universidade Aberta (the Portuguese Open University). We also looked at the gaming world and reviewed some findings that may benefit the learning design of MOOCs. We followed up on the tip that gamification, and other emerging strategies, such as social networking and digital storytelling, are crucial to the future of open education and MOOCs. However, most attempts seem to be very experimental. Furthermore, “gamifying” a course requires a deep understanding of games and this poses a problem for many instructional designers who must have knowledge of a few essential aspects, for instance, know-how concerning storytelling, engagement, motivation, achievement, and game mechanics.

On a more positive note, while the proliferation of MOOCs is still increasing, it is also becoming clear that certain changes are occurring and that more effective instructional designs are being tested. Courses are now shorter and more flexible, and the major MOOC providers show some innovation, such as credentials connected to real world outcomes (like career advancement). Coursera started “Specializations”, Udacity coined “Nanodegrees”, EdX has “xSeries”, and FutureLearn offers “Programs”. These are the perfect ground for the introduction of gamification devices, such as points, levels, badges, rankings and other means that have proved successful in the gaming world, hopefully encouraging learners to try different ways of learning and thinking while promoting empowerment, problem solving and understanding of content.

6. References


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Online Peer Observation in Distributed Course Teams

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Abstract
Peer Observation can be seen along a continuum ranging from Quality Assurance and formal processes at one end to reflective practice and informal strategies at the other. In a faculty comprising part-time and associate lecturers, online peer observation can help develop reflective practice and reduce social isolation for tutors often working from home. It can also contribute to the development of practice as social and collective rather than just personal. This paper provides a case study of online peer observation at the University of Derby. It is a formal institutional requirement to participate in the university peer observation scheme. Tutors can choose their collaborators and decide the focus of the observation. This is to be delivered within certain time constraints and by meeting specified administrative procedures. The University of Derby Online division (UDOL) has embraced the initial on-campus scheme and adapted it for use amongst online tutoring teams. We provide a case study showing how tutors on different online modules shared and discussed practice as part of an institutional programme. This was extended by the tutors involved to share reflective journals and use a ‘critical incident’ approach to discuss them together. The paper shows how online tutors and educational developers can work collaboratively online to implement peer observation and deliver social, emotional and pedagogical outcomes across national boundaries. We show how online peer observation can provide a structure and a vehicle for the participation of part-time distributed tutors resulting in a greater sense of inclusion and institutional belonging.

Keywords: online, peer observation, reflective practice, distributed course teams, belonging

1. Introduction
Peer Observation can be seen along a continuum ranging from Quality Assurance and formal processes at one end to reflective practice and informal strategies at the other. In a faculty comprising part-time and associate lecturers, online peer observation can help develop reflective practice and reduce social isolation for tutors often working from home. It can also contribute to the development of practice as social and collective rather than just personal.
The University of Derby Online division (UDOL) has embraced the initial on-campus scheme and adapted it for use amongst online tutoring teams. We provide a case study showing how tutors on different online modules shared and discussed practice as part of an institutional programme.

This scheme was extended by the tutors involved to share reflective journals and use a ‘critical incident’ approach to discuss them together. A detailed review of this approach is available elsewhere (Butterfield, Borgen, Amundson, & Maglio, 2005).

This paper shows how online tutors and educational developers can work collaboratively online to implement peer observation and deliver social, emotional and pedagogical outcomes across national boundaries. We show how online peer observation can provide a structure and a vehicle for the participation of part-time distributed tutors resulting in a greater sense of inclusion and institutional belonging.

As a summary of our research methods (detailed below), data for this research were selected in the form of shared reflective diaries written by two of the three authors. The diaries were shared through Google Forms for a period of one academic term (three months), annotated periodically by the authors in the form of written dialogue with the use of comments. Each author was asked to discuss their ideas about a critical incident they saw, resulting in two narrative accounts in which the two colleagues shared their experiences and thoughts during the term. Findings will be presented in a future publication. Here we present an overview of the approach taken.

The foci of our analysis are upon different individual tutor experiences but also how these perceptions are transformed and mature after interaction with a peer. Based on this idea, the purpose of our continuing research is not only the individual experiences and perceptions but the process of engaging in collaborative reflection as an extension of a peer observation scheme employed by the University.

2. Theoretical Background

Reflective practice has been used as a tool to promote and realize learning partnerships between faculty and students (Swanson, 2010). We argue the same is true between tutors and between tutors and academic developers. Elsewhere, there have been calls for reflective practice to be collaborative (D. Boud, Cressey, & Docherty, 2006).

We support Boud in arguing that academic work can be understood as a practice and developed accordingly through shared reflections. Practice theory (David Boud & Brew, 2012) has been put forward as a framework for this purpose and adopted in this paper. Practice theory has 3 distinguishing focal points:

1. **practice development**
2. **fostering learning conducive to work, and**
3. **deliberately locating learning within practice** (Boud and Brew, 2012)

Brookfield’s model of critical reflective practice is equally useful here (Brookfield, 2017). His model points to different sources of feedback on practice. These ‘lenses’ on practice are (a) the individual perspective (b) the learners’ perspective, (c) our colleagues’ experiences, (d) theoretical literature. Accordingly, these 4 points constitute sources of data for our view of reflective practice.

3. Peer Observation

Peer observation can be defined as “constructive mutual feedback sharing good practice in a trusting relationship” (Kaczynski, 2016). This definition is useful in highlighting the nature and challenge of peer observation. On the one hand, it suggests a collegial discursive process of development. On the other hand, it indicates an objectivist view of ‘good’ practice. The idea of ‘good’ has therefore been substituted and replaced with the idea of a process of ‘shared sense-making’ (Swinglehurst, Russell, & Greenhalgh, 2008).
Benefits of peer observation can accrue to both observer and observed (Gosling, 2014). However, several researchers have suggested observers learn most in peer-observation schemes (Hendry & Oliver, 2012; Kacmaz, 2016). These observer benefits include opportunities to see and explore new teaching strategies as well as enhanced confidence to implement them (Hendry & Oliver, 2012).

Strategically, peer observation can be a vehicle for the enculturation of participants into a process of “ongoing and sustainable reflective practice” (Harvey & Solomonides, 2014). This points to a reflective life beyond participation in the initial scheme.

Barriers to peer observation can arise where feedback is not really ‘heard’ by the person being observed (Jones & Gallen, 2016). This may be a product of anxiety about personal practices being invaded (Jones & Gallen, 2016). Others may feel that peer observation is a covert vehicle for surveillance and judgement (Gosling, 2014). Peer observation can be perceived as a vehicle for professional development or for quality assurance. The latter may result in an instrumentalist view being adopted by participants.

Gosling (2014) provides 3 models of peer observation which include the evaluative model, the developmental model (a junior mentored by a senior) and the collaborative model (Gosling, 2005, 2014). The collaborative is said to be most effective for its collegial approach and one involving an equal partnership. Within that collaborative view, others have developed the Peer Review Model in which communication between participants is located within a model of leadership (Sachs & Parsell, 2014).

Central to any model is the idea of relationship-building to gain trust and to work productively and respectfully together. Peer observation depends upon developing good working relationships to be effective. At the same time, peer observation is a vehicle for developing such relationships (Shortland, 2010).

4. Online Peer Observation

There is an emerging literature exploring online approaches to peer observation. At the same time, this is early work and there is a need for processes, models and theory (Bennett & Barp, 2008).

Peer observation can be carried out using synchronous technology (Jones & Gallen, 2016; Walker & Forbes, 2017). It can involve the use of asynchronous approaches (McGuigan & Golden, 2012; Walker, 2015) or any combination of the two (as well as face to face meetings).

Benefits of online peer observation include the ability to look beyond ‘the lesson’ as the unit of analysis (Kacmaz, 2016). For instance, the archive allows participants to look at themes within and across units/modules.

The variety of possible partners is potentially extended with online peer observation. Individual concerns can be shared with other distributed tutors in a course team (Swinglehurst et al., 2008). The online approach allows peer observation across departments (Bennett & Santy, 2009). It allows peer observation to happen in pairs across institutional boundaries (e.g. Bennett et al in Walker, 2015). Peer observation can also extend participation to international collaboration (Walker & Forbes, 2017).

Challenges of online peer observation include differences between technological competence versus pedagogical competence online (Jones & Gallen, 2016). Tutors may be strong in one area and not in another which can impact the peer observation process.
Some tutors may have no experience being an online student. This can mean they have no models of online learning to call upon in the peer observation process (Walker, 2015). There may be significant differences in online teaching experience between participants with implications for the participation of observer and observed (McGuigan & Golden, 2012; McKenzie & Parker, 2011). This may have consequences for the ability to understand and participate in the online peer observation process.

Relationship-building can be problematic particularly if participants do not meet face to face. Finding a process, structure and time for collaboration may be challenging online. Finding a focus and time for collaboration may be problematic when working across time zones and different cultures (Walker & Forbes, 2017). Such issues highlight the importance of training (Jones & Gallen, 2016).

Walker (2015) identified 3 process models distinct from Gosling’s higher-level models above. These were: (1) face to face discussions for negotiating ‘the contract’ and giving feedback (2) Contract negotiation at a distance with interactive feedback and discussion (3) contract negotiation at a distance with one-off written feedback. The key difference between points (2) and (3) was the latter is construed as a transactional process which can result in a lack of engagement.

Different roles can be involved in online peer observation. These may include part-time and hourly paid tutors (Jones & Gallen, 2016; Kacmaz, 2016). It is possible for those with more than one job to participate (Jones & Gallen, 2016). It may be useful for new online tutors who can learn from seeing each other’s work (Hendry & Oliver, 2012; McGuigan & Golden, 2012).

These are all tutor-groups for whom peer observation may be regarded as an additional burden (Kacmaz, 2016). At the same time, online peer observation helps overcome social and professional isolation amongst otherwise quite marginalised tutors (Jones & Gallen, 2016; Walker & Forbes, 2017). Online approaches can contribute flexibility in relationship-building and trust is central to the success of peer-observation, in all its forms.

Finally, in talking about peer observation of any sort, we should recognise it forms part of reflective practice. Rather than reflecting alone, peer observation holds out the opportunity of shared inquiry and the development of a conversational community (Bruffee, 1993; Harper, 1996). This can help avoid the perception of schemes as judgements (Swinglehurst et al., 2008). A reflective view of peer observation would then bring with it the following components (Harper, 1996):

1. *allow for temporal space for serious and ongoing talk about teaching in conversations that extends over time*,
2. *promote a shared sense of community based on commitment, respect, and trust... where personal risk (particularly of evaluation and competition) is limited*,
3. *include a conversational focus...that allows individuals to stand back from their taken-for-granted assumptions about teaching and enter into a shared inquiry into the meaning and significance of the event at hand, and*
4. *foster participation where it is acknowledged that conversation is intersubjective, contextually focused, and where meaning is created within the negotiated space between speakers.*

5. **Our Online Peer Observation**

At the University of Derby, there is a formal institutional requirement for tutors to participate in the university’s peer observation scheme. Tutors can choose their collaborators and decide the focus of the
observation. This is to be delivered within certain time constraints and by completing specified administrative procedures.

Both tutors in this paper, work for University of Derby Online (UDOL) and teach on a range of modules. We are a distributed course team. In this instance, one tutor is in the UK the other in Greece. One is employed part-time and the other is paid hourly as an associate lecturer. The third author is Learning Enhancement Lead and responsible for the institutional peer observation scheme (including online).

We tutor modules which are mostly postgraduate and all online. Some of those modules are jointly tutored. Others are tutored by just one of the tutors above. The tutors involved partnered under a voluntary arrangement as part of the institutional peer observation scheme. Each tutor identified an aspect of their practice for which they would value input and perspective from the other tutor. The tutors served in both ‘observer’ and ‘observed’ roles.

The tutors voluntarily agreed to extend this initial work and decided both would keep a reflective journal for a short period while tutoring on their respective modules. This meant the observer could have a richer context for the peer observation process. Each tutor was better able to present their perceptual account of the tutoring under observation.

Each tutor then annotated the other tutor’s online journal at points of interest. This follows the principles of critical incident analysis in which the observed tutor can offer their perspective of significant moments and observers can raise questions or comment upon aspects of interest to them. This locates the observer’s intervention within the perceptual framework of the tutor being observed and provides a more interactive dialogical approach to what might otherwise become an administrative procedure. At the same time, the process supported the development of deeper reflection between distributed online tutors.

The Learning Enhancement Lead, as the institutional coordinator, was equally involved in the process. The tutor’s informed the coordinator of their ideas and these were fully supported by the coordinator who was in touch throughout by email. This meant we could work as a team in a rolling conversation. Finally, the required administrative documents were completed and the research activity developed.

Detailed findings, supported with data, will be presented in research to be published elsewhere. Here, we wish to add to the range of emerging strategies and outcomes which can be achieved from online peer observation.

6. Conclusions
In our approach, we have sought to accommodate each of Brookfield’s 4 different lenses (Brookfield, 2017). Individual perspectives were provided using the reflective journal. The learner perspective is located within the online archive and contextualized within the reflective journal kept by the tutors. Our colleague’s experiences are available through sharing the online journals and by annotating each other’s journals. This is extended to include the completion of the formal documentation required for the institutional peer observation scheme. Finally, theoretical literature is referenced here on reflective practice.

Online peer observation has allowed our concept of ‘practice’ to become simultaneously individual, social and collective. We have collaborated as observer and observed across roles, time, institutions and cultures. We can thereby see practice as social inquiry rather than individual judgement (Swinglehurst et al., 2008).
The archive and various communication tools have supported us as a conversational community (Bruffee, 1993; Harper, 1996) spanning national boundaries in an ongoing and sustainable approach to reflective practice (Harvey & Solomonides, 2014). We argue those reflective online conversations have animated the process of shared sense-making (Swinglehurst et al., 2008) made flexible by technology.

With reference to Harper’s components of a conversational community (Harper, 1996), we believe online peer observation can create temporal space for ongoing conversations, promote a shared sense of community, include a conversational focus and foster participation. In our case, this is particularly valuable for tutors in part-time and hourly paid roles who went on to work as co-researchers.

More importantly, online peer observation takes the idea of individual practice and locates it simultaneously within the local, institutional and global contexts. This emerging peer observation practice makes reflection possible across departments, institutions and continents. As such we believe online peer observation can provide professionally authentic development for a connected world.

7. References


Open, online, flexible, technology-enhanced... and sustainable? Understanding new business models for distance and blended learning

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Abstract
Do open, online, flexible and technology-enhanced (OOFAT) approaches to education result in sustainable and innovative business models? This is the focus of the OOFAT Models project funded by ICDE and conducted by researchers from The Open University’s OER Hub and Forschungsinstitut für Bildungs- und Sozialökonomie (FIBS). The main purpose of the study is to develop models that demonstrate different practice in terms of how one or more elements of OOFAT are used to offer flexible learning in a sustainable model. Our OOFAT concept models Content (consisting of subject knowledge, support and guidance and learning analytics, which together make up the entirety of the didactical process); Delivery (consisting of the qualities of place, pace and timing of delivery of the content, key events and processes); and Recognition and assessment (consisting of both assessment and credentialization, which are formal processes leading to recognition of learning achievements). Each of these dimensions are analysed in terms of flexibility (how digital technology is harnessed to reduce the need for physical presence) and openness (how the principle of openness is integrated (in various ways) into the core processes; from closed group to open network). More than 50 case studies have been developed using this model. The presentation will include a summary of results and highlight interesting exemplars which could be scaled up or adopted by other through innovation pathways.

Keywords: open, online, flexible, technology-enhanced, sustainability, educational models, policy, OER, MOOC

1. Rationale
Today online, open, flexible and technology enhanced higher education is delivered through many different institutions, e.g. virtual universities, open universities, online universities, bi-modal institutions, consortia of universities, conventional universities and more. Different types of collaborative models are used within or between institutions and new models/examples are emerging, such as national consortia, portals, combination of campus/online and even “unbundling” (detachment and separation of elements of the provision of education).
To better understand this complex and rapidly changing educational landscape, the central idea of the OOFAT models project is to produce a number of case studies of institutions and alternative, emergent models around the globe, collecting data on a range of different aspects and attempting to reduce these to a few simple models that are likely to be of interest to policymakers, senior managers, researchers and others involved in higher education: both to indicate possible directions of travel and to identify effective practices.

- Comparison and benchmarking within and between models
- Inspiration and guidance for new players in the OOFAT space
- Guidance for governments and governmental agencies in considering and planning for initiatives in higher education
- Identifying good practice and possible triggers and barriers for good practice

The project is owned and run by International Council for Open and Distance Education (ICDE) and reinforced by a reference group of partners representing different members and regions.

2. The OOFAT Concept: Open, Online, Flexible and Technology-Enhanced

The evolving prototype must capture central processes in the higher education enterprise itself. These are the so-called ‘bundles’ which make up the higher education provision package. They have been called by Anant Agarwal, CEO of EdX: clocks, content and credentials. In other words, provision is made up of how higher education is delivered (clocks), what is delivered (content) and how achievement is made recognisable to third parties (credentials) (Agarwal, 2016). In an alternative scheme, Wayne Macintosh from OERu identifies six services which make up the university package. Following content services, he refers to teaching and learning as interaction services after Moore (Moore, 1993) identifies assessment and support services as additional distinct activities, which lead to credentialing services and are all supported by technology services (Miao, Mishra, & McGreal, 2016). In fact, the first scheme subsumes these six elements but is formulated on a higher aggregate level, since ‘clocks’ is actually about place, pace and timing, as well as the form of delivery (online versus physical) and, if we follow Moore, ‘content’ is actually about the interaction between teachers, learners and content, including learning analytics. With a slight reformulation for clarity and conciseness we might call the central processes:

- **Content** consists of subject knowledge, support and guidance and learning analytics, which together make up the entirety of the didactical process;
- **Delivery** captures the qualities of place, pace and timing of delivery of the content, in other words both the extent of physical and online provision and the question of the timing of key events (e.g. start and end points of learning processes);
- **Recognition** comprises both assessment and credentialization, which are formal processes leading to recognition of learning achievements. Assessment is a phase of evaluation at certain times in a learning process, whilst credentials are awarded on completion of formal learning units. In both cases, these evaluative processes lead to recognition of achievement of the learner by third parties.

The quality of flexibility is a question of what and how and is likely to rely on how digital technology is harnessed to reduce the need for physical presence. So each of the three central processes (and their sub-processes) can also described by the extent to which they are delivered in a flexible manner, harnessing digital technology, i.e. online and technology-enhanced methods.
The quality of inclusiveness is a who question and likely to rely on how the principle of openness is integrated (in various ways) into the core processes – a more open quality means less limitations on who has access to and who delivers or controls services. This quality is not reliant on digital technology, but may be enhanced by it. For instance, a classic open enrolment higher education provider uses the principle of openness, but may still be using low-interaction correspondence methods for delivery.

Table 1 provides a summary of how the elements of delivery, content, recognition, openness and inclusiveness inter-relate in the OOFAT model.

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategories</th>
<th>Dimensions of Flexibility</th>
<th>Dimensions of Openness/Inclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery of HE/services</td>
<td>Access to content</td>
<td>Time; Location; Pace; Organization</td>
<td>Openness of the institution to (all) learners</td>
</tr>
<tr>
<td></td>
<td>Access to guidance, support and services</td>
<td>Cost; Time; Customization</td>
<td>Who can access support? Who can provide support?</td>
</tr>
<tr>
<td>Content</td>
<td>Resources</td>
<td>Adaptability of content to specific learner</td>
<td>How open is the provision of content?</td>
</tr>
<tr>
<td></td>
<td>Curriculum</td>
<td>Flexible curriculum elements</td>
<td>How much influence over curriculum does the learner have?</td>
</tr>
<tr>
<td>Recognition</td>
<td>Assessment</td>
<td>Identity and role of assessor</td>
<td>Specifications on who can be assessed / performs assessment</td>
</tr>
<tr>
<td></td>
<td>Process</td>
<td>Combining elements of existing learning; Alternative pathways (e.g. Non-formal)</td>
<td>Which group provides recognition? What alternatives exist?</td>
</tr>
</tbody>
</table>

The idea behind using this rather comprehensive model of delivery of higher education products and services is to be able to capture a broad selection of providers and also to be able to highlight similarities and differences behind them. This is different to the approach taken by Garrett (2016) for the Commonwealth of Learning, who distinguished his cases based on specific additions to open distance learning – e.g. the emerging cases he analysed were additionally for-profit, had a focus on OER and MOOCs or focused on adaptive learning. Our model is intended to distinguish and map the emerging cases more comprehensively.

3. Methodology
All providers of higher education comprised the full ‘universe’ under investigation. From this universe, a number of cases were selected to shed light on different type of models for delivery of online, open and technology enhanced education.

The process began with generating key criteria and data points that could provide a basis for initial attempts at modelling a delivery model (online, open, flexible and technology enhanced), or a framework of the delivery logic of an organisation (institution, company, university, consortium, network, centre, etc.). Whether models can be described in a relevant and value added way was one of the key questions in the
project. Consequently this work went through several phases of iterative review. Key aspects considered at this time included:

- **Organisational profile**: student enrolment; academic profile; campus/online/blended; institutional accreditation; leadership perspectives
- **Financial**: resources & costs; funding approach; sustainability; business model
- **Teaching & learning**: pedagogy; method of delivery; curriculum design
- **Assessment**: recognition; quality assurance; accreditation
- **Technology**: digitalization; innovations; clustering

Cases were selected from all types of higher education providers according to the following selection criteria:

- A global balance with representation from around the world was sought
- Cases from both private and public sector providers and mixed models
- Cases from both profit and not-for-profit organisations
- A variety of distribution and ownership at different levels: international; national; regional; local
- Emergent and/or interesting models, such as:
  - A range of models for delivery (centralized-decentralised)
  - A range of models for openness of content
  - Alternative recognition systems

Data was collected in several ways, including desktop research, consultation and interview. The primary instrument for data collection was a survey that was circulated on several email lists as well as being shared directly with institutions and organisations who were thought to provide interesting cases. The survey included several questions directly aligned to the OOFAT dimensions in order to provide benchmarking on key aspects across the data set. Because of the nature of these questions – about strategies, visions, aspirations and directions of travel – many of the data points involve subjective judgements by the survey completer. To counterbalance this, the survey asks for quite detailed justification of the information provided. Fig 1. Illustrates this approach: Q37 asks for categorization on a Likert scale and Q38 invites the sharing of a justification for the judgement made.
37. How flexible is assessment for each learner assignment?
This question focuses on the organisation of learning assessment. Low flexibility of assessment means that time, place and pace are dictated centrally, whilst high flexibility means that such constraints are relaxed and the learner can determine these largely themselves.

☐ 1 (not flexible; fixed)
☐ 2
☐ 3 (somewhat flexible)
☐ 4
☐ 5 (highly flexible; adapted to learner requirement)
☐ [not applicable]

38. How flexible is the assessment process?
Please justify the evaluation you made in the previous question.

Figure 1: Sample questions from the OOFAT survey illustrating data gathering approach

The survey also requested information about changing student numbers; the provision offered, elements of TEL; subjects taught; funding models; and other elements relevant to OOFAT.

4. Results

4.1 Responses
Based on the existence of complete data for the OOFAT Model questions, we have 44 complete and cases from 24 countries. However, 112 HEIs made at least some entries to the survey and 90 provided partial information that was of use in at least one key element of the project focus. Figure 2 shows a strong geographic spread of cases from across the globe (see list of institutions in appendix).
From information provided about institutional enrolment growth over the previous three years (Table 2) we are able to discern some trends. It appears from this data that smaller and very large institutions are experiencing rapid growth while the medium sized institutions are experiencing static or slightly declining numbers. This may be because medium sized organisations may be less able to innovate: very small organisations can adapt practices quickly while very large organisations have more strategic resources.

<table>
<thead>
<tr>
<th>Enrolment Range</th>
<th>Average Enrolment Growth 2015-6</th>
<th>Average Enrolment Growth 2014-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;1,000 students (n=5)</td>
<td>26.32%</td>
<td>35.71%</td>
</tr>
<tr>
<td>1,001-20,000 students (n=20)</td>
<td>-1.05%</td>
<td>-12.69%</td>
</tr>
<tr>
<td>20,001-99,999 students (n=12)</td>
<td>1.77%</td>
<td>2.41%</td>
</tr>
<tr>
<td>&lt;100,000 students (n=6)</td>
<td>22.74%</td>
<td>-1.07%</td>
</tr>
</tbody>
</table>

### 4.2 Business Models

For each of the seven business model dimensions, two binary options are presented, which together provide an insight into whether an institution is focusing on extending its current market reach or developing new markets (Table 2). This allowed responding HEIs to classify their business model based on a simplified typology which distinguishes growth based on existing activities and breaking into new markets.
Table 2: Focus of the business model (based on Taran et al. 2015)

<table>
<thead>
<tr>
<th>Core aspects</th>
<th>Extending reach</th>
<th>Developing new markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Products and services</td>
<td><strong>We deliver and/or support core institutional provision</strong></td>
<td><strong>We offer something different, complementary or alternative to the main provision</strong></td>
</tr>
<tr>
<td>Target group</td>
<td><strong>We target an existing market</strong></td>
<td><strong>We are targeting a new (or non-traditional) market</strong></td>
</tr>
<tr>
<td>Communication channels</td>
<td><strong>We interact with learners through traditional channels</strong></td>
<td><strong>We interact with learners through new or innovative relationship channels (physical or virtual)</strong></td>
</tr>
<tr>
<td>Legacy or new value chain</td>
<td><strong>We develop, produce and deliver the provision by making the most of legacy knowledge</strong></td>
<td><strong>We develop, produce and maintain our offering through exploration of new approaches and innovation</strong></td>
</tr>
<tr>
<td>Competitive advantage</td>
<td><strong>Our competitive advantage comes from traditional competences</strong> (e.g., market knowledge, expertise, improvement of existing technology)</td>
<td><strong>Our competitive advantage comes from new, unfamiliar, competences</strong> (e.g., new or emerging technologies, innovation in working practices)</td>
</tr>
<tr>
<td>Networks</td>
<td><strong>We operate primarily within traditional institutional or cultural parameters</strong></td>
<td><strong>We operate primarily in non-traditional or (dynamic) networks</strong> (e.g., alliance, joint-venture)</td>
</tr>
<tr>
<td>Profitability and sustainability</td>
<td><strong>We maintain profitability through incremental cost cutting and efficiencies</strong></td>
<td><strong>We maintain profitability through new processes to generate revenues, or cost-cutting in existing processes</strong></td>
</tr>
</tbody>
</table>

The aggregate results for the data set are presented in Figure 3. They show that around half of the HEIs are using digital affordances to help them reach new target audiences, but more so: that three-quarters of HEIs are using these new digital opportunities to develop new relationships with their students. The HEIs are likewise focusing their use of digital on facilitating the development of new and innovative approaches to providing higher education. By aligning cases with one of these subjective, binary choices, we are able to start modelling business strategies. These are summarized for the cohort (below, Figure 3) and also form the basis for the ‘shape analysis’ (Table 3, §3.4).
This data shows that higher education institutions are most likely to be adopting a more innovative approach focused on new markets with respect to stakeholder communication, making the most of social media and other opportunities for outreach. However, the ‘Networks’ parameter indicates that more than 70% of respondents said ‘We operate primarily within traditional institutional or cultural parameters’. This suggests that new methods are being used to communicate with existing networks. There is a similar focus on core provision for products and services across the sample as a whole.

Another area where there seems to be more emphasis put on alternative approaches is the exploitation of the legacy knowledge of the HEI (‘Value Chain’ in Figure 3). Since established institutions may be limited in their ability to monetise legacy knowledge within legacy systems for enrolment, tuition and examination, it perhaps makes sense that this would be an area where there was competition between HEIs to find the right model for exploitation.

We get a similar impression from comparing the reported dimensions of the OOFAT model across the data set as a whole. Figure 4 shows OOFAT dimensions from across the cohort, with approaches that are more exclusive (or less open) in darker shading. The preliminary indications from this data are as follows:

- Content delivery showed the greatest level of openness, perhaps supported by the delivery of materials online
- Similarly, the flexibility of support delivery was reported to be highly open by most; this could reflect technological approaches to learner support (such as the use of learning analytics) or a more fundamental, philosophical approach to support
- Content production is not typically an open process, although there were some interesting examples which bucked the trend
- Assessment and recognition tend to be the least flexible or open dimensions of the model for most
4.3 Technology Use

When examining the use of technologies at these institutions some general trends emerged. There is a persistence of ‘older’ technology, for example the VLE/LMS is pervasive, and wikis are still prevalent. Despite much of the media coverage there is very little real application of Artificial Intelligence, and even learning analytics is relatively scarce. What we observe is a pattern of cautious implementation across the board, with a range of educational technology being deployed but rarely all of them, and with a tendency towards the older ones, and similarly with approaches. The traditional distance education establishments tend to use it to supplement their existing model rather than in pursuit of new audiences. Figure 5 shows patterns of technology use across the sample, organized by type of service provision.
Online establishments are by their nature deploying many of the technologies in their core model. All online providers who answered are using online assessment, LMS, mobile, and social media, suggesting elements of an integrated strategy in online provision. Learning analytics were important for online provision (particularly at larger institutions), but social media is typically even more of a focus.

Campus based institutions by contrast tend to implement OOFAT approaches for a specific need, such as trialing MOOCs in a specific discipline. OER were least used by distance learner institutions, which is perhaps surprising.

The most widely used technology across the sample was Learning Management Systems (LMS) – perhaps because it transcends institutions and can support many different forms of delivery. There were no small institutions using eportfolios and no large institutions using wikis. The smaller an institution is, the more likely it is to be interested in open educational resources (OER).

### 4.4 Shape Analysis

One advantage of the methodology used in the OOFAT study is that we are able to provide simple visual representations of business models and OOFAT dimensions. Shape analysis reveals certain patterns in adoption. The specific aspects of OOFAT may vary, (i.e. which index shows a peak) but the strategy for adoption is can nonetheless be consistent.
<table>
<thead>
<tr>
<th>Distribution Type</th>
<th>Visualization</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Even distribution</td>
<td><img src="image" alt="Even distribution visualization" /></td>
<td>This presents as a perfect nonagon. This suggests that OOFAT is not implemented for one specific purpose, or market, but as an integral part of the institution’s overall mission.</td>
</tr>
<tr>
<td>Star pattern</td>
<td><img src="image" alt="Star pattern visualization" /></td>
<td>This would often be associated with a particular dimension of the OOFAT model, for example flexibility. This indicates that a specific role of OOFAT is important to the institution across all aspects.</td>
</tr>
<tr>
<td>Single peak</td>
<td><img src="image" alt="Single peak visualization" /></td>
<td>Regardless of their ranking on other criteria, many providers demonstrated a clear single peak, suggesting that OOFAT implementation was being developed for one very specific function or market.</td>
</tr>
</tbody>
</table>
In contrast to the star model which emphasized a particular dimension of the OOFAT model (openness or flexibility), other providers used it to concentrate on one or more of the elements of the content, assessment and delivery, resulting in a lop-sided pattern.

For some cases there were clear emphases on two specific elements.

Lastly, some analysis revealed multiple peaks, which might be related to very different initiatives within the institution. These produced various unique shapes.

Figure 6 shows the distribution of these shapes across the cohort.
‘Lopsided’ and ‘Manifold’ models were the ones identified with HEI providers in the cohort most consistently. This may reflect the way that HEIs are attempting to refine their activities in response to the diverse pressures that currently affect them by attempting to address several dimensions simultaneously. The geographical, pedagogical, and operational differences between individual cases are of course concealed by these aggregate figures, but we believe that we have demonstrated the viability of this approach for modelling.

5. Exploitation

The conclusions drawn here represent a work in progress. The full report for the International Council for Distance Education is currently being drafted, and could form the basis of an extended piece of work, such as an annual audit of OOFAT dimensions across HEIs. The proposed typology of business models, OOFAT dimensions, and archetypal cases provided as visual models can be used to describe educational provision in a wide variety of circumstances, and the approach has been validated by the responses already received. Others who wish to make use of the model are advised to contact the authors for a fuller description of the process.

The next phase of our work will include:

- Identification of exemplary types from within the dataset
- Publication of the collection of cases
- Scientific publication

There is potential for a regular audit of open and distance learning institutions and project to be conducted using this methodology.
6. Conclusion
This paper has described the processes, methodology, and basic findings of the OOFAT Models project. The primary goal has been to convey the concept rather than report the results. We hope to have demonstrated that the approach is viable and can produce results that are of interest to a range of stakeholders. The OOFAT model dimensions provide a flexible framework for considering the ongoing changes that are happening in higher education as a result of technological, economic and political pressures. Reflection on these elements can help decision makers in HEIs to locate themselves and their institution within wider questions about the nature and role of academic institutions.

7. References


Openness / OER as a student eScouts project at Ruhr-University Bochum

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Abstract
The eScouts project at Ruhr-University Bochum develops a proceeding to open teaching and learning. It is formed by student employees of the central learning technology service and dedicated to try out new practices and technologies at the university.

The eScouts are trained by a special online education module and supervised and guided by staff members. The incorporation and integration of students into the central E-Learning service has been since 2007 an important feature of its work.

The eScouts set up an understanding of open content which means at a basic level to provide open and free access to the learning content. If possible licensing as OER should be applied. Goals for opening education include making learning content visible, giving insight for new students, fostering diversity and offering an alternative to copyright restrictions. It was seen as an important part of the project to have arguments to convince staff to open teaching and learning.

This includes building an online open education repository, creating OpenCourseWare after the model of MIT OpenCourseware and offering training sessions. The Open RUB repository (www.open.rub.de) includes 30 items of freely accessible learning content and OER: mainly information courses, lecture recordings, self-study and OCW courses.

The project with the repository at its heart is going to be further developed as well as structures, attitudes, skills and knowledge regarding OER.

Keywords: OER, open, OpenCourseWare, OCW

1. Introduction
eScouts OER is a pioneer project at Ruhr-University Bochum to promote open content/open educational resources (OER) in the context of E-Learning. Main goal is to encourage staff and students of the university to produce and make use of open content/OER. The prerequisites, proceedings and experiences of the project are described in this paper. First the organizational embedding of the eScouts OER project is outlined. It is also put in relationship to other OER reports and activities in German Higher Education to give an idea of the overall status of the project. Recently in German Higher Education OER emerged as an idea or concept that should be taken into consideration by educational institutions in their growing efforts to digitize education.

The underlying concepts and goals of open content are then explained. Goals that have been identified as worth pursuing are: visibility of teaching, an alternative to copyright restrictions, a way to foster diversity and a means to reach sustainability of digital learning content. Goals and understanding of openness are important to make it clear and reasonable for teachers to engage in the field of open teaching and learning. However they do not automatically constitute motives in the actual teaching practice. This dilemma is also
covered in the explanation of the goals. Then the activities of the eScouts OER project are described which has its focus on low-threshold offers for opening teaching and learning. The components of the activities are: the OCW course format, the Open RUB platform, the integration with E-Learning activities at Ruhr-University, marketing. The OCW course format is a specific format developed following the model of MIT OpenCourseWare. To have a common point of access for open courses a university wide platform (Open RUB) was created. A variety of approaches are made in order to get content for the Open RUB platform. These imply the integration with E-Learning activities at Ruhr-University and marketing initiatives. As a conclusion the future plans and measures of the project are presented.

2. The eScouts project at Ruhr-University: background information

The eScouts project is a student team of two persons with the task to explore new technologies and practices relevant for E-Learning in higher education. It is embedded in the centre of E-Learning support and development at Ruhr-University of Bochum (RUBeL) which offers a wide range of E-Learning services. The team is supervised by permanent staff with expertise in the respective fields. The project is set up for two to three years and financed by funds for quality improvement of teaching.

The E-Learning centre was founded in 2005 and has since the beginning a strong culture of student involvement (Thillosen & Hansen, 2009, Henze & Cramer, 2012). The student perspective is seen as very valuable in the whole process of E-Learning setup as it integrates the target group perspective into the E-Learning construction process. Student eTutors can from their perspective tell which technologies work for students and how they should be designed to get good adoption in a course.

Since 2006 the E-Learning centre offers a study program called eTutoring with a duration of approximately six months. Students are qualified as eTutors and get at the same time ECTS (5 to 10 ECTS) for this qualification. The study program is integrated in the so called “Optionalbereich” (soft skills centre with courses which have to be taken with 30 ECTS altogether during the Bachelor programme). For one semester eTutors support staff setting up an E-Learning course using the technology offered by the E-Learning centre. Additionally eTutors get didactical and technical training and are guided throughout the semester by the E-Learning centre team. Subsequently qualified eTutors have the necessary knowledge to implement E-Learning in university courses.

After finishing the eTutoring training eTutors can often make use of their expertise in student E-Learning jobs in the university. Also the E-Learning centre employs eTutors in various projects, one of them being the eScouts project aiming especially at technologies and practices unknown or not yet well established in teaching and learning. From 2016 to 2019 eScouts projects have been created in three fields: OER, inverted classroom, gamebased learning/gamification. Ideally eScouts already have general knowledge of E-Learning tools and didactics, so that one part of the job is to build expert knowledge in the eScouts domain. Based on this the eScouts develop concepts on how to proceed in implementing their topic into the university’s teaching and learning landscape. The eScouts OER team in a first stage built up in-depth knowledge about OER and then planned how to put OER into practice inside the university. Thereby it worked partly explanatively but also tried to systematically reflect procedures and possible strategies. This also meant to have an overview of the current situation of OER in German higher education in order to get an orientation in which direction to proceed.

3. OER in German Higher Education

OER has not been an issue at Ruhr-University Bochum until the eScouts project was setup. The only other open initiative at Ruhr-University is an Open Access initiative maintained by the university’s library focussed on research. With the signature of the Berlin declaration to Open Access Ruhr-University Bochum supports
the political demand for open access to scientific publications. Ruhr-University established funding to publish in Open Access journals and also has an Open Access repository. Open Access can be seen in close relationship to OER in higher education as scientific literature is also a resource for teaching (Mruck et al., 2013).

OER only recently became an intensively discussed topic in German education/higher education. Internationally it was introduced in 2002 (Deutsche UNESCO-Kommission, 2013). Since 2012 it entered the educational debate and is discussed in Germany intensively (Deimann et. al., 2015). A milestone can be seen in a joint paper by a mixed committee of state and federal stakeholders (BMBF, 2015) with proceeding recommendations. They play an important role for further initiatives and funding on a state level:

- setup of platforms
- copyright improvements
- awareness raising
- knowledge building
- European and international cooperation
- set up of a national information agency

The project “Mapping OER” funded by the ministry of education and carried out by Wikimedia Germany from April 2015 to February 2016 states correspondingly three prerequisites for OER to unfold their potential: media literacy, technical infrastructure and a sharing culture (Wikimedia Deutschland, 2016). Departing from these general initiatives many OER activities focus therefore mainly on either creating technical platforms or addressing knowledge/awareness building. Similarly the eScouts project can be characterized roughly as a project uniting technical and sociocultural measures.

As “Mapping OER” describes how OER is unfolded in the different educational areas, school, vocational training, higher education and further education, it concludes that from the universities there are only a small number of institutions and organizations that deal systematically with OER or produce OER (Wikimedia Deutschland, 2016, p 18). In this respect the eScouts OER project has a singular status in the higher education OER landscape because it tries a systematic approach to OER.

Following the recommendations of the joint central/federal working group several funded projects by the state, for instance the national OER information agency and other projects with regard to awareness and qualification (BMBF, 2016), started since 2015/2016. Despite a more intensive discussion and funding by the state the effect on daily teaching practice is still limited and it is difficult to find a working model inside an organization. Universities still pursue a individual path to deal with OER if they deal with this topic at all.

4. Understanding of open content and goals

The eScouts OER team started to find an understanding of “open” which could be used at Ruhr-University. Open or openness is a term that has no sharp borders and has different interpretations and concepts (Deimann, 2016): open content, Open Access, open education, open courses and OER.

In the eScouts OER project the term “open” refers to educational content. Content should be easily and at no cost accessible by a broader audience. It is targeted but not necessary to publish content under an open licence as OER (Deutsche UNESCO-Kommission, 2013) This is done only if copyright holders give their consent.

The target concept of OER follows the UNESCO definition: “Open Educational Resources (OERs) are any type of educational materials that are in the public domain or introduced with an open license. The nature of these open materials means that anyone can legally and
freely copy, use, adapt and re-share them. OERs range from textbooks to curricula, syllabi, lecture notes, assignments, tests, projects, audio, video and animation.” (UNESCO)

A central question is how to get staff and also students to make or use open content/OER in their daily teaching and learning practice. As a first step it is generally encouraged to put content open because a first obstacle to overcome is to get people used to the idea of opening at all. To have a common starting point for staff the eScouts OER team centred their proceedings around Moodle, the main learning management system of Ruhr-University. This was seen by the eScouts OER team as a low threshold means for opening teaching and learning as most staff use Moodle to support their face to face classes.

Another important step to reach this goal has been seen in giving good and convincing reasons and arguments leading to the decision to open content as part of the teaching practice and furthermore license content as OER. The main effects and benefits which eScouts OER identified are: visibility of teaching, alternative to copyright restrictions, fostering diversity, accomplishing sustainability. Although these effects and benefits of OER are obvious on the one hand, they do not automatically boost adoption in the specific use cases of teaching and learning.

4.1 Visibility of teaching
Opening educational content is a way of making teaching visible. This has different meanings and effects, some more related to opening content as such, some more specifically to OER (Deutsche UNESCO-Kommission, 2015). For Ruhr-University’s Open RUB project the eScouts OER team interpreted the visibility of teaching in the following way:

- Content can be used/reused for teaching and learning.
- Staff at Ruhr-University see a variety of online courses/materials and use them as an inspiration/resource for their own teaching.
- Students at Ruhr-University as well as future students get an insight into what is done in a specific course or subject.
- School teachers can have a look into current university level knowledge of their own subject.
- People interested in further education have the possibility to use open content modules for self-study.

These desired effects and advantages from a strategical point of view are obvious and clear and could supposed to be in line with the teaching objectives of staff. However to understand teaching or parts of it as something that is visible or should be visible to an external audience is usually not part of the teaching concept. Learning objectives do not necessarily include components or learning results visible for an outside audience. Furthermore it might not always be in the interest of participants to open educational materials/processes. On the contrary, for the purpose of learning a certain room of privacy is often seen as necessary. Also resources are made open only as part of a whole process. Content is then carved out of a teaching and learning process used or intended to be used out of the original context and settings. It may not reflect the actual teaching and learning experience. Therefore both the interest in teaching and learning privacy and the process character of teaching can be seen as barriers to open content in the sense of making teaching visible. Although from an external perspective there may exist potentially open content, from an internal perspective, the participants’ view, elements and aspects are not suitable or eligible for opening. Rarely teaching concepts are applied where openness is explicitly part of the course and which for example have a product as a result. There a greater chance to integrate open content / OER exists as visibility of teaching and learning is wanted.
So as a consequence the eScouts OER project has to deal with specific attitudes and conditions of teaching with respect to openness. In the eScouts project so far it was not part of the measures followed to push activities with the explicit goal of producing open content/OER. Instead a first step has been to put open parts of teaching which have not been especially designed for opening but still could be made open depending on the individual decision of staff.

4.2 Alternative to copyright restrictions
A possible effect or advantage of open content/OER could be that it functions as an alternative to copyright restrictions. Copyright is a point of great concern when there is the decision to make to open content. Recent political activity in Germany recognized that legislation is very complicated to apply and it is difficult for users to comply to legal requirements (Bundesregierung, 2017). For this reason a legislative change was made to improve the situation reacting thereby to a barrier for digitization of higher education. Legislation was simplified and the legal ground for using copyrighted materials set.

Based on German copyright law copyrighted content can be used to a certain degree for teaching purposes without consent of the author (§ 52a UrhG since 2003, § 60a UrhWissG from March 1st 2018). Quantitative limits are set so that parts of texts or of other content types can be made available inside an online course. Only in the case of certain types of works (for instance images) it is allowed to provide the complete work to students. Generally this regulation seems sufficient to support university teaching by supplemental online courses. There is no pressure or need for staff to look for free content or to license content additionally. Furthermore scientific content is licensed by the university’s library and can also be used freely in online courses. On the other hand for educational and scientific purposes in general it would be adequate and useful to have unrestricted and full access to scientific and educational content. One way this could be reached is through Open Access and OER as an alternative to law permissions. In this sense OER can be seen at least in the long run as an alternative to copyright restrictions. The more content is available as OER or Open Access the more it can be an alternative to copyright restrictions. However already now OER allows using content to a greater extent: the advantage is that resources can be altered or modified and a greater amount of for instance text can be used as opposed to usage under § 52a UrhG or § 60a UrhWissG.

At present online courses show a mixture of content: one part which is not possible to transform into OER or to substitute with OER/OPEN Access and another part that could be transformed and also made open. So for certain parts of online courses the use of OER should be suggested. Especially when there is the explicit goal to open teaching and learning and when new digital resources are created. To react to this situation the eScouts OER team developed a special course format to allow to open only parts of a course.

4.3 Fostering diversity
Open content/OER can also be regarded as a prerequisite to accomplish diversity goals as the possibility exists to create and reuse content adapted to diverse needs, requirements and backgrounds (Deutsche UNESCO-Kommission, 2015). The eScouts project OER found a connection to strategic goals of the university. The mission statement of Ruhr-University includes the estimation of diversity which means that people from different countries, with individual biographies, different preconditions and diverse goals and expectations are part of the university (Ruhr-Universität Bochum, 2017). The possibility to fulfil diverse educational needs might also guide future activities of the eScouts project, for instance to aim at educational content of different levels or languages. So far however no activities have taken place in this respect.
4.4 Sustainability
Sustainability in connection with openness has been considered by the eScouts OER team especially interesting for E-Learning content. As content production is expensive it could be an advantage if it was possible to be able to adapt or reuse existing content which means that content could be exchanged and resources jointly used. This also implies the idea that publicly funded content should be reusable at no cost. Additionally digital content is less static than traditional non-digital content because technology continually evolves and thus is subject to constant change. OER would allow to easier change and adapt content to individual needs. At present especially many funded E-Learning projects produce content which is not put under open licences and cannot be made open. If for example the content producers are not available any more the once produced content that could be valuable for other users or even developed further gets lost or disappears.

However sustainability can be seen as an important component of innovations in the field of digital education (Euler & Seufert, 2004). It develops in four dimensions according to Euler & Seufert: economic, pedagogic, technical and cultural. In the pedagogical dimension E-Learning/OER is didactically successful because it supports positive learning outcomes. In the technical dimension technical formats are used that are widely used and suitable for long term persistence. In the economical dimension after the creation of educational materials little effort is needed to continue using them. In the cultural dimension the production of educational content contributes to a digital friendly learning culture. If educational content gets positive ratings in all four dimensions it can be regarded as sustainable. This sustainability condition could at the same time be a good indicator for open content / OER and serve as a guideline for quality measures. However these have not been implemented yet in the eScouts OER project.

5. Activities
From the understanding of openness and the goals and effects which the eScouts OER team found to be particularly relevant for Ruhr-University several activities have been pursued. One part constitutes the platform Open RUB with several course types which includes the OCW format. The other part is made up of activities which integrate with the service and incentive offers of the centre of E-Learning.

5.1 OCW format
Moodle courses are seen by the eScouts OER team as a low threshold starting point for opening teaching and learning. They contain course information, documents, activities, communication, announcements, literature, slides, podcasts, pictures, links, tests, assignments and other items. A disadvantage is that often copyrighted content is used, personal data as well as organizational information given which is of no interest to an external audience which does not make it possible to open a Moodle course as it is.

Therefore adapted from MIT OCW the eScouts team decided to offer a transformation of a Moodle course into an OCW course. A Moodle OCW course contains only those elements for which the author has the copyrights and only those materials that might be of interest for the public. Self-produced content can be licensed as Creative Commons inside an OCW course. This means in addition to an existing Moodle course a separate OCW course is created. The OCW format is available as a Moodle template with a common course structure having a course description, readings, syllabus, and content. The eScouts team offers the creation of an OCW course as a free service. The free service also comprises consultancy to open teaching and to OCW, the creation and publishing of the OCW course on the Open RUB platform.
5.2 Open RUB platform
The eScouts OER team decided to make open Moodle courses / open content/ OER available on a public platform, the Open RUB platform. It is a web platform technically based on Drupal which mainly links to open Moodle courses. It is also directly accessible through the Moodle platform. It started in 2017 and has around 30 courses, about 30% containing OER. There are 5 types of courses: preparatory, information, self-study, demo and OCW courses. Also included are links to free available lecture recordings from Ruhr-University courses. Preparatory courses offer study materials as preparation for specific courses at Ruhr-University. Information courses contain resources for different topics without learning activities, for example an information and exchange course about professional internships in a study programme. Self-study courses have learning activities and can be used for independent studies. Demo courses show parts of a course to give an impression of the character and methods used in a course.

Table 1: Number of courses listed by course types available on Open RUB in 2017.

<table>
<thead>
<tr>
<th>preparatory</th>
<th>information</th>
<th>self-study</th>
<th>demo</th>
<th>OCW</th>
<th>lecture recording</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>9</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Through OpenRUB staff can request an open course and the support service offered by the eScouts OER team.

5.3 Integration
To extend the content base of the Open RUB platform the eScouts project tries to integrate OER in the E-Learning activities and projects of the centre of E-Learning. The idea is that open content/OER forms an integral part of E-Learning design and setup. Eligible E-Learning activities and measures so far identified are the E-Learning contest 5x5.000, lecture recordings, the study programme eTutoring and the eLabel.

5.3.1 E-Learning contest 5x5.000
Twice a year the E-Learning centre organizes a competition for E-Learning projects. The contest is a well established means of E-Learning funding since 2007. 5 x 5.000 Euros are awarded for convincing E-Learning concepts which can then be implemented with the help of this funding. It is planned that one of the criteria that are part of the application form is the use of OER material. In a first step this is optional, a further going requirement would be to have all materials produced in this contest licensed as OER.

5.3.2 Lecture recordings
Lecture recordings at Ruhr-University are done by a central service team and consist mostly of a combination of slides and audio. The eScouts OER team contacted approximately 50 persons who recorded a lecture and asked them if they would be willing to put the recorded lecture on Open RUB. Around 12% answered positively. Even from the positive answers there could not be all accepted because of copyright issues. As lecture recordings are not especially prepared for publishing they may contain copyrighted materials inside or student contributions. This is legally no problem when the recorded lecture is published only for course members and access is restricted. For Open RUB consequently without further effort only chalkboard lectures or audio only recordings could be used.

5.3.3 eTutoring
The eTutoring module in which eTutors are qualified gives the opportunity to integrate an OER training session and to produce courses with or as open content/OER. The OER training is carried out by the eScouts OER team. In this training session eTutors learn about the implications of OER and how to find and make OER
when they set up an E-Learning course. In many cases during their practical work eTutors create new content or use existing content to design a Moodle course. In those cases open content/OER can be applied.

5.3.4 eLabel
The E-Learning label of Ruhr-University defines standards of E-Learning quality based on a criteria catalogue. Staff fill in a form to get a label for their course. The label is displayed inside the Moodle course and is issued each semester. As the Leitbild E-Learning as main guidance for E-Learning at Ruhr university also implies to foster collaborative working and exchange of ideas this can very well be understood to also comprise the exchange of ideas through the exchange of OER (RUBel, 2009). So the application form for the E-Learning label should contain the options that if possible content is embedded as OER and that new created content is licenced as OER.

6. Conclusions
The eScouts OER project has done first steps to establish the possibility at Ruhr-University to use and publish open content/OER and to get information, consulting and training about OER. To make open content/OER visible inside the university the Open RUB platform plays an important role. Future activities are directed towards further development and extension of the Open RUB platform. This also means to get more content/OER on the platform. Although the stated goals and effects, visibility of teaching, alternative to copyright restrictions, fostering diversity and sustainability are worth pursuing they do not work as direct motives for staff in their daily teaching and learning practice. Part of the activities of the eScouts OER team was therefore to incorporate OER also in the activities of the E-Learning centre to push OER as a natural component of E-Learning. To reach this goal marketing and promotion of OER / Open RUB are going to be intensified and continued as well. This is done by articles and information on the university’s website and communication channels and the media used by the E-Learning centre (homepage, social media) and personal contacts. Networking inside and outside the university is also done and continued, for example exchange with regional activities and coordination with the Open Access initiative inside Ruhr-University.

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Preparing to Learn – transitioning and retaining incoming Level 4 students via online methods

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Abstract
Leeds Beckett University’s Strategic Planning for 2016-2021 places high emphasis on student progression as a key objective. In aiming to hit 95% student progression after one year of study, 2016 saw a pan-University project with various departments (including our Centre for Learning and Teaching, Skills for Learning, Widening Participation and the Distance Learning Unit) to produce an open-access module that would be shared with incoming Level 4 students. The creation of the module aims to show students the type of teaching, assessment and learning environments they may experience during their time at Leeds Beckett University. It also introduces some of the skills they will be supported to develop during their University course, specifically around independent learning and producing arguments. The module was built and delivered in our VLE (virtual learning environment) to reflect the online learning environment the students will experience when they arrive at Leeds Beckett. This module was launched in July 2016 and 2017 has seen a review of usage statistics and qualitative feedback informing changes to the module material. Based on feedback the future plans include School personalisation, specialisations for various backgrounds and the introduction of a formative assessment to support induction activities.

This paper shares our process and several of the challenges and considerations encountered over the past 18 months.

1. Background
A new University strategy was launched in 2015, part of which covered the educational strategy for the Institution. Within this area there were three KPIs (Key performance indicators) laid out covering retention, progression and outcomes. The DVC (Deputy Vice Chancellor) Academic, prior to the launch of this strategy, had already instigated a number of projects and activities to support the achievement of the KPIs, one of these being a pre-sessional MOOC (Massive Open Online Course) to introduce students to university teaching and learning prior to their arrival on site. This project started in May 2016 and, led by the Library’s Associate Director, brought together a number of services from across the institution to create the first version for launch in July 2016.
2. Phase 1
The first meeting of the pan-University group met in May 2016, to agree and discuss a number of key features so that the project could move quickly. The DVC had requested a launch date from the MOOC for mid-July 2016 giving approximately a 10-week time frame in which to complete the work. The group was made up of staff representing Learning Systems, Skills for Learning, Distance Learning Unit, Centre for Learning and Teaching, Marketing, and Outreach. The group agreed that the platform for delivery should be the institution's VLE (Virtual Learning Environment) Blackboard (known as MyBeckett) to allow students to engage with and experience the platform they would encounter when entering university, rather than it being a web-based resource or an external open VLE that bore little resemblance to what they would ultimately end up using. It was agreed the content would be based on that already created for registered students by the Skills for Learning team. The decision to use existing content and make minor changes to suit an external audience rather than write something from scratch was taken due to the tight time frame to produce and launch the resource. Staff from Learning Systems worked to create a method of access that did not require visitors to log in to the University’s systems to be able to interact with the material. Staff from the Centre for Learning and Teaching (CLT) and the Distance Learning Unit (DLU) worked on the content created by the Skills for Learning team to amend it for a pre-HE audience and reduce some of the volume to make the content engaging and streamlined with the most relevant information.

A decision was taken to include the different learning, teaching and assessment methods the students might encounter during studying for a degree but was not to cover course and module structures, and any social aspects of University life. From this, four different units were created covering University teaching and assessment, independent learning skills, academic IT skills and critical thinking skills. It was also decided to give students an idea of the length of time they should spend on the module (approximately three hours).

It was primarily promoted through emails sent by Marketing to incoming and prospective students, and also shared on the VLE login page for students to self-enrol onto if they already had a username and password.

2.1 Feedback from students and statistics
The University’s full student intake at Level 4 for 2016/17 Academic year was 7865. Due to the setup of the VLE environment for Preparing to Learn whereby incoming students accessed under a Guest account, it was not possible to track the discrete number of users who accessed the module.

Whilst this module was aimed at incoming Level 4 students prior to them receiving MyBeckett logins, once they were registered on MyBeckett 98 users self-enrolled into the module. These 98 users represented a wide selection of the University community and were not restricted to incoming Level 4 students - whilst 72 users were undergraduates, 19 were postgraduate and one was a part-time languages CPD student. Furthermore, 56 were in their first year of study, 21 in their second and 14 in their third year. They also came in with a variety of different prior qualifications: A/AS levels, foundation degrees or diploma and other Level 3 awards.

Using analytics software, it was possible to check access clicks and time spent in the module. Most access was seen in September. Figures 1 and 2 show hits inside the content areas with most activity happening between 22rd August and 30th September – shortly after A-level results day until term start.
Just over 65 hours were spent inside the module in total, averaging out to just over 30 minutes per user. Most access was on a Monday and Tuesday, with little access over the weekend. 59 users spent 10 minutes or less in the module, and 12 users spent between 1 – 4 hours in the module.

Analytics monitoring clicks show that Unit 1, University Teaching, received the most attention, with Unit 2, Independent Learning, being the second most popular. According to student feedback, the Critical Thinking section, particularly the YouTube video, was the most well received section.
Feedback was sought using a feedback form at the end of the module. 4% of participants responded. Of that number, 83% thought that the module was either useful or very useful, and 41% thought it covered everything needed. They gave some specific feedback regarding improvements - namely that navigation should be made easier and that it was very text heavy and required more pictures and audio-visual content to improve the content.

3. Phase 2
A pan-University group of a similar constitution to the team who led phase 1 met early in academic year 2016/17 with a view to making improvements to version one and have a more manageable amount of time in which to make changes and upgrades. The first exercise was to review the feedback and usage statistics which allowed the group to make several key decisions on what would be included in the second iteration of the module. It was decided to make minimal additions to content as it was felt that the module contained the relevant topics and that creating more content would make the module longer than it already was and possibly less appealing to students. The consensus from the group was to reduce the text content by either removing sections which were not as useful for students or by converting it to audio-visual content.

Key sections of text-based content were taken and converted into interactive lectures and animations to bring the content to life. The animations were done by a student placement from the University’s BSc Broadcast Media Technology course, and have received positive feedback from University staff members who have seen them.

This phase has also included more publicity about the course, in particular, promoting it within the Schools and via the University’s academic conferences. The increased publicity, both internal and external, had led to increased awareness. The team was approached by academics and Schools from across the University who were also looking at tools to support the Education Strategy about the course. The conversations have led to requests for personalisation and for certain topics to be included. Whilst it was decided that any personalisation would need to be looked at in phase 3, some extra content was added on academic integrity and critical reading and writing as it was felt this would benefit all students.

Phase 2 development has been completed and the module went live for students mid-July. Communications were sent out to incoming students in mid-August containing a message about how to access the module. Up to date usage statistics is still awaited.

4. Challenges and considerations
Phase 1 was completed over an incredibly short amount of time, with the aim of getting a quick win available. This meant that there was little time for in depth development and creativity, leaving us with content which primarily contained a lot of text to read with small amounts of interactivity. The initial target audience were incoming students freshly out of school and growing up in a more digital world. Their expectations and experiences of consuming information would not have included reading significant amounts of text - and design wise, having solid blocks of text on screen does not make for a conducive learning experience. This was reflected in student feedback as they requested more visually appealing content that contained more audio-visual and interactive content. Some of the challenges here came about due to the restrictions presented to us by the VLE. For example, the basic user interface of the VLE pales in
comparison to many of the website interfaces available today, unless you are able to use coding. Whilst DLU have these skills, they were asked not to produce highly HTML-based or coded content as most standard VLE usage that students would experience throughout their course would be basic document uploading and other similar elements.

The VLE also restricted us in other ways - namely with the inability to track the exact number of users who engaged with the module given that we wanted them to be able to access the content without signing in. It was only possible to produce one instance of this guest log-in, which presented a challenge for the phase 3 developments. Phase 3 plans to provide School-based personalisation, as well as different modules for different incoming backgrounds (i.e. A-Level, BTEC. Foundation year), and will thus require different methods of allowing guest/non-registered user access to these multiple modules.

Within the pan-University group, there were differences of opinion on the purpose of the module, particularly when looking at whether this was an outreach/marketing tool or whether it was for familiarisation and progression, however there was agreement on most aspects and produced a module which made all parties happy. Research has shown (Lim 2004; Thorne 2016) that students engage better with monitored modules, (as demonstrated by comparing the University’s distance learning courses where online learning tutors are present to monitor engagement with courses that do not have this role), so DLU put forward an argument that this module would be better received by students if it was monitored and had staff actively engaging with it, however due to various constraints including time and resource availability, it was not possible and so the content was designed to be entirely stand alone.

As it has not been possible to check guest user access, we cannot fully judge engagement with the module. However, it was not as expected in its first year. Of a potential audience of over 7800 incoming Level 4 students, fewer than 0.7% of that number self-enrolled into the module, and various other student types did self-enrol. It was promoted via Marketing emails, at a time when incoming students are bombarded with information, so could have easily been missed, and was subsequently silently promoted via the VLE login pages, which was only noticeable if you were seeking information or generally browsing. It was not actively promoted to academic staff during phase 1 (primarily due to the short time frame in which it was established), leading to the implementation of more internal promotion in phase 2.

5. Future Plans
As one of the challenges has been getting the message about the course out to the target audience, in future versions conversations with the outreach and widening participation teams should be held early in the process so that they can use the course to support their work but also so the course can receive richer feedback to improve it going forward.

After the second iteration has been launched and the data and feedback is reviewed, an assessment will be undertaken to see whether there is a benefit to creating a more bespoke product aimed at Schools or courses. Schools have indicated that they would like specialisations for various backgrounds and the introduction of a formative assessment to support induction activities. This will also require reviewing the current platform used to present the course. The technical limitations of the current platform restrict the institution to one fully open course on the system. If a number of Schools or courses showed an appetite for creating bespoke open courses, then a suitable platform would need to be provided and managed.
The development of School-specific content may also lead to having more academic staff contribute content aimed at students looking at their specific subject area. Suggestions that did not make it into version 2 include top tips for getting the most from lectures, from both a student and staff perspective. It is felt that content such as this would be useful in preparing students for study as it comes directly from the staff that would teach them and students that have very recently gone through the experience of starting and studying at University.

It has become clear as the site was developed that there are a number of weaknesses in the content being based around using subject matter that had originally been written for on-site enrolled students. The target audience for the course has likely not yet experienced University language and terms, so some of the language needs to be further modified to take this into account and introduce concepts from a lower base line. The course currently lacks bespoke videos and images, and has been completed by repurposing existing appropriate media. In the next iteration, it would be useful to have a bank of images and videos created in line with the content such as in-classroom images and snippets of course lectures. Research has shown that using people in videos rather than just voiced over images provides a greater level of response from the viewer and this is something the course and the development team need to utilise (Fahey, 2008).

6. Conclusion
At the time of publication, progression data for 1617 academic year has not been finalised, therefore the impact of this project cannot yet be measured. The internal appetite for this type of course is growing exponentially, which shows value in continuing to progress this type of development.

7. Bibliography and References


Quality Assurance Processes

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Abstract
Transforming the governance processes of the University, the training government organization for excellence, implicates the reassessment of expertise, knowledge and qualifications of teachers engaged in novel think-over practices, along with the acquisition of a critical attitude towards their own didactic approaches. The aforementioned changes encouraged the research community to question about the training processes designed for university teachers in order to promote the development of a didactic methodology to meet the demands of excellence required by the European education policies.

This manuscript aims to providing to re-enact the Italian regulatory pathway in regard to the university evaluation processes starting from the 1990s to the present day; we emphasize the impact on the didactic approach, which has been significantly influenced by the new organizational models proposed or imposed by Universities.

Following the Bologna process, education has been promoted as an element of social growth in the contest of the European community that aspires to rely more and more on world knowledge and competitiveness, and which today appears to be committed to developing economy and employment by encouraging and enhancing training in various ways and by the employment of multiple educational actors, with the involvement of academic institutions and communities. Over the years the University of Foggia sponsored numerous initiatives in this direction. Herein, we describe a specific training course (established by the recently activated Permanent Learning Center) that aims to guaranteeing the quality of the training courses and therefore designated for all newly promoted teachers (2016-2017). The objective of the aforesaid training initiative is to develop and deepen the didactic proficiencies in line with the quality assurance guidelines of the Italian AVA2 system.

Keywords: Quality Assurance, Lifelong Learning, Teacher Training
1. Regulatory References

The regeneration of the University's governance processes achieved over the last few decades forced an update of the Italian evaluation practices system. The purpose that we want to pursue is to apply Quality Assurance processes to the university system. It is well known how the Quality Assurance System nourishes a set of actions and feedback to improve academic activities. The necessity to reform the Italian university method was palpable since the beginning of 1980 due to the obvious critical theme. However, the formalization of the first practices of the Italian universities dates back to the nineties with the Ruberti law (n. 168/1989), which clearly highlights (art. 6-8) the principle of financial autonomy, accounting and research entity thus transforming the University into a true legal body.

The Bologna Declaration, signed on 19 June 1999 by Ministers of 29 European countries such as Italy, France, Germany and the United Kingdom met with the Sorbonne in Paris the year before signed the real transformation of Italian university, deliberating the centrality of the evaluation processes as the formalization of an intergovernmental cooperation agreement.

Is the objective of the Bologna process is in fact, to create a "European Space" of Second Grade within the Secondary Education, based on academic freedom, institutional autonomy and the involvement of teachers and students in the government of higher education contributing to all together academic quality, economic development and social cohesion.

In this way, students and teachers are encouraged to move freely by developing the employability and lifelong learning of graduates by tapping relationships with external agents to the university world.

The most important reforms introduced following the agreement are as follows:

• to realize a Certified Quality System through the introduction of a comprehensible and comparable ranking (the first, second and third tier system);

• to execute a ranking framework in line with the European Higher Education Area;

• to guarantee transparency of study programs through a common credit system (ECTS) based on workload and learning outcomes, and through the High School Graduation Supplement;

• to recognize both all grades and study cycles;

• to secure the sharing of quality assurance practices.

The enactment of the university evaluation system took place in December 1993 (law 537) with the establishment of both the Internal Evaluation Board (NVIs) and the National Observatory for the Evaluation of the University System (ONVSU). They represent an effective control and evaluation instrument in a system that is rapidly heading towards the responsible autonomy within a common European framework. Autonomy should, therefore be guided and addressed in the constraints of the Bologna Process and Italy presents, with a series of progressive regulatory adjustments, some evaluation processes already in place in other countries that will, twenty years later, culminate with the institution of the ANVUR (National Agency for Evaluation of the University System and Research).

In the context of full autonomy, the regulatory organization will later award the Universities, now Evaluation Body, with the assignment of roles as Independent Evaluation Body (OIV) unfolding the assessment practices of both organizations and staff, in order to promote the excellence and the improvement of their own
organizational performance. The responsibilities of the Evaluation bodies have changed over time and it would be interesting to analyze in detail how the evolution of their role took place; nevertheless for the purpose of this discussion it is adequate to point out how they have always provided support to the University’s governing bodies in monitoring the results of their own strategic planning. They embodied a first attempt to expose the university system to accountability policies with a vision to making the process transparent and liable not solely to the academy but also to all stakeholders. Unfortunately, in the beginning they have been penalized by the widespread self-referential environment, this one being a distinctive side in the early years of university autonomy.

Upon its establishment, the Observatory (ONVSU) did not have the task of overseeing the activities carried out by the individual Evaluation Bodies but instead it was able to interact in a complex way with all the other actors involved in emergent quality assurance processes. The activities carried out by the Observatory, starting from October 19, 1999 with Decree No.370, were then extended and conferred to the National Committee for Evaluation of the University System (CNSVU). The latter was composed of nine members, including foreigners, with proven qualification and experience in the field of evaluation, chosen in a variety of methodological and disciplinary fields, including the non-academic field, and thus nominated by the decree of the Minister of University and Scientific Research and Technology upon consulting the relevant parliamentary committees.

The CNSVU was responsible for:

• to establish the general criteria for assessing the activities of universities after consulting the Conference of Rectors of Italian Universities (CRUIs) of the National University Council (CUN) and of the National Council of University Students (CNSU) where it is set up;

• to promote experimentation, application and dissemination of methodologies and evaluation practices;

• to determine, within a three-years segment, the kind of the information and data that evaluation pools of universities are obliged to communicate annually;

• based on the reports of the universities assessment pools together with other information obtained, to prepare and execute an annual program of external evaluation of universities or of individual teaching organizations, which has to be approved by the Minister of University and scientific and technological research providing particular emphasis on the quality of university activities following recognized standards;

• to prepare annually a report on the evaluation carried out activities;

• upon request of the Minister of University and Scientific and Technological Research to carry out further counselling, investigation, evaluation and definition of standards, parameters and technical regulations also in relation to the distinct activities of universities and projects and the proposals submitted by the same.

Following this Decree, Art.1, paragraph 2, the gained a progressive operational autonomy: the right to access the essential data and information, as well as the marketing and dissemination of legal acts, in compliance with confidentiality rules. In addition, Evaluation Committee developed the role of collecting and assessing periodically the perspectives of students participating to all didactic activities and to transmit subsequently a specific report, by April 30 of each year, to both the Ministry of University and Scientific and Technological Research and the Committee for the Evaluation of the University System.
In this concise regulatory renewal, it is important to quote the contribution provided by Ministerial Decree 509/1999 "Rules on the teaching autonomy of universities" known as the "3 + 2 Reform", because it converts the training system into cycles. In fact, the first cycle allows the student to acquire the qualification of a doctor, the second cycle allows the degree to be mastered, and finally, the third cycle allows students to acquire the title of a doctor of research. A distinct Italian anomaly almost forces a compromise between the dominant international model, which involves the award of a doctor's degree only after a PhD, and the local tradition of single-cycle degree that usually represents the highest level of education. With the establishment of the "study cycles", the evaluation system of the university will be subject to both internal and external evaluation processes from a non-academic institution, such as the Miur or the Evaluation Commission.

The Ministers of the Signatory Countries of the Bologna Agreement invited the ENQA (European Association for Quality Assurance in Higher Education) to develop a shared set of indicators and processes, known as "Guidelines on Quality Assurance Processes". Starting from 2005, in Italy particular attention will be paid to the goals set by the Lisbon Strategy, hence to take on the guidelines of the ENQA as the first element of the External Quality Assurance. Consequently, there will surface the demand to develop a national evaluation system that will enhance research, teaching and the third mission of each university to relate with local, national and international evaluation systems.

The main recommendations of the 2005 guidelines are as follows:

• development of European standards for quality assurance and external quality assurance agencies;

• cyclical review every five years by the European Quality Assurance Agencies;

• where possible, carry out audits at national level, while respecting the principle of subsidiarity;

• creation of a European Register of Quality Assurance Agencies;

• control by a European Registry Committee on the admission of new agencies to the register;

• the creation of a European Quality Assurance Advisory Forum for Higher Education.

This should achieve these goals:

• a greater coherence in matter of quality assurance procedures throughout the entire European Higher Education Area (EHEA), thanks to the use of shared standards and guidelines;

• use of common reference points for quality assurance by higher education institutions and quality assurance agencies across the EHEA;

• easier identification, through the Registry, of agencies that work in a credible and professional manner;

• strengthening procedures for the recognition of qualifications;

• increased credibility of the work of quality assurance agencies;

• better exchange of views and experiences between agencies and other stakeholders (including higher education institutions, students and the world of work) through the work of the European Advisory Forum on Quality Assurance in Higher Education;

• growth of mutual trust between institutions and agencies;
support to the transition towards a mutual recognition.

Subsequently, the Ministry, recognizing the freedom of teaching and the autonomy of universities, legislates the DM 240/2010, art.1, paragraph 4 by which outlined the strategic objectives and guidelines for the system and its components and created the National Agency for Evaluation of the University and Research System (ANVUR), which is responsible in turn to verifying and evaluating the results according to criteria of quality, transparency and promotion of the merit, also on the basis of the best international experience, thus ensuring a distribution of Public resources consistently with the objectives, the addresses and the activities carried out by each university, recognizing the principle of national cohesion and the evaluation of the results achieved. It is with DM 47/2013 that periodic assessment is institutionalized and formalized on the basis of what the guidelines will be called "AVA (self-assessment, evaluation, accreditation)".

Starting from 2012, Italian universities have strengthened the activity of the system of self-assessment of the quality and effectiveness of teaching and research activities of universities, with DM / 19. The latter determines the inclusion of the Internal Quality Assurance Board (PQA) as the body responsible for overseeing the proper and uniform performance of the University Quality Assurance procedures through an effective interaction between the various stakeholders involved. Specifically, PQA organizes and verifies the compilation of SUA-CdS, SUA-RD and Annual Monitoring Records for each CdS, coordinates and supports AQ procedures at CdS and Department levels. In addition, PQA, with the aim of providing an appropriate, pertinent and sustainable observation and evaluation system, can propose common tools for AQ and training activities for their application.

In 2016, the Ministry of Education, University and Research updates the initial AVA guidelines for 2013 and DM 987 introduces the so-called AVA 2 (Self-Assessment-Assessment-Accreditation) system. The latter takes changes with the recent update of ESG ENQA in 2015 and aims to simplify and standardize quality assurance processes. Among the actions of the AQ, introduced by the new AVA system, it is good to mention the AQ Audit embodies a simulation of the Accreditation process, or better it function as a further self-evaluation test carried out by experts involved in the process accreditation, with the task of monitoring the activities planned by the university and analyzing the adequacy of the processes to then verifying the desired results.

"The assessment" translates into an Accreditation Judgment that gives the Referral University an accreditation level, which can occur either opening or periodic, with duration of 5 years. The current model, used for the accreditation of Italian universities, envisages the appointment of ANVUR by the CEV (Expert Evaluation Commissions), which have to carry out one first evaluation of remote process through the analysis of documentation published and available on the University's website. Later, CEVs will carry out on-the-spot checks, analyzing specifically all AQ processes at the University, a section of Departments and Study Courses, to verify the effectiveness of the AQ system. The main actions of the accreditation visit are: 1. CEV Remote Examination: A synthesis report was prepared, drawn up by the University, with the purpose of presenting and describing, in a generic way, the AQ processes carried out. This prospectus is accompanied by a series of University's internal documents demonstrating the actual performance of the processes described. On-site visit: The CEV compiles the “visiting register” where all the information gathered at the University, the Departments and the individual CdS.3 are recorded. Drawing up the final report: The report includes the provisional remote assessment and the quality assessment sheets for the University, Department and individual CdS. The Preliminary Report is sent within 60 days after an on-site visit from ANVUR to the University, which has 30 days to present, where it deems necessary, its Counter-Reports. Within 120 days of the visit, after taking into account the counterfeits of the University, the CEV prepares the Responses to the
Controversies, approves the CEV Final Report and sends it to ANVUR, which draws up the Accreditation Report.

2. **Actors Involved in AQ Processes**

The aforementioned regulatory evolution leads Italy to embrace convincingly an autonomous, European-modelled system through a sequence of three study cycles that culminate with the title of a research doctor. In order to standardize and to make possible comparisons of higher education systems within the common European space all States and therefore Italy started to provide quality assurance systems since 1993, reaching the actual custom only after the “Gelimini” reform, which radically revises the governance of universities and formalizes the role of ANVUR.

Within each university several actors play to create quality assurance processes, creating an unprecedented administrative burden. Below we list the functions normally performed by each University:

- **University:** Connection of administrative, teaching and research structures of University
- **Department:** Academic body with promotion and organization of research and teaching activities
- **Study Course (CdS):** a cycle of studies at the end of which you get a degree
- **Steering Committee:** an organization composed of representatives of business field, culture and research, which can be represented permanently by the stakeholders of one or more CdS.
- **Student-Teacher Joint Quality Assurance Committee (CPDS):** a committee set up by the Department, a CdS aggregator or, possibly, a link structure, equally composed by teachers and students. It is responsible for monitoring the training offer and the quality of the teaching, identifying indicators for evaluation and results and formulating opinions about activation and abolition of Study Courses. It is required to draw up an Annual Report for CdS and broadcast to the NdV and the Academic Senate.
- **External Evaluation Board (NDV):** a body in charge of verifying and evaluating - in accordance to the internationally agreed guidelines, the legal guidelines and the criteria defined by ANVUR - the quality and effectiveness of the teaching offer of the University, research, proper management of structures and personnel, impartiality and good administrative behavior. NdV annually compiles a report containing the results of its verification activities. The composition of the NdV (it may comprise from a minimum of five to a maximum of nine members, mostly external) is governed by the Statutes of the individual Universities.
- **Internal Quality Assurance Board (PQA):** a structure that oversees the conduct of AQ at the University level, the Boards and the Departments, based on the addresses formulated by the governing bodies, ensuring the management of internal and external information flows and supporting actions of each academic institution. Each independent University individually defines configuration and operation of the PQA.

3. **The training of university teachers and the PRODID survey**

In the current, deeply changed Italian scenario, university teaching is required to carry out a pedagogical and didactic innovation that takes into account cultural, social and technological “contamination”. The excellence of university teaching plays a key role in achieving the training goals declared by the various Study Courses, and this renewed awareness confirms the importance of research and experimentation in higher education. Indeed, many Italian universities have established lifelong learning centers or continuing training centers...
inspired to the teaching model of the Anglo-Saxon Teaching Learning Center (Felisatti, E., & Serbati, A., 2014).

The Bologna process and the Sorbonne Declaration make clear how the university system also demands a strategic plan for the training of university professors, so that they may stand as an educational figure differently from the past. This is undoubtedly an important break, for some embodying a true Copernican revolution, because in twenty years this reform was able to finally place the student to the center of university teaching scheme, while traditionally it focused predominantly on the teacher's role. The student becomes now a manager who claims a training pact and services so to place the university professor's contribution among the many puzzle jars that build up the academic experience. The lectures are no longer self-referential or isolated; all the didactic procedures should be part of a collective contribution offered by colleagues who provide with skills established with the study plan.

The training of university professors in this framework is presented as a "continuous accompaniment" service, in line with the Lisbon Lifelong Learning Directives, with the aim of upgrading and supporting the teaching body. The skills needed to teach at universities are many, but we wish to try to list the main ones we could remember:

• to promote knowledge related to teaching activity with students;

• to elaborate scientific researches aimed at advancing the achievements towards new knowledge;

• to organize curricular structures and learning environments to make the teaching and training offerings concrete. (Galliani, 2011).

These premises have pushed the Italian university system to innovate and promote paths that are able support and motivate teachers to redesign their teaching syllabi. In fact, by way of example, it is appropriate to mention the PRODID (Preparation for Teacher Professionalism and Innovation Didactics), conducted initially at the University of Padua in 2014 by a group of pedagogical and didactic field researchers within the three year program of the University they aim to delineating an overall picture of teacher professionalism by offering a stable and lasting Teaching and Learning Center service. PRODID has been an important pilot-research experience, where the lecturer, in particular the newcomer, received support with the design, conduct and evaluation of his lectures, so to help to build a bridge between the training actions and the objectives set by the Study Courses.

In 2016, the survey was extended to a network of universities grouped into the new-born association AIDU (Italian Association for the Promotion and Development of Teaching, Learning and Teaching at Universities). In order to offer an introduction to didactic methodologies and self-assessment practices in the contest of various teaching and professional practice it has been carried out an extensive survey of the skills and training needs of the professors coming from the partner universities of the project, together with a manual dealing with the fundamental themes of didactic at the design, methodological, managerial and evaluation level.

The main areas of research were:

• research in the field of teaching and assessment;

• training and support for teaching professions;
• innovation in the field of didactics;

• the new professionalism of the university professor.

The ANVUR QUARC National Team (Qualification and Recognition of Teacher Learning Skills in the University System) also co-operated with the survey. For the implementation of the questionnaire, consisting of 30 items, the research group focused on four research units:

1. Teaching / Learning Methods;

2. Didactic and technological innovation;

3. Evaluative research in the field of didactics;

4. Organizational-management models for the quality of teaching.

At the end of the questionnaire were asked four open questions to allow individual teacher to indicate the excellence introduced within the didactic activities accompanied by aspirations, methodological or technical support, and emerging criticalities. The questionnaire was disseminated through a LimeSurvey web-platform, to all teachers' part of the study, including those at the University of Foggia. The data analysis shows how teachers put in place teaching methods that favor student engagement (86%), taking into account previous experience and being available to suggest changes from students (73%); use of Multimedia materials (67%) excellence of learning with a variety of shapes (61%) is evaluated in many cases even with IT tracking (58%). Less than half the cases are taught in coordination with others (46%), in alternative are produced ad hoc multimedia teaching materials (45%), or are proposed external contributions (41%). The advanced use of e-learning platforms is poorly distributed (26%). Teachers nevertheless feel that their teaching is integrated and well-structured within the training course (90%). Local situations are not different from the general representation of how teaching is realized in our Universities. University teachers are, in the vast majority, very “passionate” of their responsibility, both in regards of their role as teachers, and even more, of researchers. They are less inclined to describe themselves exclusively as teachers or as researchers, the two role dimensions tend to integrate and converge, with high levels of correlation between the two sets of items. Moreover tests pointing on opinions and innovative didactic methodologies show asymmetric distributions shifted to high scores (though not reaching the particularly high values recorded for “passions”), however data dispersion (both in terms of standard deviation and interquartile deviation) is more pronounced. On the other hand elements that highlight opinions with specific regard to the opportunity to use different evaluation approaches show more symmetrical distributions, a sign of a wide variety of attitudes that lead centrality indicators to position themselves on intermediate values in the range of possible options. Is present at an average high level the effort of teaching improvement in relation to the needs of students, however there is also some variability between the different points of view. In particular, the need for a variation within the evaluation tools it was acknowledge by everyone. The questionnaire closes with the question about the respondent’s interest in possibly being contacted on the topics of investigation. Over 60% of the respondents said they were willing to be contacted, and this data relies with some stability for all the universities that participated in the survey.

4. The Permanent Learning Center of the University of Foggia

Contribution of the University of Foggia at the PRODID investigation triggered the attention of the University’s Permanent Learning Center (CAP) to set up initiatives that would remodel the educational intervention and improve teaching techniques. The aim of University of Foggia was primarily to conduct an
analysis of the training needs so to identify the practices, beliefs and needs of teachers and to outline a comprehensive picture of the teaching profession of the University of Foggia itself. The emphasis was placed on the most exquisitely pedagogical dimension, also in light of the Indications of important International Documents (such as the Recommendations of the High Level Group on the Modernization of Higher Education of 2013) which underline the importance of adequate pedagogical and didactic training advising that the entire university teaching body receives, by 2020, certified pedagogical training.

In detail, during the aa. 2015/16, the University of Foggia has designed and executed a 30-hour (30-hour) teaching tutoring course for newly graduated teachers, predominantly to a group of 20 junior researchers hired for a fixed term as a result of an agreement stipulated between the Puglia Region and the Puglia Athenaeans. In line with these indications, the Training Path has been structured in modules constructed following Dublin descriptors. The sharing and discussion of the participants’ didactic experience, thus enhancing peer exchange and mutual enrichment, characterize each module. The privileged approach consists of a critical reflection on real experiences and in the design of improving interventions for the development of their professionalism. All of this involved, at a strategic level, a reasoned system reflection on renewed policies and practices for enhancing the quality of teaching and learning processes that involved the existing Organizations and Offices with respect to the field of didactics, with particular emphasis on Departments, the University Presidium for the quality of teaching, the Evaluation Core and the Study Courses. Reflection that has led, among other things, to the decision to set up a Permanent Learning Center (C.A.P.) to promote:

- research in the field of teaching and assessment;
- training and support for teaching professions;
- innovation in the field of didactics;
- the new professionalism of the university professor.

In the international scene many universities pursue the training method of the university teaching staff through Centers for teaching and learning excellence and Faculty development (University Centers for Excellence in Teaching and Learning and Teacher Development). These are structures aimed at developing and consolidating didactic planning skills in the context of continuous training in relation to constant change (Ferman, 2002). For all reasons explained above, C.A.P. was entrusted with the design and the organization (on the mandate of the Presidium of the University for Quality) of specific training courses designed specifically and mandatorily for the newly appointed teachers but also open to long time fully appointed teachers and researchers who feel the need to re-qualify and innovate. In continuity with the previous training experience designated to newly graduated academic teachers realized during last academic year (and based on the reading and analysis of the questionnaires of satisfaction) the Permanent Learning Center, in synergy with the Quality Presidium of the University, planned for the academic year 2016/17 a training course on 30-hour AVA system teaching methodologies and quality assurance procedures addressed to only newly-trained teachers with mandatory attendance; the course is delivered in May-July and replicated in September-November. The realization of the training plan has taken into a substantial account the criticisms surfaced from the PRODID research in regard of teaching/learning qualification and innovation of university teaching by identifying and proposing new teaching strategies so to raise educational standards. In particular, the PRODID research has highlighted that a good teacher is the one who promotes engaging, active and collaborative learning opportunities using problem-based approaches, ways of discovery and
research thus developing experiential, reflective and transformative models. The C.A.P. strategy lies precisely in its ability to contribute to generate a new approach to the professional development of University professors and to raise the overall quality of both teaching and training offered by the academicals institution. This is a process that implicates innovation in matter of institutional tasks carried by teachers and organization of educational scheme, but also in regard of new professionalism of the technical and administrative staff, tutoring and the same organizational forms. Not by coincidence, in fact, it has been programmed and realized in the aa. 2016/17 a Training Course on "Quality Assurance Procedures" addressed to both T.A. personnel and to the Student Representative of the University of Foggia. The course is divided into three modules: 1) The AVA System: normative bases (2 hours); 2) The role of students in the AVA system (6 hours); 3) Periodic accreditation and CEV visit (2 hours). The level of satisfaction of the participants was high, as emerged from the reading and analysis of the satisfaction questionnaires. To facilitate the access to and the use of training interventions, it was organized an online training course in MOOC mode addressed to the whole academic community (teachers, structured and not, students, TA staff) to generate interest for Quality Assurance Policies and Processes. The analysis of the satisfaction questionnaires of both initiatives promoted by C.A.P. is still being processed. However, the massive participation of student representatives during the training days represented an important achievement that promoted the participation of students at all levels, which it was already established from long time in the contest of university politics with the presence of representatives in all organs and in all commissions that deal with the decision-making processes of their interest. Promoting quality actions, however, is a gradual process. The key steps in this process are embodied by the enhancement of trust and participation in activities related to this topic. The student representative is of course a student and as such is the only one who has the faculty to know the subject of quality from the perspective of a student.

During the training days it turned out that the representatives, as such, show an excellent knowledge about insurance systems, policies and administrative genealogy. However, the other part of the student population is situated on a lower level, showing a reduced and uneven interest in participating in those initiatives. It is therefore, important that the students themselves are active in promoting their engagement as such, training other students and making quality assurance an interesting and appreciative part of university life. For their part, higher education institutions should consider and better understand student expectations and work to monitor their participation in quality assurance processes, taking into account all possible complications to their path to graduation (for example: excessive work study load, failures to adapt to the system, lack of knowledge and tools needed). The above-described experience shows how University of Foggia is trying to align itself with the renewal processes through a series of proposals that are stimulating and promoting change actions at the level Micro (teachings), meso (departments) and macro (general organization). The AQ training program directed at students and staff at ATA represents a small, cultural and scientific revolution in the direction of affirming their participation at all levels of interest in AQ and the decision-making process of the university required for pursue quality of higher education.

5. Conclusions
This review concerning the Italian experience on Quality Assurance processes underlines how the evaluation process radically transformed the modus operandi of the university, so to question about the training activities of University professors. Several changes and strategies have been adopted to promote the progress of research and teaching approach thus to meet the requirements of excellence established by the European education policies. A positive change stands in the awareness that the university professor’s vocational training may not and should not result in a build-up of sterile courses but must embody a pedagogical-didactic pathway that is able to support teachers and to stimulate them to experiment new
teaching and training models depending on emergencies/educational needs. At this regard studies on evaluation methods may become an effective tool to support choices and actions that influence the teaching and training practice of university teachers.

6. References


Abstract
Ten universities of applied sciences (UASs) in Finland have developed an AgileAMK model in an ESF funded project Uutta avointa energiia (New open energy). The model was created to help higher educational institutions to respond to the changing educational needs of companies, organizations and the labour market in a flexible and cost-effective way.

The Finnish abbreviation AMK in the AgileAMK stands for UAS – university of applied sciences. The AgileAMK model has been applied to create compact modules for extension studies and short educational programs out of large existing degree program content modules. The main idea is to modify existing educational content quickly and flexibly, in an agile manner, for new purposes. During the project the participating Finnish UASs have been working closely with representatives of labour market in modifying the educational content.

The AgileAMK model is loosely based on Scrum and Kanban agile software development models. The AgileAMK model is being tested by implementing MOOC-type pilot courses running on the DIGMA.FI learning platform. The themes of the pilot courses are "Nearly-zero energy building" and "Sustainable energy solutions", both related to the EU Commission Recommendation on nearly-zero energy building (EUR-Lex, 2016). Pilot courses are being offered in Finnish and in Swedish. The AgileAMK model has been and will further be modified based on feedback from the pilot course students.

Quality assurance cards for production, MOOC pedagogy, content, as well as usability and accessibility have been created in the project. The cards can be applied at various stages of the AgileAMK model.

Keywords: MOOC, agile, higher education, online course, e-Learning, online learning, model, ESF, Finland, energy, nearly-zero energy

1. Need for an agile educational production model
The creation of a new, agile production model of MOOC-type courses initiated from quite a special need: the demand of developing renewable environmentally friendly forms of energy in Finland, and mastering the requirements of the nearly-zero energy building according to the EU recommendations. According to the EU Commission Recommendation 2016/1318, by 2020 all new buildings inside EU should be nearly zero-energy buildings (EUR-Lex, 2016). It was evident that existing actors and companies in these areas of technology should be further educated so that their competency will meet the new technological requirements.
The private enterprises do not necessarily prefer their employees entering long degree programs at universities. Instead, short programs of extension studies which can be done online while working, and which are concise and specifically designed for professionals would be easier to approach. Another aspect was that universities of applied sciences in Finland had both the technological competency and the learning assets to meet the nearly-zero energy challenge, but the learning content was mainly designed for four-year degree programs.

In this context ten universities of applies sciences (UASs) in Finland found it necessary to start creating MOOC-type concise learning modules in a more rapid and flexible way. They applied for national European Union's Social (ESF) funding, firstly, to create an agile method of course creation, and secondly, to pilot the model with courses on renewable energy and nearly-zero energy technologies.

The funding was granted nationally in the Programme for Sustainable Growth and Jobs 2014–2020: Education, skills and lifelong learning (ESF), and the Uutta avointa energiaa (New open energy) project was launched in August 2015. The project will continue until July 2018. The Uutta avointa energiaa project website can be found at http://uusiavoinenergia.fi.

By September 2017 the project has developed an AgileAMK model (2017). The model was created to help higher educational institutions to respond to the changing educational needs of companies, organizations and the labour market rapidly in a flexible and cost-effective way. The universities of applied sciences involved: Tampere UAS (the lead partner), Oulu UAS, Lahti UAS, Centria UAS, Novia UAS, Arcada UAS, Haaga-Helia UAS, Kajaani UAS, Turku UAS, Satakunta UAS.

Two of the participating universities are Swedish speaking. The model it is being currently applied and tested in a few MOOC-type online courses, both in Finnish and in Swedish. The pilot courses are available for anyone on the DIGMA.FI learning platform.

2. Background for agile production models

Agile development model was initially a set of methods used in software production projects. The Agile model is described officially in the Manifesto for Agile Software Development (Manifesto, 2001). Since the declaration of the Manifesto, the notion has been expanding to other areas, and currently any project that values the 12 Principles behind the Agile Manifesto (Agile principles, 2001) can be considered agile. According to the Manifesto, preference should be given to:

- “Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan”.

These principles apply quite well in the situation when universities aim to respond to the rapidly changing educational needs of working life in a flexible and cost-effective way. Considering that we are developing online learning modules, we could slightly modify the second item. We give preference to working educational learning modules over comprehensive documentation. The name of the model AgileAMK refers to an agile university of applied sciences. In Finnish the abbreviation AMK denotes UAS, University of Applied Sciences.
The starting points for the AgileAMK model are:

- Scrum, providing a reference framework for solving complex problems and product development, without taking into account the implementation methods or techniques (Scrum, 2017).
- Kanban, which is a production timing system that helps you determine what is to be produced, when, and how much (Kanban, 2017).

AgileAMK model applies Scrum's daily meetings and other practices. On the other hand, AgileAMK model is influenced by Kanban method in the visualization of work steps.

3. AgileAMK Model in a nutshell

The AgileAMK model in a nutshell is presented in figure 1 below. In the Study module backlog phase the team members describe the entities of the required educational module. This phase shows what will ultimately be delivered to the customer. It is essential that the product owner, client, stakeholders and the study module developers are involved in this phase.

The study module backlog makes the project goals and progress visible to both the development team and the customer. When planning the entities of the backlog, the customer’s wishes should be carefully taken into consideration. Planning the entities of the study module backlog also helps organizing the project team for the next sprint. Finally, one or a few of the entities (work blocks) of the backlog will be forwarded to the next phase.

Figure 1: AgileAMK model in a nutshell

**Sprint** is a one to four week time slot, a kind of mini project. One of the entities is processed during a sprint. On the other hand, more than one entity can be processed simultaneously in case sufficient work force is available. Several sprints can be running simultaneously in case designers and team members can be allocated into the development teams. At the beginning, a **sprint’s planning meeting** is held, where the goals and tasks of the sprint are defined and a common understanding of the requirements is achieved.
The goals of the sprint make a sprint backlog, which is divided into concrete tasks, which make a sprint task list. The task list becomes a sprint development timeline as soon as deadlines and actors are allocated for each task. The development team also evaluates and allocates the time spent on each task. Large tasks should be minimized so that they can be performed in one or two days. Tasks and their number vary according to the target of the sprint.

The AgileAMK model takes no position on the tools that can be used while processing the backlogs or when running the sprints. In an ideal situation short (30 min) meetings are held on a daily basis. The tasks can be reallocated in the daily meetings to different members of the team in case a task gets stuck for one reason or another. New tasks are allocated to the team members from the sprint backlog, until all the tasks are finished.

Finally the development team runs a sprint review, where the team members present the concrete outcome of the sprint, and the team concludes and closes the sprint. Before starting the next sprint, the team runs a sprint retrospective. It is a post-review reflecting what was successful, and what could be improved in future from the perspective of the AgileAMK process. The product owner or the client can theoretically be engaged in any of the phases of the model, but realistically speaking they are usually present only in the sprint review, and sometimes in the sprint retrospective phases. In an ideal situation also the key stakeholders could be involved in these phases.

4. Quality assurance cards

To ensure the high quality of the process and the outcome, four quality cards and related assessment questions were designed. Quality cards functioned systematically throughout the production process, supporting quality assessment in the production teams. The aim is that the content and implementation of the courses produced using the AgileAMK model are technically high and pedagogically compliant with modern teaching methods. Quality assurance cards have been created by Irja Leppisaari (Centria UAS), Päivi Aarreniemi-Jokipelto (Haaga-Helia UAS), Päivi Rajaorko (Haaga-Helia UAS), Pekka Tervonen (Kajaani UAS) and Miia Törmänen (Tampere UAS).

Quality cards are based on existing MOOC quality criteria (Rosewell, 2014; Herrington et al., 2010) and, on the other hand, on the Finnish quality assurance criteria for online learning (Opetushallitus, 2006). The design of quality cards was created to take into account the special challenges of MOOC-type courses, as the MOOCs are characterized by openness and large numbers of participants. Key themes in quality cards are pedagogy, usability including accessibility, content and production. Each of the themes includes the quality criteria, a set of control questions and an evaluation scale. The cards can be used as checklists for designing the MOOC courses and also in the implementation and evaluation phases.

Quality criteria for pedagogy

1. Learning objectives have been defined in relation to demands of working life.
2. Learning objectives, content, methods of work and assessment constitute an entity, which supports learning.
3. Working methods support community-based knowledge building and knowledge sharing.
4. The learner is able to track the progress of his learning process.
5. Instruction in its various forms has been designed as part of the learning process.
6. Evaluation is continuous and versatile.
Quality Criteria for usability and accessibility

1. The learning environment is:
   a. Easy to use
   b. Easy to learn
   c. Functionally reliable
   d. Secure.

2. The learning environment adheres to accessibility recommendations
3. Content is provided in various forms, for instance, images, audio, video, and text.
4. Requirements for different devices have been taken into account.

A screenshot of the usability and accessibility quality card is shown below in figure 2.

Määrittelyvaihe: MOOCin kehitysjoono

Figure 2: An excerpt of the quality card for usability and accessibility. The criterion is on the left. The control questions are in the second column. The evaluation scale of quality comes in the third column, and the instructions in the fourth.

Quality criteria for content

1. The needs of the users are taken into account in the content.
2. Content is designed to meet the learning objectives.
3. The material is:
   A. Reliable and up-to-date
   B. Clear and comprehensible
   C. Accessible
4. Sources are of high quality and they are expressed clearly.
5. Maintenance and upgrades of the content are provided.
Quality criteria for production

1. Production is planned.
2. Target groups are defined.
3. Copyrights have been agreed.
4. The technical and pedagogical support of the content providers has been ensured.
5. Quality criteria have been taken into account at various stages of production.
6. Continuous feedback is gathered from students and production teams, and it is used immediately.

The AgileAMK production teams were familiarized with the use of the quality cards and the evaluation criteria in online sessions. The production process of online courses is intricate, and it takes place besides the other teaching duties of the teachers, so using the quality cards for evaluating the material and production of courses has been quite limited. For this reason, a member from the quality team, specialized in using the quality cards, has been attending the development team meetings. Anyway, introducing the development team to common quality criteria before starting the AgileAMK process will clearly improve the quality and speed up production. The iterative process under the AgileAMK model involves essentially the fact that we learn from our mistakes and will not repeat them.

The AgileAMK quality cards (Leppisaari & Rajaorko et al., 2016) are currently available in Finnish, but it is possible that they will be translated into English by 2018.

5. AgileAMK Model Step-by-Step

In the beginning of the New Open Energy project the development teams applied the AgileAMK model on the basis described above in the chapter AgileAMK model in a nutshell. Initially the intention was to keep the model as simple as possible, but unfortunately the model lacked some concrete details, so an additional graphical presentation was designed, as we can see in figure 3. According to the feedback from the development teams, it was necessary to add some kind of a feasibility study into the model.
In this graphical presentation of the AgileAMK model the developers do not jump straight into the study module backlog. After all, we should always ensure that there is a need for education before jumping into creation of a study module. There are different ways to study the potential need for a MOOC. It can mean interviews, surveys, questionnaires etc. During the first step of the AgileAMK model we may also find out that plenty of high quality educational resources already exist, and therefore it is unnecessary to reinvent the wheel – or start creating any new MOOC modules.

In the step-by-step presentation of the AgileAMK model we can also see at what stage of the AgileAMK process different quality cards are especially useful. The responsible actors are also more clearly defined in this presentation. As we can realize the New Open Energy project is not basically a research project. That is why the research tasks are strictly limited to control and further develop the functionality of the AgileAMK model. The third step was also added into the model to emphasize the importance of proper planning of resources before starting the creation of the sprint backlog and concrete task lists.

### 6. Pilot courses

The pilot courses to test and get feedback of the AgileAMK model can be found on the DIGMA.FI platform in the category “Energia” (https://moodle.amk.fi/course/index.php?categoryid=19). The pilot courses are divided into two thematic areas: Sustainable energy solutions and Nearly-zero energy building. Both thematic areas are represented in the two national languages, Finnish and Swedish. The AgileAMK model has been systematically applied in the creation process of all the eight MOOC-type courses which are available at the moment.
Figure 4 below illustrates how the extensive theme of nearly-zero energy building was handled with the AgileAMK model. The nZeb (nearly-Zero building) MOOC backlog is on the left. One of the blocks (Requirements of energy efficiency) has been selected and further divided into tasks in the Sprint Backlog.

![MOOC-type course on Nearly-Zero energy building](image)

In the next phase one or a few of the tasks have been selected into the sprint circle. Completing each of the tasks typically takes from 1 to 2 days. Regular meetings are being held, and new tasks introduced into the sprint circle until all the tasks are ready for review. The sprint will usually be concluded in 1 to 4 weeks time.

**7. Conclusions**

The New Open Energy project is not essentially a research project. It is a project where creating a model and applying it practise are the key components. This kind of development and application are in the very core in the Finnish universities of applies sciences. However, feedback has been collected from the project actors and a few surveys made in order to support the development of the AgileAMK model. The proper analyses will be made at a later stage in the project.

The future perspectives of the AgileAMK model appear to be bright. The model has been updated a few times, and version 0.6 is currently available in Finnish. Two half-day workshops have been organized to disseminate the model, and the feedback has been very positive. Eight more AgileAMK model dissemination workshops have been scheduled. A need for a fixed model that speeds up the development process of MOOC-type online courses seems to be actual and present. In this conference paper several essential parts of the AgileAMK model have been translated into English, and we are quite confident that there will be an opportunity in future to make a full version of the AgileAMK model in English.
8. References


Researching the student’s emotional engagement, motivation and behaviour over the life of an online course

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Abstract

Since 2013, Leeds Beckett has carried out two studies, working with market researchers, into student feelings and perceptions on online courses and their learning context. This work has been carried out outside the data collection practices for statistical reporting to government and regulatory agencies, and in routine module evaluation. These normal data collection exercises, whilst helpful for comparative purposes, do not collect or explore a student’s engagement or behaviour in a rich enough way to assist decisions in the design of learning products, services and experiences. Furthermore, by assembling snapshots of large samples of students answering standard questions, they say less about the individual student.

The unstated philosophy of both studies discussed has been to ground learning behaviour, and hence engagement, in the whole life of the student, including their emotional life. This paper describes these two studies, their findings and their value in developing and delivering online courses. The first study (2014) was entirely qualitative covered a small sample, in a narrow time window, but provided rich, nuanced insights into covering learning context and motivation. The second study (2016) was a longitudinal study of a much larger sample of students, using a mix of qualitative research and quantitative data collection. Both studies help us contextualise the ‘online student’, whose presence and activities online are measured by the institution, in the ‘whole person’ of the student, taking a humanistic perspective.

Keywords: emotion, engagement, online student, qualitative research, humanistic perspective, customer, net promoter score, satisfaction, marketing research

1. Introduction

Leeds Beckett University, with around 24,000 students, has been running distance learning courses for almost 25 years. As reported at EADTU at Hagen in 2015 (Thorne, Sheridan-Ross and Hewson, 2015), the University set up a central Distance Learning Unit (DLU) to support the development of distance learning courses, and to shape how they were promoted. Since that time, there has been significant structural change in the University. The four faculties were replaced with thirteen schools with greater autonomy over their strategy, subject to the achievement of some overarching key performance indicators (KPIs). The wider environment of UK HE has impacted activity, in particular the Teaching Excellence Framework, whereby participating universities received a bronze, silver or gold award reflecting teaching, learning environment and student outcomes, as measured over the past three years. In line with the greater accountability and
autonomy at School and discipline level, academic roles were also enhanced to give clear decision rights to those running courses. Reorganisations of the central services has aligned their activities to the new academic structure. The DLU remains as a central service focusing on collaborative development and consultancy in delivery. The University now runs over 32 distance learning courses, mainly at Postgraduate level. Annual enrolments have grown since 2013 and amounted to over 1,100 in the academic year 2016/2017.

Since its inception in 2013, the DLU has carried out two research studies into the University’s online students. In the 2014 study, the focus was an intensive review of the lives and learning of a small number of online learning students. The 2016 study asked a much larger sample of students about engagement, emotions and other aspects of their course relationship.

The two studies surveys were carried out on behalf of DLU by the University's marketing department or a market research agency, rather than academic staff as part of their research work. This was decided for several reasons, Firstly, it was a pragmatic decision as the DLU had budget but not the resources to complete such a survey in detail or the expertise in marketing research techniques. Secondly, part of the remit of the DLU was to provide an environment for growing enrolments on DL programmes. Consequently, the implicit model was understanding the online student took some decisions as a ‘customer’, so that, for example, ‘net promoter score’, a marketing measures, was used to sum up their feelings about a course. The surveys did not, however, assert that the student-university relationship is essentially a customer-supplier relationship, as this is highly contestable. However, certain aspects of a student’s relationship have customer characteristics: searching, deciding between alternative providers of future experiences and benefits, and taking on a personalised financial obligation. Thus it seems appropriate to consider ‘customer’ issues in discussions of student behaviour, situating student engagement in a key buying decision which is an exercise of significant agency. The small financial incentives to encourage participation in the studies not only reimbursed students for their time but also symbolised their active participation in the process as decision maker, subjects not just objects. Thirdly, the research was designed to be fed back into models of delivery and development which the DLU, involved in internal consultancy and governance, needed to own institutionally. Fourthly, marketing research techniques can involve different modes of presentation, so the 2014 survey avoided social science reporting conventions in favour of a richer more suggestive management presentation. In both cases, the research were governed by the ethical code of the Market Research Society. The 2014 survey was based on a very small sample and we felt student anonymity could be best preserved at a distance.

2. The 2014 study

2.1 Objectives and development

The 2014 study was carried out on behalf of DLU by Sarah Finney and Habib Lodal of the University’s own marketing research department. The DLU’s objectives were originally:

- To understand students’ decision making processes and search behaviour, and their motivations as buyers;
- To establish and understand students’ expectations prior to arriving on the course;
• To establish a depth of understanding of the ‘real’ distance learner’s experience whilst studying on the course, to cover learning materials provided, tutor interactions, including level of tutor contact, interactions with technology and assessment;
• To assess thoughts/opinions on the overall level of service provided by the University;
• To understand what their ‘ideal distance learner course’ would look like.

Conversations between DLU and the University’s market researchers enriched this significantly, to focus not just on the touch points of a student’s formal engagement, but on contextual factors:
• The situating of learning within the spatial environment of the home;
• The actual as opposed to expected use of technology as these were online courses;
• The learning activity within the context of family and work relationships;
• Key demographic data which determined their study logistics

2.2 Survey activity

The study engaged at with six students, with demographic characteristics in Figure 1 below.

<table>
<thead>
<tr>
<th>Student</th>
<th>Gender</th>
<th>Age</th>
<th>Partnership</th>
<th>Children</th>
<th>Employed?</th>
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<td>M</td>
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*Figure 1 Sample demographics from 2014 in depth qualitative study*

The study started with a one-hour telephone interview. The students then kept a study diary for two weeks, including video as to how they were feeling, and this was followed at the end of the period by an additional interview. This qualitative approach has precedents: O’Shea *et al* (2015) describe a qualitative survey or interviews with online learners.

The study situated the student’s relationship with the university within their other relationships, and covered pre-purchase behaviour, the justification being that every interaction with the University is a ‘moment of truth’ for the student’s engagement with the institution: by choosing between universities (or between university and a job) the student is choosing between two alternative futures. The actual purchase process, with the real risks of making a wrong choice, can be emotionally draining with a high possibility of post-purchase cognitive dissonance. The survey also, perhaps covered studying as a material practice: we were interested in finding out exactly where in the home or workplace, and in what conditions they study, how they used their devices and how many devices they used. The technology, and its embedding in life routines, is not transparent and neutral but regulates and mediates the experience of learning. It was thus interesting to read Gourlay who suggests a reframing of ‘student engagement which recognises the socio-material and radically distributed nature of human and non-human agency in day-to-day student study practice’ (2015, p403).
The students’ motives for studying were career progression but this reflected the vocational focus of the University's distance learning courses. All of the participants had already taken an undergraduate degree and were employed and/or had a family when applying for a distance learning course. The ability to fit studying with their current lifestyle was the biggest factor in choosing distance learning, followed by the ability to attain a qualification and price competitiveness. As learners had to juggle work and family, an engagement model which only addresses study encounters, rather than the personal decision and time-allocation ecosystem which online learners inhabit, ignores key aspects in their daily decision-making as students, and is not perhaps an antecedent choice: learning is a set of contextually prioritised choices. They had plenty going on therefore wanted to study without compromising their responsibilities and work commitments.

Concerns that distance learners had when applying on the course included: uncertainty of the course structure and delivery; accuracy as to their weekly study commitment in terms of hours; assessment criteria and module information. In effect these might constitute, in effect, in service marketing terms, the ‘specification’ of what they were going to experience. Even at the point of purchase, the students were typically reflexive enough to consider their own motivation to study in the context of already challenging ‘work/life’ balances. Critical to their concerns, were interactions and relationships with their tutors – how often and how they would be able to communicate. Initially, they were less concerned about socialising and engaging with fellow classmates. (The wider 2016 study supports this.) The tutor-student relationship is critical. This has clear implications for the appropriateness of group assessments in the context of the student-university relationship.

As this is was a qualitative survey, we wanted to focus on the individual student, rather than generalities about them. Whatever the statistical regularities may be on collecting data, they are experienced personally, and any one individual might diverge in key respects from the norm, they are likely to be diverse as individuals. The University’s market researchers developed a number of infographics, as in Figure 2 below, to reinforce the focus on individual leaners.

The results of the qualitative reviews were created as infographics as in Figure 2 below. This allowed us at least to imagine the learning process in the life of the student, rather than generalised data, aggregated. The student is recognised as an individual agent and decision maker.
2.3 Competing identities

The 2014 survey generated a number of reflections. Firstly, although focusing on students as customers and users of learning as a service, the use of marketing research reflected the reality of their agency and decision-making to contextualise their study behaviour. Secondly, whilst employing customer survey techniques, it is a humanistic and person-centred, which situates learning in the lives of the student. We could therefore test as what might work for that student. The notion of ‘student-centricity’ often implies a fixed student identity (for us to be student-centric around), but this dominant student identity is only realistic if students are immersed in academic surroundings and prioritise study (O’Shea et al. 2015). This, as is seems to be the case, cannot be expected of online students: criticising students for not prioritising a ‘student’ identity when they have so many other things to do is unfair to the online student. The student may or may not be engaged, to a greater or lesser degree, than his or her digital avatar collected from management information. If there is a link between student identity and deep learning (Bliuc et al., 2011) then the University’s task is to try to ensure how this learning can be captured by students who, by virtue of their life paths, cannot prioritise a student identity.

We should not be surprised that students prioritised family first, work second and study third. The study habits of those with families as the dominant contextual factor were characterised by lack of structure owing to childcare and extra-curricular activity. Those whose main contextual influencer was work were enabled to be more structured. Distance learners with families tended not to study much over the weekends, unless they did not get time to study during the week.
2.4 Study as material practice

As far as material practice is concerned, all of the participants stated that they studied at home, often in their living rooms with the TV on in the background. All of the participants used their laptops to study, usually placed on their lap as they sat on the couch. Some used two devices, a laptop and a tablet at different times. None of the participants in this small survey suggested they used a desktop PC. Some listened to audio recordings over their tablet or phone while cooking. Those who have a tablet used it for reading journals and eBooks and/or to make short notes. Moreover, as can be seen from Figure 3 below, the online course has to compete for space with other things.

Additional findings from the study diary…

- Participant is a school teacher and has a very structured week. She often gets home by 6.30pm and then has marking/planning to do, therefore, not leaving much time to study in the evenings.
- When she does carry out her studies, it’s usually on a non-school day and spends majority of the day studying in her study room with no distractions.

Figure 3: participant infographic: online study as material practice; digital does not equal paperless.

This highlighted the importance of study logistics in reducing barriers to participation in the course. Despite the fact that the programme was structured, they wanted all their learning materials available in advance. This is obviously very easy for purely online University’s but for Leeds Beckett, which sees online students as existing on the end of a spectrum, and engaged in by the same academics as teach classroom courses, this creates a challenge. However, they also wanted some live online tutorials where they can interact with their tutors and tutors to be available at specific times to answer any queries or pressing matters, possibly dedicated two hours a week where they would be available. They were also reflective about learning to request specific activities.

This 2014 study was suggestive but confirmed what was already our strategy. As developing online courses in a University based in the classroom, and wishing to embed online courses in the Schools and classroom course teams rather than in a separate unit, DLU had to balance flexibility with structure. It also meant that we realised our role in supporting and helping students maintain their motivation through the course. We developed our practice to focus on a consistent experience,
and relationship building. We also developed best practice guides on delivery in response to this qualitative feedback, and also enforced consistency. We noted that students were reflexive on how they studied.

3. The 2016 study

The 2016 study used a different marketing research methodology on a bigger sample. We used a marketing research agency, RedBrick Research to carry out the survey, which enabled the survey to be scaled up to a greater number of students. It did not follow on exactly from the 2014 survey but shared some similar themes, as is shown in Figure 4 below.

The primary purpose was to get a deep and detailed understanding of the student customer experience in order to capture the nuances of the distance learning student journey off campus.

**Expectations**

- What attributes does a ‘good distance learning course’ need to have?
- Whether Leeds Beckett courses meet/don’t meet expectations.

**Lifestyle and logistics**

- How/if the course aligns to their lifestyle requirements.
- Attitudes/thoughts towards the logistics of the course.

**Materials and communications**

- Gather attitudes/thoughts on the course materials provided to students.
- Attitudes/thoughts towards Leeds Beckett course communication mediums.

**Emotion and community**

- Understand their emotional status while completing the course.
- How learners keep themselves motivated to do the course.
- Explore whether they feel part of a DL community or ‘on their own’

*Figure 4: 2016 survey objectives*

The survey and response was written as a business report, largely narrative in nature supported by data, but designed to assist decision making.

3.1 Research background

Unlike the 2014 survey, this longitudinal survey used a variety of quantitative and qualitative profiles. The research therefore was carried out over a 10 month period. An opening survey sent to 805 distance learners early in the academic year was completed by 134 responded (16.67%). From this group, 65 distance learners were recruited to track Key Performance Indicators on (1) engagement, (2) motivation, (3) community, (4) satisfaction and (5) net promoter score (NPS), at regular times in the period. This enabled the market researchers to build a sense of the student journey and to identify student profiles. The researchers followed up the opening survey with 27 interviews and 6 focus groups. Video Interviews were carried out with 25 participants using an app which enabled the experiences of opinions of the individuals behind the data to be brought to life. Given the richness of perspective offered in the 2014 survey, this seemed a good way of ensuring
the student voice was heard above the data. A closing survey of 85 students, similar in structure to the opening survey, was carried out to map engagement over time.

3.2 Executive summary

This section linked the quantitative and qualitative work in an integrated narrative and set of practical recommendations and interventions. More detailed review allowed some of these conclusions to be nuanced. The reported findings were that ‘satisfaction’ is driven by the ‘academic’ experience which is defined as teaching and support. This is valued over all other things, including a sense of community. Feeling part of a community was seen in the opening survey as a bonus but not a necessity in driving satisfaction, but during the course some students became frustrated if their peers did not engage and welcomed the opportunity to engage with their fellow students. The KPI trackers showed a consistent score, finishing higher at the start of the year than at the end. The other finding was that the hours spent studying varies significantly from week to week, more and less than the recommended ten hours, reinforcing the point that students will moderate or accentuate their engagement according to non-study concerns. The University’s DL approach is committed to a course structure. Whilst overall satisfaction was stable and strong, there was not always a consistent learning experience between modules. Students valued consistency in approach. The recommendations and interventions were largely logistical – swifter feedback, ensuring consistency, clear expectations of support and management of ‘hygiene’ factors. Basic issues such as functioning technology were critical. These are broadly supportive of the DLU’s own recommendations.

3.3 Motivations for study

The study asked two questions about students’ reasons for studying: (1) ‘what personal goals are you hoping to achieve whilst studying with Leeds Beckett University?’; and (2) ‘what made you undertake the course you are studying at Leeds Beckett University?’ which separates the objective formal motive from other less formal reasons for making the considerable investment of time and money in studying.

As in 2014, the motivation to undertake the course was career progress. Students were asked to write in what they felt, so additional information suggesting a future orientated emotional choice: 5% wanted to ‘escape from the current situation’, 10% wanted ‘to improve the standard of living for myself and my family’, and others included ‘learning new skills’, a ‘sense of challenge’, ‘intellectual stimulation’, ‘improve quality of life’, ‘gain new experiences’ ‘get my dream job’ ‘gain more confidence’. So, as well as an instrumental calculus of career development, there appears to be an emotional and experiential aspiration, revealed when we asked students to write about themselves. All this suggests that some students are imagining alternative better futures and emotional states to which career development provides access

3.4 The teaching or academic experience

These KPIs measures satisfaction with various aspects of the ‘teaching’ or academic experience grouped together, on a Likert scale from very dissatisfied to very satisfied. Fortunately, 82% are satisfied overall which, as a matter of interest, is not dissimilar from similar measures recorded in more formal data collection. Satisfaction was broken down into further sub-questions covering: (1) the overall academic experience, (2) academic advice and support, (3) non-academic advice and support, (4) assessment methods, (5) course materials, (6) the teaching standards, (7) course structure and (8) delivery.
Support from academic staff was most important. Students wanted a ‘personal touch’ from academic tutors. They also wanted a single contact point to turn to in order to sort out problems, quickly. As they are investing time and money on a high stakes purchase, self-service solutions are not always welcomed. They expected consistency between modules and from one module to another. This desire has implications for how academic colleagues bring their own personality and creativity into the work. Students expected to understand how feedback would be delivered and when, and is an area which can be most dissatisfying. Departure from expectations that causes most concern. There was no significant correlation between a student’s satisfaction with their academic experience and time spent studying, although it did affect their emotional state.

3.5 The social experience: anxiety, community, emotion

The researchers reviewed student behaviour outside their course. Students juggled multiple elements which made it difficult for them to spend as much time as they wanted on the study: over 30% found it difficult to set aside enough time. Consequently, wasting precious time through non-availability of materials should be avoided. Outside the student encounter, they had several concerns, as in this chart, which changed over time. When asked what worried students most, the most significant concern was work-life balance (68%), more than the 62% concerned with academic success. This remained throughout the course. 24% were concerned with their emotional wellbeing and 25% were concerned with the impact of study on their relationships (personal and professional), and 30% were worried about money at the beginning of the period (although this declined to 21% at the end).

This element of the survey considered community: 55% felt part of a community. Definitions of ‘community’ varied from student to student, and can be driven by the course experience, for example, formal discussion groups, or informal networks (Facebook or WhatsApp) set up outside academic oversight. Although community was not a motive for being on course, distance learners who feel part of a community are more likely to be satisfied with their course. The report also suggested that student engagement with social media and online learning platforms was the best way to generate community. Both opening and closing surveys asked students to describe their emotional state, which obviously changed through the process.
Older distance learners are also more likely to feel ‘happy’ or ‘excited’ about their course than younger learners. Students who spent more time studying described more positive emotional states. Similarly, students who felt more part of a community expressed more emotional positivity, and they described emotions such as ‘excited’ or ‘energised’. There was also a link between positive emotions and satisfaction: those students who are satisfied with their learning experience are more likely to use emotions such as ‘hopeful’ or ‘energised’ to describe how they currently feel about their studies. Those who disagree that they feel part of a distance learning community are more likely to use emotions such as ‘frustrated’. Consequently, although being part of a community was not a priority, compared to the academic experience, it does seem to have impacted the emotional state, and reports of satisfaction. Community might be more powerful than the overtly stated prioritisation of students might suggest.

There is a further link of emotion to Net Promoter Scores. Students who spend more time studying and students who felt part of a community were more likely to recommend more recommend the course to others. 72% of distance learners who spent 11 or more hours a week studying rated the experience as 8 or higher (out of ten). This compares to 55% of learners who spend less than 11 hours each week studying. Feeling part of a community also has an impact on the likelihood a distance learner will recommend the University. 61% of students that feel part of a distance learning community are ‘promoters’ of the University (giving scores of 9 or 10). Leeds Beckett’s overall NPS score is +22 but this rose to +24 by the end of the study.

### 3.6 The social experience: motivation and engagement

Motivation and engagement were conceptualised separately. During the KPI tracking exercise, students were asked to score their levels of motivation. Motivation and engagement did vary according to assessment deadline, reflected in Figure 6 below.
The survey found no significant correlation between students’ reports of their motivation and their actual engagement. Engagement increased over the course, but motivation stayed the same. Whilst the University might make interventions to increase engagement, or reduce frustration, many students reported, when interviewed, that they regarded motivation as something personal to them. This suggests that the academic and non-academic support might focus on enabling motivated students to maintain their engagement. Offering tailored support at the right time, and access to a mentor or person, were most helpful.

4. Tracking engagement, motivation, community, satisfaction and net promoter scores over time; student profiles

The KPI tracking scores indicated a generally consistent and positive experience over the survey period. Satisfaction and net promoter score remained at average of 7.5 out of ten.
Finally, the data identified three student types based on their reported KPI scores. These are virtual, not real profiles, and do not reflect demographic data. and presented real student profiles (which are not reproduced here), but focused less on demographics, as in the 2014 survey, but on student study behaviour and what we can do. These are not real students but have been created from the data.

<table>
<thead>
<tr>
<th>Student A: driven and engaged learners’</th>
<th>‘My story’</th>
<th>‘How to support me’</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I think my qualification will really benefit my career in the longer term.</td>
<td>• I don’t need much help as I am really motivated to do well at the course.</td>
<td></td>
</tr>
<tr>
<td>• I’m really enjoying my studies and the course has exceeded my expectations.</td>
<td>• Keep supporting me like you have been doing so far.</td>
<td></td>
</tr>
<tr>
<td>• I’ve stayed motivated throughout. I know it will be worth it in the end.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student B: motivated but distracted learners</th>
<th>‘My story’</th>
<th>‘How to support me’</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I’ve enjoyed my course but sometimes it’s been hard to keep up.</td>
<td>• I need most support during the start of my year to adapt to life as a distance learner.</td>
<td></td>
</tr>
<tr>
<td>• At the start, I needed a bit more support, but now I’m in the swing of things.</td>
<td>• Make sure that my course leaders are available to answer any questions.</td>
<td></td>
</tr>
<tr>
<td>• overall, I’ve managed to keep myself motivated but sometimes I’ve needed help from others on my course.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student C: pressured and disengaged</th>
<th>‘My story’</th>
<th>‘How to support me’</th>
</tr>
</thead>
<tbody>
<tr>
<td>• I’m doing a distance learning course to help get promoted at work.</td>
<td>• Ensure systems are working and up to date.</td>
<td></td>
</tr>
<tr>
<td>• Overall, I’m content with my distance learner experience but it has been sporadic - there are some good weeks and some bad weeks.</td>
<td>• Make it easier for me to contact academic staff when I need help.</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7: student attitudinal and behavioural profiles as a guide to service design**

So, behind the consistent KPIs, there are variations in data reflecting different student profiles and behaviours, leading to different potential service offerings.

### 5. Comments, context and reflections

Both studies engaged with students who studied only online. However, the experience of distance learning provision will be used to inform the classroom experiences to evolve genuinely blended offers. We can thus envisage a spectrum of encounters, with different degrees of onsite and offsite engagement, and different types of synchronous, asynchronous learning opportunities. These developments are facilitated by the University’s broader technological strategies, for example lecture capture and the issue of students with Office 365 accounts to facilitate collaboration. The eruption of technology, from internet enabled whiteboards to mobile devices used by students in class means the ‘lecture’ is already technologically enabled and has been fundamentally, if not intentionally, changed by digitisation (Gourlay, 2012), with the lecturer’s words recorded and open to challenge by the pervasiveness of digital media in the classroom. More digitisation necessarily is not necessarily a ‘good thing’ if unsupported by sound pedagogy and understanding of the many factors, learning and non-learning-related, affecting student engagement with it: Burch et al (2017, p120) describe a course which made web use compulsory but which received lower engagement scores from the same course where use of the web was not mandatory. There is thus a blurring of
the largely artificial boundaries between digital and non-digital, or ‘distance’ and ‘classroom’. Both the 2014 and 2016 surveys show some of the risks in engaging students as individuals on the basis of statistical averages.

Furthermore the boundaries between market and non-market provision have been eroded. This influenced the decision to use market research as a specific technique to investigate the student experience. The process of buying process and the financial commitment are not just antecedents: a student’s debt remains during the course and beyond it. Considering the student engagement as only being on the course omits the underlying life narrative and existence of other identities. In England, the state still funds universities, but indirectly via the mechanism of student buying decision choice at point of purchase. Whether this market-mimickry approach, with the unintended consequence that a degree has taken on the appearance of a Veblen good, is applauded or deplored, the student in effect has been given a significant agency at the point of purchase and commitment. It is harder to exercise this agency once the buying decision has been made, but the 2014 and 2016 research showed work life balance issues, and money concerns, as factors in the student’s mind. The focus on financial costs should not obscure the significant if less visible opportunity costs of making the wrong choice or bad decision, which is hard to reverse. The customer relationship, where the student purchases the benefit in advance, is a highly risky one for the student as a buyer, and the issues here are informational and ethical. The quotes below were not from actual conversations. Treating students as part customers is not necessarily disempowering academics or demeaning them, but stating in stark terms the real life risks students undertake in study making commitments.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student is making a high-risk purchase</td>
<td>High opportunity cost of time if the student makes the wrong choice; failure means wasting a year, other opportunities not taken</td>
</tr>
<tr>
<td>There is high information asymmetry</td>
<td>Students cannot judge what the course will be like until they experience it</td>
</tr>
<tr>
<td>High financial asymmetry</td>
<td>A Masters programme priced at £4,500, paid out of post-tax income is a high % of average earnings: but it is not a lot to the University</td>
</tr>
<tr>
<td>There is high emotional asymmetry</td>
<td>When applying, a student submits him/herself to a judgment as to whether they can join a club</td>
</tr>
<tr>
<td>But many alternatives</td>
<td>experience and award are available elsewhere: student can choose</td>
</tr>
</tbody>
</table>

*Figure 8: asymmetry in buying choices*

The opportunity costs of time and risk having to live with poor decisions, existed before marketisation. However, students exercise significant agency at the commencement of their studies. An approach to student agency based on student expectations has been modelled by Dzubian et al (2015) by using the concept of the ‘psychological contract’. This has been adapted from research into employment relations and is valuable as it reflects student expectations deriving from their role as contracting partner. Psychological contracts were developed for employer and employee relations and, although students are not the University’s employees, they do work under direction, their time is, to a degree, controlled, for fear of sanctions such as expulsion or extra work. However, gaps between expectations and delivery might be measured in KPIs of satisfaction. Expectations gaps may result of poor information, but may in fact reflect more fundamental discursive differences between student and non-student identities. Martin et al (2014) complain that care workers doing an online degree did not adopt the right ‘student identity’; they blame the
students and their work environment for their failure to behave as students should, particularly when the students voiced significant disquiet at being expected to do a group summative assessment by peer review on the grounds they felt it was not their job. It might have been better to surface the hegemonising value system that devalued the students low-status care work as pure compliance, and addressed the substantive issues raised by students’ failure to engage. Likewise, Johanson (2014), but in a more sophisticated way, identifies two fundamental discursive clashes in the vocational training of Danish chefs, who saw themselves as ‘trainee practitioner chefs’ rather than ‘students’. Clearly understanding the critiquing the discursive conflicts might lead to better engagement with students who cannot prioritise student over work identities.

The construction of online learners as students who are judged on the performance of digital work in conforming with regulatory expectations is also shown in some approaches to student engagement. Unlike the positive and contractual self-reporting of emotion and engagement and motivation, digital information is easy to capture, for example the number of times a VLE is accessed. There is a natural tendency to view this as a proxy for engagement. The mass collection of data on student digital behaviours may be with wholly beneficial ends in view but, just as the psychological contract mimics employment relations, so the mass collection of data mimics the automatic collection of data by social media and digital giants and interpellates a student as a data generator for a measurement system rather than an learner with agency.

As Bocconi et al suggest, mobile and network technology offers a facilitation and ‘tracking of the learning and teaching process’ (2014, p525) and suggest there is a need to ensure the learning path is such that any ‘activity that leaves digital traces that may be analysed asynchronously’ and can be observed. Similarly, Dixson defines engagement as putting ‘energy, thought, effort and to some extent feelings, into their learning’ (2015, p146), and maps two types of digital behaviour, ‘observation’ and ‘application’ then mapped to students’ self-reports of how engaged they felt, creating a proxy link between digital traces and student self-reports. However, students’ reports of engagement may perhaps be stimulated by the request to report on it (Burch et al 2017 p 120) or, even worse, might be positively misleading if students do not understand the questions (Kahu, 2013). This has two implications. One of these, as suggested by Gourlay (2015), is that engagement measures depending on digital traces ‘may serve to underscore restrictive, culturally specific, and normative notions of what constitutes acceptable student practice’ for the very simple reason that engagement is only ‘legitimate’ if it ‘communicative, recordable, public, observable and communal’ so that by implication ‘listening, thinking, reading and writing or private study are assumed to be markers of passivity and not indicative of engagement (2015, p403). In other words it is a digital performance of participation, and failure to perform can lead to disapproval or social sanctioning. The student’s identity as a learner is thus being constructed by the measurement tool, the needs of the measuring tool, and the administrative apparatus that supports it. In other words, a student in effect is presented, modelled and controlled as a digital avatar, a creator of traces that conform to the regulatory and cultural regime of the institution. Underpinning to all this is the regulation of student behaviour to produce indicators of engagement, cognitive, behavioural and emotional, which may be based on a flawed model which assumes a dominant student identity, when we have seen this is not realistic for online students. The focus on traceable performances devalues quiet study which forms much student work. One can envisage a possible future where a student can
measure his or her own engagement on a sort of ‘fitbit’, a self-policing and self-regulating tool embodying the dominant discourse as to what a student should be, and learning is an external performance not an internal transformation. As Zepke suggests: ‘performativity, the value of what can be produced, measured, recorded and reported becomes a technology of control’ (2015, p702).

Finally, what appears to be absent in this interpellation of students as data generators is any appreciation of emotion and, perhaps a humanistic perspective of learning as personal, agentive or transformative applied to learners. A humanistic perspective assumes people are not reducible to components, have agency and intention, and seek and create meaning (Bugental, 1964). There seems a discursive gulf between what is measured, data points, and the language of social science and a humanistic perception of the process of education in which learning might be a rite of passage, a narrative in a life story, or a process of personal transformation, in which people’s views of life and opportunities are permanently changed, in which social and intellectual opportunity are somehow combined. As Bowers et al (2016) suggest, statistical regularities may not be always a good guide to what to do in counselling practice with particular individuals, who may deviate in significant ways, owing to life context and personality, from the norm. They directly negotiate what is, perhaps, a clash of discourses, from the value of data to the personal and experiential. For an individual student, learning is potentially transformative, and forms perhaps part of a life narrative. There is little sense in the studies of learning as a ‘rite of passage’. Not only do a number of studies suggest the importance of emotion as a whole (Maguire et al 2017, Oriol et al 2017), but others delve deeper and show that the type of emotion is important: autonomous motivation generates better learning than controlled motivation whereby feelings of pride and guilt drive the desire to meet internalised social expectations (Cai et al, 2017). Failure can have real consequences, in which a hyper-competitive environment causes stress and mental illness (Posselt et al, 2016). Finally, Ghori (2016) suggests that established models understate ‘the critical role that students can or cannot play in their own learning and satisfaction’ (p5) and suggests that when students realise they are agentive and have a role to play, they are less dissatisfied (p231). The multidimensional models offered by both Kahu (2013) and Ghori (2016) offer a way forward in surfacing the student behind the data.

6. Conclusion

The above might seem a lengthy coda to the description of two studies into student behaviour that Leeds Beckett’s Distance Learning Unit commissioned in 2014 and 2016. These were developed largely so we could improve our products and services to students as individuals, recognising them as agents with other things to do, for whom a decision to study is a daily one. The surveys were not designed with the current debates in mind but address them. Given criticism of marketisation, or the expectation that students must enact performances of learning to satisfy the needs of data recording systems, a customer perspective recognises their agency, individuality and roundedness, and multiple identities. Recognising these facts enables us to invest in the personal relationships that must exist behind the screen for online learning to be an experience, not just an ingestion of content, and for a imaginative sharing of perspectives. The ambiguous nature of community, not a priority but a driver of satisfaction, suggests that this cannot be ignored. The development of profiles based on real students, as opposed to generalities, of study as a material practice and a daily set of choices, shows the role of emotion in satisfationations. The surveys speak to some of the above debates, but do speak to many of their concerns.
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Robotics in skills training – an innovative approach in rural nursing education

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Abstract
The decentralized nursing programme at UiT The Arctic University of Norway aims to provide flexible education to students who live and study off campus. This requires pedagogical solutions and a reliable infrastructure. The challenge is to provide supervised skills training in rural areas, and part of this training is today centralised to an on-campus location. This involves practical and logistical challenges for students in a decentralised education model.

The use of technology in health care services is meant to meet the challenges with an ageing population and increased expenses related to health care. As educators, we have a responsibility to ensure that our education provides students with an awareness of technology, as this will become part of future health care. There is though some scepticism around ethical challenges and how technology may change the relationship between professional and client.

In January 2017, we started a pilot to explore if the use of remote presence robot technology could enhance supervision in skills training for off campus students on a decentralised nursing education?

Reflection notes from 14 nursing students written after completing four different sessions of skills training are part of the data. In addition, written logs from two lectures involved, one on-campus and one off-campus, are preliminary analysed for organisational issues and for the pedagogical approach of using the robot in supervision.

The presentation will highlight nursing students’ perception of being supervised by a lecturer via the robot and the lecturers’ experiences of designing sessions for students off campus.

Keywords: health care, education, technology, flexible learning, skills training, supervision, robotics, remote presence technology

1. Introduction
In this paper, we aim to present and discuss preliminary findings from an educational project that we conducted in a decentralized nursing education in Northern-Norway. The main purpose of the project was to pilot remote presence technology in basic skills training for nursing students in their first year of the BA program in nursing.
1.1 Background and purpose

Norway, as many other western countries, is already seeing the changes in demographics, due to an increasing population as a result of people living longer (Statistics Norway, 2016). In addition to the demographic situation, statistic projections shows that Norway will have a shortage of 30 000 nurses by year 2035 (Gautun & Øien, 2016), which is worrisome.

One of the measures to meet with these challenges is an increasing use of welfare technology. Especially regarding nursing and health care in people’s homes. A Norwegian welfare technology program has set the goal that by 2020, 80% of the Norwegian municipalities will have implemented welfare technology as part of the services (Helsedirektoratet, 2017). The primary goal for implementing technology is to enable the elderly population to live in their home as long as possible despite the need for professional care.

However, there are also skepticism to this increase of welfare technology use in particular ethical issues and privacy issues (Nakrem & Kiran, 2017). Health professional’s express concerns of how technology can replace human contact and care for people suffering from i.e. loneliness, depression and anxiety. The challenge will be to combine care and technology in an ethical understanding of the patients’ situation (Alvsvåg, 2015). In addition, health care providers have to consider the cost and user friendliness of technical devices to be implemented.

We have an assumption that if students in nursing education are exposed for tele medical devices as users they will gain insight and experience of how to receive services through technology albeit not health services, but in a student learning setting. In order to prepare nursing students for future health care in rural and remote areas we have piloted the research in a decentralized nursing education in UiT The Arctic university of Norway.

The overall conclusion suggested that while the inclusion of multimedia and interactive technologies were found to enhance student learning, the key to incorporating these resources was the pedagogical approach that focused on the student and not the content (Lou, Bernard, & Abrami, 2006).

1.2 “Learn where you live”

Flexible education on a distance is by Fossland (2015, p. 2) defined as “an educational service offered to gain or strengthen the accessibility for the student”. Education programs within this definition can either include the use of digital technologies or not.
The Decentralized Nursing Education (DNE) program offers nursing education on four different locations off-campus (Norbye & Skaalvik, 2013), mainly to recruit students living in these rural areas of Northern-Norway. This means that students live and study close to their home and can participate in the BA program in nursing without moving away from home. These students are typically over 30 years as an average (Norbye & Skaalvik, 2013) and has family and work obligations in their home communities. Teaching in these off-campus locations is a blended learning approach (Daniels, 2016; Margaryan, Collis, & Cooke, 2004), combining traditional learning by university lectures responsible for each of the off campus locations, online learning modules, video conferences and skills training by instructors on site.

University of Saskatchewan in Canada has since 2012 developed a “Learn where you live”- program for nursing students that focuses on the students learning in rural and remote areas supported by Robot technology as face-to-face teaching. This approach sets the students activities in the center as equal and distinctive constituents (Butler, Bullin, Bally, Tomtene, & Neuls, 2016). The aim of the approach to learning was conducted to ensure that the nursing students should not be disadvantage by geography, rather in the center of the learning and the teacher became the remote (Berry, Butler, & Wright, 2014). This model build capacity in local communities as nurses locally learned new pedagogical approaches and increased their confidence and skills in teaching, which benefitted them in supervising students and working with colleagues in the clinical setting (Berry et al., 2014) . The approach has through the UArctic Northern Nursing Education Network emerged with North-Eastern Federal University in Yakutsk in Siberia as well as with UiT The Arctic University of Norway (Butler et al 2016).

1.3 Use of remote presence technology (robotics) in skills training

Remote presence technology (robotics) is primarily designed to allow health personnel to examine patients’ remote health services as in the feasibility study by Mendez, Jong, Keays-White, and Turner (2013). The Robot is a designed to use with patients included enciphering content for confidentiality.
The "Robot" is a mobile hand held unit with an articulated flat-screen monitor visual display, dual camera configuration and full on-board audio. The Remote Presence Robotic System is comprised of one or more control stations. The eye of the Robot is 10 times more powerful than the human eye, can zoom, and can therefore examine carefully where visual guidance is needed for education purposes. The attachment as a stethoscope and printer create capabilities of completing health assessment in education over distance in real time.

Connectivity between the control station and the robot is provided by a standard Wi-Fi internet link. In addition, we used a digital stethoscope connected through an USB port. The control station is also capable of storing video and still images of the remote presence sessions for further analysis and archival purposes.

In this context, the Robot technology allows university lecturers to engage with students as learners at remote sites to teach and supervise during clinical skills training. Due to this new approach to the lecturers had to re-design the way the skills training was taught to blend in with the ordinary skills-training that was already offered.

Before the robotic skills-training startup, we decided upon four different themes to include in the training. The distance supervisor visited the location for the skills training, to do a test round as well as discussing practical, professional and pedagogical issues with the local supervisor.

The sessions were organized with groups of approximately 6-8 students at a time (two groups per session). Students received information in advance of each session. The information included what skills was in focus and students were encouraged to work through the learning resources provided for them. The group that was not in the robot session had a parallel session with the local supervisor, with focus on both clinical and theoretical aspects beyond the robot sessions contents.

After each session, the local and the distance supervisor were in contact, by either e-mail or telephone, to adjust either practical, professional or pedagogical issues to improve the sessions.

Our research questions were the following:

1. How is it feasible to provide skills training by using robot technology?
2. How is the skills training supervision challenged by robot technology?

2. Methodology

In the following, we will present both how we collected data for this study as well as the analysis of the data material.

2.1 Data Collection

The Norwegian Centre for Research Data (NSD) approved the study in January 2017.

All 17 students from one of the off-campus locations from the DNE participated in the project. After each individual session, the participating students individually wrote reflection logs where they reflected upon their own learning outcome as well as the practical implementation (i.e. Organizational aspects, technological aspects). At the end of the trial, we had collected 50 individual logs in total. All logs were written in Norwegian, the authors of this paper have translated statements from the students.
The distance supervisor wrote individual logs after each session. These logs also included number of network outage during the session as well as issues regarding sound and image. In addition to this, the local supervisor wrote a summary of his perspective at the end of all four sessions.

Two of the sessions were video recorded.

2.2 Analysis

The analysis conducted so far is of the written material in our study. The analysis is inspired by thematic analysis (Braun & Clarke, 2006).

Both authors participated during the first phases of the analysis. To familiarize with the data material we first did a naïve reading. After this we did a re-reading were we also wrote initial codes throughout the reading. We then had a conversation about possible themes from the material, which resulted in five main themes: 1) Technological aspects 2) Learning outcome 3) Organizational aspects 4) Student activity and 5) Supervision. A summary of the sequences of the analysis follows:

1. Familiarizing with the material through naïve reading
2. Re-reading with initial coding
3. Discussion/conversation with a search for themes within the written material
4. Reviewing themes

2.3 Limitations of the study

As mentioned, this paper is based on only one part of the data material we collected. This can be a limitation of the study so far. We are aware that the video material, which we have not yet analyzed, may nuance the preliminary findings.

3. Preliminary findings

In the following section of this paper, we will focus on the preliminary findings from our study. In an overall perspective, the findings are more positive than we could predict when starting the project. As mentioned, the analysis led to five different themes from the written material: 1) Technological aspects 2) Learning outcome 3) Organizational aspects 4) Student activity and 5) Supervision.

3.1 Technological aspects

Many statements from the students relates to technical aspects and especially to what we have defined as vulnerability in technology. The number of network outages are often mentioned in the reflection logs and as we will illustrate later this is often mentioned in relations to both organizational and pedagogical manners. Sound and audio-related distractions such as “choppy” sound or the distance supervisor’s placement in the room seems to be disturbing for the students focus. Some students commented on whether the distance supervisor used a headset (with a built-in microphone) or not. This in relation to volume and clearness of instructions and supervision that was given.

The size of the image on the robots display was in some cases reported as too small and students stated, “It was hard to see sometimes”.

Even though the robot was handheld and at first sight easy to move, several students reported it as not so flexible. The robot was in strongly need for power access and did not have a good battery capacity, this led to
a more static robot than one could expect. It seems that the robot’s flexibility did not meet the students’ expectations.

3.2 Learning and learning outcome

Initially many of the students expressed uncertainty related to whether learning with help from robot technology was a good method. However, most of them also had positive attitudes. After each session, most of the students self-report that they experience learning and the expected learning outcome. This included the first session, even though the students were unfamiliar with the technology. One student reported after the first session: “A bit early to say something about my learning outcome, but I think this could be a good way of learning”.

Robotic skills training is by several students in our study, perceived as equal to traditional skills training. Students report that they gain experience in example by simulating being a patient, or having to try out skills on peers. One student experienced the first session as important for experiencing the intimacy that skills training can provide. The student stated: “It is okay to understand the patient-nurse situation”, another student wrote:

One thing is to learn the theory, what to look for and so on, but in this way, we get to feel how it is to conduct the procedure in a practical manner and how a patient would experience it. From my perspective, this is a very important lesson to learn and I felt that I had a good learning outcome from this session.

3.3 Organizational aspects

The students had many thoughts about the organization of the skills training sessions. Students reported verbally to the local supervisor after each session as well as written in the reflection logs.

Students reported that the group size mattered, both when it came to access to supervision and noise in the room. This can also relate to the fact that the students had to wait their turn, and had to consult the distance supervisor rather than the supervisor consulting them. One students stated:

Maybe it should have been smaller groups so we could have a closer follow-up. It is hard to ask for advice or supervision when the robot is placed on a table and peer students’ walks around the room making noise.

Findings from the reflection logs after the first session showed that some of the students experienced poor coordination between local and distance supervisor. One of the students stated the following:

Before the skills training, we went through the theme with the local supervisor, […] and with the robot later; we went through the same themes (repetition). I do not know if that was the plan, but we might not have needed it.

As mentioned the local supervisor and the distance supervisor did adjustments after each session. Several students remarked this, and some of them assessed the following sessions as better organized. One of the students reported after the fourth and last session: “The session has been more effective than previous sessions, I am very satisfied”.

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It is worth noting that the students apparently commented on effectiveness when there were few or no network outages, this could be related. A good example of this is when one student states: “The technology was on our side today, so the organization and session instruction worked well”.

3.4 Student activity

The Robotic skills training gives the student activity a focused glance on the session’s theme. They would both be active in theoretic discussions as well as practical training on specific skills. One student wrote in her reflection log, “I learn more from trying myself, be supervised, and then try more”.

Several of the students had experience from working in health care services. This meant that some of the skills training was theoretical and practical repetition rather than new knowledge. In some cases, the distance supervisor took advantage of the previous knowledge the students had, this was positive from the students’ perspective. One of them said: “[… it was an educative day, even though I considered it more repetitive. Since I had previous knowledge, I got the opportunity to supervise my peers”.

The distance supervisor’s log did remark that even though there were network outage, the students continued the training. Also, the students remarked this: “We had a few network outages today, but it didn’t bother us noteworthy. This since we were set well under way”.

3.5 Supervision

Most of the students reported their experience with distance supervision as positive and in some cases, equal to having a local supervisor. However, others did miss someone to guide him or her physically through some of the procedures in the skills training sessions. In all the students seemed to consider that the supervision was of good quality.

Feedback is an important aspect that was pointed out by the students. Most comments regarding feedback from the distance supervisor are positive, “it is nice with feedback along the skills training. Nice that the supervisor can show pictures and explain. This makes it easier to know what we’re going to do”.

At some point during the four sessions, the distance supervisor seemed to “become” the robot. This was remarked in different reflection logs, one of the students wrote after the last robot session, “It’s sad that this is the last session with the robot. I have had great learning outcome from some varied teaching”. Another student wrote, “[…] it is easy to have a conversation with the robot”.

Overall, the students express that they experienced to be “seen and heard” by the distance supervisor regardless of the supervisor’s lack of presence. One of the students seemed to have a very positive experience with this way of being supervised, “To communicate with a supervisor in a different place – it’s fantastic”.

4. Discussion

As presented earlier our research questions were the following,

1. How is it feasible to provide skills training by using robot technology?
2. How is the skills training supervision challenged by robot technology?

In the following sequence, we will discuss how using robot technology in skills training can influence the lives of rural students enrolled in a decentralized nursing education. We will further discuss how one can design
and implement skills training using robot technology and what aspects will be of importance when supervising with help of such medium.

4.1 Consequences for the rural student

Former empirical research on the DNE shows that twenty years of continuing development of the nursing education has contributed to competent nurses as well as a sustainable health care service in Northern Norway (Norbye & Skaalvik, 2013). It also shows that women in rural communities, with their commitments, can contribute to their community without failing to commitments at home.

Among the 17 students that participated in our study, all 17 are remaining as enrolled students after 9 months. We cannot draw any conclusions to this fact from this study, but what we can conclude is that the students have not been alienated by skills training using robot technology. This is positive.

Our preliminary findings supports the former findings of Norbye and Skaalvik (2013). The ability to offer skills training regardless of location will create equal opportunities for students enrolled in nursing education in rural areas. In one perspective, the students that conduct their skills training with help from robot technologies will be able to oblige to commitments at home, i.e. work and family commitments and for some following up their children in both school and leisure activities. There are also economical benefits when it comes to saving expenses related to fuel, diet and accommodation when having to leave home for a day or two or even longer. For students with children, costs related to babysitting could also be an expense. In addition, protection of environmental aspects can be considered as a positive aspect of not being forced to drive to the central campus (most students go by car and boat).

As nurse educators, we are concerned about the quality of the education, and we have a commitment to our students and to the health care force to deliver high quality education and at last high competent nurses. We are not able to draw any conclusions on the quality of the skills training using the robotics, at least not from this data material. Even though most of the statements from the students are positive when it comes to their experience of learning outcome and supervision they can only be considered as a set of remarks rather than a measurement of quality of the supervision. It could be interesting to follow the students in their clinical placements to see if and how they use the knowledge and skills trained in the sessions with the robot.

4.2 Designing and implementing “blended skills training”

As described in the introduction, learning activities in DNE falls within definitions of blended learning (Daniels, 2016; Margaryan et al., 2004). In our project one can even go further and name this method blended skills training. Blended skills training can be defined as skills training where one both have on-location and distance supervision as well as combination of technologies and traditional methods.

Many of the students considered blended skills training a good method and a way to have varied learning activities with use of modern technology. Even though the students overall were positive, there are some critical aspects to take in consideration. One aspects could for instance be the collaborating environment between the supervisors. Implementation of this kind of skills training presupposes a close collaboration between the distance and the local supervisor. This collaboration will give students well-coordinated sessions that brings out the best from both supervisors. In our study the robot was tried out as a part of the traditional skills training that the students were offered off-campus, it did not arise necessarily because of the need for such digital technology. It was rather the need for more support to the local supervisor and to avoid travelling for the students that were incentives to try out this technology.
4.3 Designing and organizing robotic skills training

Lund, Bakken, and Engelien (2014) has brought up the term technology-rich learning environments, which is exactly what our students daily is a part of. It is recommended that teaching in technology-rich learning environments must be designed from scratch, not implemented as a new part of the traditional/ordinary program. The robotic skills training fits in to this definition. Experience from our trial shows that designing skills training with use of robot presupposes that the design process starts from scratch. Implementing the robot skills training with the traditional approach influence especially the organizational aspects, and there is need for new thinking all the way.

As some of the students reported in the preliminary findings, the collaboration between the distance and the local supervisor had some challenges initially. This collaboration seems to be a crucial to create student activities that coordinates and complement each other. Throughout our trials, the sessions progressed in a positive way, due to the continuous collaboration and because of direct adjustments before each session. To have time to discuss adjustments on different manners that have impact on the sessions, creates a common understanding among the supervisors on the purpose and the expected outcome of the skills training. This continuous discussion can relate to a way of creating a community of practice (CoP) (Lave & Wenger, 2003) among the supervisors, which can directly influence the supervisor’s contributions to students learning.

The practical aspects of using robots in skills training is of importance to how the skills training contribute to the student’s learning outcomes as well as how the student’s experience the learning activity itself. Both group size and a convenient location for the robot influences the supervisor’s ability to give feedback to all students in a group.

4.4 Supervision and instruction with robot technology

Supervision has a broad definition and can be interpreted in different terms (Bjørndal, 2011; Lauvås & Handal, 2014; Tveiten, 2013). In the Norwegian literature, supervision somewhat can be seen in relations with both coaching, mentoring, counselling and in some cases therapy (Lauvås & Handal, 2014). Supervision is considered an important pedagogical activity where the context and the purpose is more important than what term one choose to use (Bjørndal, 2011; Lauvås & Handal, 2014). In our case, the term professional supervision can cover the kind of supervision that we conducted in our project. As already described, the basis for supervision was both practical skills students were expected to restrain as well as reflections on how these skills could be conducted in a practical manner with patients. The theoretical knowledge also provides the basis for supervision and reflection.

The students in our project were overall satisfied with the distance supervision. Surprisingly, they did only to a small extent, differ supervision in the technology-rich learning environment to their experiences with traditional supervision. A few students missed the hands-on supervision where their supervisor would be shoulder-to-shoulder, but most expressed satisfaction with the way they were supervised. We know little about their previous experience with supervision however, and it is reason to believe that their critical remarks could increase with more experience as nursing students.

Hattie and Timperley (2007) has conceptualized the term feedback and defines it this way:

Feedback is information provided by an agent (e.g., teacher, peer, book, parent, experience) regarding aspects of one's performance or understanding. It occurs typically after instruction that
seeks to provide knowledge and skills or to develop particular attitude (Hattie & Timperley, 2007, p. 102).

With evidence from research on feedback, Hattie and Timperley (2007) have divided effective feedback into three subcategories; feed up, feedback and feed forward. The purpose of the three is to answer the questions, ‘Where am I going?’ ‘How am I going?’ and ‘Where to next?’

The preliminary findings show that the students in our project mostly perceived the distance supervisor as present and they felt seen and heard even though they did not have one-on-one supervision. The students’ reflections may indicate an experience of both feed up and feed forward that could help them make progress with the skills they were training. For some regardless of the distance supervisor’s location. The supervisor’s ability to give feedback to the group as well as address individuals in the group seemed to be of importance to the students. What we do know is that individual feedback on task is more effective than addressing it to a group (Hattie & Timperley, 2007). In our case, it was a challenge for the supervisor to give feedback and feed forward to individual students. The fact that peers in the group could hear what was said to one student might have influenced the quality of the feedback that was given. It is possible to think that critical feedback might have been held back to protect the student’s right to privacy. With the possibility for more one-on-one supervision, the chance of giving more specific and critical feedback could lead to higher learning outcomes for the student.

5. Concluding remarks

The preliminary findings from the pilot project of trying out robot technology in skills training are overall positive. This type of blended skills training gives a multi-mediated learning experience, where all senses are stimulated. The participating students express that this way of training skills is sustainable, however with some adjustments both to organizational and technical aspects. The students’ reflection logs show that this learning activity is feasible to conduct in the future. When it comes to learning outcomes and quality of using blended skills training, we must investigate this further to be able to draw any conclusions.

The collaboration between distance and local supervisor is crucial to organize the content of the learning sessions. Good collaboration will benefit the blend between distance and local supervision with use of both traditional and new ways of supervising the students. With better organization, students learning outcome might also become higher.

Further, we will focus on the last part of the analysis to expand our knowledge about using robot technology in skills training. Then the focus will turn to design and implement blended skills training of good quality as a part of the ordinary curriculum.

Bibliography


Abstract
The purpose of this study is to identify factors that relate to student satisfaction of the face-to-face tutorials in a blended learning environment. The study uses qualitative research interviews to collect data. The review of literature suggests that studies on student satisfaction, particularly in Indonesia that employ qualitative research method, are limited. The interviewees are students of an open university in Indonesia\textsuperscript{1} residing in Yogyakarta. Nineteen students participated in the face-to-face interviews. The interviews were recorded and transcribed verbatim for analysis. The results suggest that the interviewees were satisfied the face-to-face tutorials. The major reason that they were satisfied was that they could discuss topics they did not understand with the tutor and other students as well as they could learn the topics more deeply. The results also suggest that peer learning groups and discussions helped their comprehension of the topics increase. A common view amongst the interviewees was that employment responsibilities was a major challenge. Concerns were expressed about the inadequate classrooms of the face-to-face tutorials and tutor’s absence without prior notice. Together these results provide important insights into the interviewers’ perspectives on quality face-to-face tutorials. The study recommended the university through the regional office improve the quality of face-to-face tutorials. The improvement could be conducted by on-site monitoring and obtaining formative feedback from the tutees.

Keywords: blended learning, face-to-face tutorial, Indonesia, interview.

1. Introduction
This paper reports the results of the study that aimed to investigate factors related to student satisfaction on face-to-face tutorials in a distance learning environment. The study was conducted in Indonesia which involved a group of students of an Indonesian open university. To comply with the formal agreement with the institution where the study took place, the name of the institution and the students were kept confidential. The university is a single-mode distance learning university. Face-to-face tutorial is a type learning support that falls into two categories: mandatory and on demand which is given eight sessions within a semester. Mandatory face-to-face tutorial is given for students who choose the semester course package. The package includes school fees, printed books, and eight-session face-to-face tutorials for all subjects. The second one is tutorial on demand. In other words, the students who do not choose the

\textsuperscript{1} To maintain confidentiality, the name of institution remained anonymous
semester package may request for face-to-face tutorial to the Regional Office. The Regional Office will then appoint tutors.

The Regional Office selects the tutorial location which is commonly school buildings. The face-to-face tutorial is conducted on Sundays as most of the students are in employment during the weekdays. The tutors are hired from reputable conventional universities near the Regional Office and they are recruited and trained by the Regional Office. This study focused on the students who choose the semester course package. This group of students was selected based on some considerations. Firstly, most of the students are at the same age that might indicate that they have similar learning experience. Thus, in terms of academic performance, they are considerably similar. Secondly, based on previous analysis, the presence rate of the students who chose the semester course package is higher compared to the students who choose the on-demand tutorial. Thirdly, the number of students who chose the semester course package are higher. Thus, they might provide detailed and comprehensive information.

2. Literature review

Research on face-to-face tutorials in a distance learning has been an interesting topic. A preliminary study on student satisfaction on face-to-face tutorials in distance learning shows that student satisfaction on face-to-face tutorials is influenced by two major factors; external and internal. The external factors that influenced student satisfaction are learning facilities and tutor, including tutors’ pedagogical competence. Meanwhile, the internal factors are mostly related to students’ readiness to study in distance learning and time and study management skills. However, studies that particularly investigate student satisfaction on face-to-face tutorial in a blended environment (traditional distance learning that adopts independent study and face-to-face class room setting) are still limited.

A mixed-method research conducted by Fung and Carr (2000) to investigate student expectation of the face-to-face tutorials offered by the Open University of Hong Kong found that, in general, the participants valued the face-to-face tutorials, because they had opportunities to ask the tutors directly. The most interesting finding of the study was that the participants were likely to be active and show student-centered approach. Generally, as showed by Cheng (2000), Asian students are quieter. Henri and Lee (2007) found that students participating in the face-to-face classroom setting spent less time to make a preparation. Another important finding was that they joined the face-to-face tutorials in order that they could accomplish the assignment given. In addition, face-to-face tutorials became a time to interact with other students for social activities, including having meals during the study break.

Face-to-face tutorials in a blended learning environment offers a suitable solution to the problems associated with balancing family and work commitments (Alebaikan & Troudi, 2010). Problem associated with balancing family and work commitments was also pronounced by Rahmat Budiman (2014). Alebaikan and Troudi (2010) highlighted that face-to-face tutorials helped students build self-directed learning skills. Furthermore, Azizan (2010) suggests that face-to-face tutorial enabled the students to interact and communicate each other. It can argued that face-to-face tutorials in distance learning is needed, particularly for those who are new to distance learning system. Kennedy (2010) argued that students’ awareness of shifting from teacher-centered approach to student-centered approach should be developed.

Another important finding from a study conducted by Tso (2015) that adopted a case study at the Open University of Hong Kong is that effective face-to-face tutorials should consider the ratio between students and lecturer. A more recent study in Ghana that was conducted by Badu-Nyarko and Donkor (2014) found most of the research participants preferred to have face-to-face tutorial to online tutorial. Among the
reasons identified was that students had more opportunities to interact personally with the tutors and the other students.

3. The Study
The year 1984 saw the emergence of distance learning for higher education in Indonesia. Since then, distance learning has become an interesting field of research. Unfortunately, international scientific research publications related to distance learning in Indonesia are relatively limited. Hence, this paper aims to make a distinctive contribution to the field of distance learning and present alternative perspective on face-to-face tutorials in a blended-learning environment. The study is a part of continuous improvement to provide better academic services to students.

To obtain students’ beliefs, intentions and perspectives on quality face-to-face tutorials, three research questions were formulated. The following research questions were:

1. What are the students’ perspectives of the face-to-face tutorials?
2. What factors are associated with student satisfaction and dissatisfaction on the face-to-face tutorials?
3. What challenges did the students face during the face-to-face tutorials and how to overcome them?

3.1 Participants
The participants of the study were students of an English degree program offered by a distance learning institution in Indonesia. The students are registered in a regional office in Java and the study centers (study center A and B) where the face-to-face tutorial conducted were about 23 km from the regional office.

The participants were generally homogenous in terms of age, educational background, and English language skills. Five students of study center A (three females and two males) and nine students of study center B (five females and four males) participated in the interview. The participants are students under a scholarship scheme which face-to-face tutorials were a part of the scheme. Hence, attending the face-to-face tutorials was a compulsory.

3.2 Procedure and methods
The study adopted semi-structured face-to-face interviews to provide the broader range of perspectives on face-to-face tutorials and challenges they met. Two researchers were assigned to conduct the interviews. The interview protocol was prepared which previously was reviewed by a colleague with similar background. The interviews were recorded audio only and transcribed for analysis. Prior to the interviews, the consent letter was distributed to the students in order that they understood the aims of the interview and their involvement in the study. The interviews were conducted between July and August 2016.

The interview recordings were transcribed verbatim. The transcripts were analyzed based on the following procedures:

- understanding meaning
- coding and describing data
- identifying and classifying themes
- interrelating data
- interpreting, creating explanations
The interviews were conducted in Indonesian. For the purpose of publication, however, the selected comments were translated into English.

4. Findings and results
The study has obtained certain key information and insights on factors that related to student satisfaction on face-to-face tutorials in a blended learning environment. Results of this study indicated that the majority of the students were satisfied with the face-to-face tutorials. Nevertheless, some students indicated wishes and concerns for a better face-to-face tutorial practice.

Research Question 1
What are the students’ perspective of the face-to-face tutorials? A variety of perspectives were expressed openly during the interviews. A number issues were identified and classified into two main themes, including face-to-face tutorials as a learning community and face-to-face tutorials as an extrinsic motivational driver. Firstly, the majority of the students argued that face-to-face tutorials enabled them to make contact with the other students and the tutors. Hence, they were able to develop collaborative learning. This finding confirms the idea of Moore’s three types of interaction (Moore, 1994). Although student-student interaction and student-tutor interaction were particularly limited, the students found that these kinds of interactions during the face-to-face tutorials were important to develop their knowledge, learning experience, comprehension, and conceptual understanding of certain subjects. Talking about this theme, three students said:

Face-to-face tutorial helps me to understand some subject, such as the English for Translation and Structure. I can ask my friends freely. (Female).

I get a lot of new knowledge that I cannot get from the book. I learn how to study independently and prepare for the examination, because distance learning is something new for me. The tutors also explain more deeply the learning materials that I learn from the book. (Female)

I can ask directly to the tutor and get the answer promptly. If I do not understand the answer, I can ask further. (Male).

Secondly, some students were of the opinion that the face-to-face tutorial served as an extrinsic motivator driver. Being together with the other students, particularly with those who took the same subjects became integrated with their society. In other words, they did not feel alone and isolated from the other students. This result seems to be consistent with Budiman’s (2015) finding which showed that distance learning students often experience feeling of isolation. One student said:

I never communicate with other students, except on Sundays when we have face-to-face tutorials. Mostly, I study by myself because everybody is busy with their activities during the weekdays. (Male).

Furthermore, feeling of isolation is one of the factors that leads to procrastination and even dropout (R Budiman, 2015). This study found that being together physically in the face-to-face tutorials helped the students develop their motivation to study which in turns increase their opportunities to accomplish their studies.

Research Question 2
What factors are associated with student satisfaction and dissatisfaction on the face-to-face tutorials? In terms of satisfaction, having opportunities to ask questions to the tutors and peers became the major theme from the analysis. The major reason that they were satisfied with the face-to-face tutorial was that they
could discuss topics they did not understand with the tutor and other students as well as they could learn the topics more deeply. The results also suggest that peer learning groups and discussions helped their comprehension of the topics increase. Two students commented:

*Besides having new friends, I can ask the tutors directly and I can understand the answers easier.* (Female)

*The tutors are excellent. They are experienced. If I ask a question, they will answer it and I am very pleased with the answer.* (Female)

Concerns were expressed about the inadequate classrooms of the face-to-face tutorials and tutor’s absence without prior notice. Issues related to those themes were particularly prominent in the interview data. As mentioned earlier, the tutorials were conducted in some pointed school classrooms, which some students argued the desks and other facilities were not suitable for adult students. One student reported:

*I was thinking that the tutorial was in a big campus building, but it is in a school classroom. Compare to my friends who study in a conventional university, they have a large range of facilities for the students. I feel ashamed.* (Female)

Some students reported that some tutors cancelled the tutorial sessions without prior notice. As a result, the students who had traveled to come to attend the tutorials had to return home, whereas they had prepared themselves with some questions. A student said:

*The tutor did not come. We were already in the classroom. After one hour, one of us made a phone call to the tutor, but he could not be reached.* (Female)

**Research Question 3**

What challenges did the students face during the face-to-face tutorials and how to overcome them? A common view amongst the interviewees was that employment responsibilities were a major challenge. The students found that, although attending the face-to-face tutorials was something they expected, they could not prepare themselves for the tutorial well due to their employment responsibilities. The comments below illustrate the problems they face.

*I work in a workshop to build food truck from Monday to Saturday. I sometimes read some pages on Saturday nights and the following day I go to the tutorial location.* (Male)

*I work as a tailor and another part time job. I have little time to study before the tutorial. I am busy with my jobs.* (Female)

**5. Conclusions**

The main objectives of the study are to identify factors that relate to student satisfaction on face-to-face tutorials in a blended-learning environment. Student satisfaction on the face-to-face tutorial in a blended-learning environment is an important element of teaching learning process, particularly for those who are new to distance learning. Based on the findings and results, the study has identified three definite conclusions.

Firstly, face-to-face tutorial in a distance learning environment is an important learning support, particularly for those who are new to distance learning, such as fresh graduates and young age students. Distance learning students need face-to-face tutorials. This is consistent with the results obtained in the study by (Azizan, 2010). Through the face-to-face tutorial, students may be helped to develop independent learning skills, including developing learning strategies, help-seeking strategies, and academic literacy skills. (Kennedy,
2010) labelled this practise as a shifting practice from teacher-centered practice to student-centered practice. To develop those kinds of skills, the tutors must be well trained, well prepared, and well planned. In addition, to ensure that the tutorial sessions are conducted properly and effectively, there should be intensive supervisions from the Regional Office.

Secondly, data from several previous studies indicated that distance learning students experience feelings of isolation, which in turns might lead to resignation. In terms of feelings of isolation, Budiman (2015) found that feeling of isolation is believed to be a serious problem experienced by distance learning students. The study has found that the face-to-face tutorials have integrated the students and promoted their motivation. In addition, the students who are the same age found that the face-to-face tutorials enabled them to build study group and discussion among them became easier. Peer learning has enabled them to formulate questions, discuss, and explain something with their own words, which according to them, sometimes are more suitable and far easier to understand. This result is an agreement with the one obtained by Azizan (2010). To create a positive learning environment, the Regional Office should provide adequate educational facilities that suit the students’ needs.

Thirdly, in this study, employment commitments are found to be a major challenge that the students cannot ignore. Although the face-to-face tutorials helped the students to master some certain topics of the courses they learned, those who were in employment pronounced that working and studying at the same time needed great efforts. Those who were not able to manage their time might experience difficulties in learning which in turns might affect their academic performance. Consequently, the students spent very limited time to study prior to attending the face-to-face tutorials. This finding was also echoed by Henri and Lee (2007). However, a further study could assess the effect of employment commitments to the student academic performance.

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The challenge of retention in open and distance education: the role of engagement in persistence.

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Abstract
Attempts to widen participation in higher education in the UK can be traced back to the 1960s and coincide with the launch of the OU UK and the subsequent spread of the Open University movement around the world (Kettley, 2007, Burke, 2002, Fulton, 1981, Weinbren, 2015). Over the last twenty years there have been more focused attempts globally to extend participation to more diverse student cohorts, particularly to those who have been under-represented, through more flexible and accessible routes. Alongside these developments we have also seen a growing concern about, and extensive research into, student retention. However, the majority of this research has been concerned with retention in traditional, face-to-face, full-time provision, whereas the risks appear to be much higher in open and distance education.

Nonetheless, there are themes which have emerged in mainstream retention research literature (Crosling et al., 2009, Thomas, 2002, Thomas et al, 2017) which could provide some insight into enhancing support for learners at open and distance providers, particularly through links with concepts of engagement and belonging. This paper gives an overview of some of the issues which open and distance universities face in relation to retention and engagement. It sets out an intention to develop benchmarks in relation to retention and engagement in distance universities and to share good practice and effective interventions. A specific initiative from the OUUK of a technology-enabled activity – Student Hub Live – is presented as one such intervention to demonstrate a means of engagement which is highly transferrable to other European contexts.

Keywords: open education, distance education, retention, community, engagement

1. Introduction
Retention is associated with success in several ways: for example it can determine institutional success in University ranking tables, but also relates to the way that students are categorised as either successful or unsuccessful learners. Retention is relatively easy to measure, easy to compare, and vitally important in an increasingly competitive market, thus a key focus in all Higher Education institutions. The relationship between persistence and the sense of belonging or community have been identified in the literature on both retention (Simpson, 2004, Yorke, 2007) and student engagement (Trowler, 2012, Thomas 2012, 2107). However establishing community, and thus fostering persistence is challenging in a distance learning environment when students have very limited opportunities to interact with their peers and lecturers. Furthermore, there is less of an opportunity to identify oneself as a “student” in a distance learning environment and to compare performance or understanding with others. These identity issues are
compounded by the diversity of the student population in Open, Distance, and Part-Time contexts and by the very real barriers that can lead to withdrawal. This paper outlines some of these issues in the context of the current social and political climate in the UK, and discusses the need for collaboration between Open and Distance Universities internationally. In addition to benchmarking measures of retention, the shared practice of successful interventions may help in different contexts, and with this objective the Open University UK is initiating a project where participating universities can share in data and best practice.

Retention and progression are topical issues in all Higher Education settings, but are particularly relevant in open access and distance education where the rates of student progression are typically lower than at brick universities (Simpson, 2004). Distance learning has many positive aspects such as offering lower fees, greater flexibility in when and where people study, having the potential to attract self-motivated learners, particularly mature students who may have experience persisting in other areas and a stronger commitment to their investment in learning. Yet there are also hurdles in distance and open education and some of these issues impact on progression, for example challenging life circumstances, low or no previous educational qualifications, disability, and perhaps most importantly isolation from the academic community that the student is de facto a part of. Rates of interaction with staff and the ability for students to measure their performance against their peers are examples of factors seen by Kuh (2009) as “High Impact” (a term for activities that correlate with student success) and relate to the notion of community, an emerging area of importance in the student engagement narrative. With a diverse student population, lack of face to face interaction and life circumstances that are not always in the individuals control, it is easy to see why retention rates are lower in open and distance learning environments.

Yet very little is known about norms in terms of percentage figures, and much of the retention literature in Open and Distance learning focuses on student circumstances and the effectiveness of various interventions. If we agree that retention is more of an issue in this context, and that there can be ways to increase persistence, then there must be value in identifying normal parameters and also in sharing case studies of effective interventions in the same way as brick universities have been doing, for example in the UK Higher Education Academy ‘What works?’ project (Thomas, 2012 and 2017). In identifying such parameters and interventions, context is important, and we begin this discussion by describing the policy and funding context in which the OU UK operates. We then consider in more depth a range of factors which might impact on retention and persistence before presenting an example of an initiative designed to increase engagement and thereby reduce attrition.

2. Policy and Funding in the UK and the impact on retention

In the UK, there have been changes to the way higher education is funded in recent years, with direct government funding in England replaced by indirect funding, via student loans. Where students are incurring heavy debt it is critical that they are able to successfully complete their qualification in order that they can afford repayments. But governments also seek return on their investment and thus it is argued that when funding is heavily subsidised by the government student retention becomes an important performance indicator (Yorke, 2007) and perceptions of institutional success are related to their capacity to successfully retain students.

In 2016 the UK government introduced The Teaching Excellence Framework (TEF) as a mechanism to measure institutional excellence in teaching and to convey standards of undergraduate teaching to prospective students. Institutions are assessed in three areas: teaching, learning environment and student outcomes and can be awarded bronze, silver of gold rating. A minimum bronze award allows an institution
to raise their fees above the existing cap, in line with inflation. For the OU UK, this is not an incentive as fees are already well below the cap and there is no intention to increase them. However, reputationally, it is important that the University is seen as offering at least a comparative, if not better, experience than ‘brick’ alternatives. Unfortunately, the metrics used to assess institutions have been modelled on full time, face to face attendance and are inappropriate for an open, distance university where the predominant mode of study is part time.

Another area of UK institutional assessment is the annual National Student Survey (NSS) which invites students to score their University on how satisfied they are with teaching, learning and assessment. The OU UK has always scored very highly in the NSS but an additional category in the most recent exercise asks for student feedback on satisfaction with ‘community’, which OU students did not rate highly, perhaps because they find it difficult to interpret in a distance learning context. Allied to the difficulties of assessing ‘learning environment’ in a distance context, it is clear that measuring success for open and distance universities is highly challenging.

Nevertheless, measurement is essential in understanding retention, both in terms of institutional success and also student success. There are, however, necessary differences in the way these measures are recorded, particularly where registration is at modular, rather than qualification level, as is the case at OU UK. Thus, the very flexibility which makes part time distance learning attractive mitigates against linear progression within a fixed timeframe. Needless to say such categorisations impact highly on retention figures. This is important because there are similar categorical measurements that apply to both retention and student engagement, such as interaction with the institution (attendance), task completion, attendance at tutorials and submission of work, which are all key indicators of success and also alerts to potential issues. With such similar measures, it is even more important to establish how these relate to the learning provision in order to understand the way in which engagement influences retention.

3. **Issues in retention: Part Time, Open Access and Distance learning**

It has been widely agreed that students who study part-time, who enter HE with no or low previous educational qualifications and who learn at a distance are a diverse population that have higher risk of withdrawal (Butcher 2014, Yorke, 2004, Simpson, 2004). Whilst many of these factors are beyond the control of the HE provider (and often the student), these issues are often the focus of intervention, for example students identified as high risk may receive targeted interventions. These aspects are discussed in turn and may form the basis of shared interventions.

4. **Distance Education and part-time study: Impact on identity**

The life circumstances of students can dictate whether they can in fact engage with a distance or brick university: many choose a distance learning provider, because of work or caring responsibilities, because of a disability, or because they are in a secure environment. These factors can impact on the students ability to create time and space for study, but more importantly the very nature of distance learning presents its own unique challenges in that students do not often interact with tutors or their peers. This can impact on the individuals’ identity as a student which is important to persistence; if one holds an identity it tends to be something that matters and is worth protecting. Establishing an identity as a student is a precursor to integration in an academic community: it is impossible to belong to something that you do not identify with.

Thomas, whose research focuses on student identity in distance learning environments, contrasts “belonging” with the uncomfortable feeling of “not belonging” and suggests that this can lead to withdrawal (Thomas, 2015, p42). The issue of community is addressed in retention literature also, with models of
student success often including this element (for example Tinto, 1993, Bean and Eaton, 2000, and Thomas, 2002).

Many students studying in distance learning environments also choose to study part-time. Butcher argues that for many students the choice to study part-time is based on the option of that or nothing (Butcher, 2015). Whilst issues associated with distance learning and part-time study are not mutually exclusive, both present barriers to student engagement and community. Identity as a student is more of an issue for part-time students who are performing many other identity roles that may be prioritised above the role of student (see for example Schuller and Watson, 1999). This relationship was also identified by Butcher, who suggests that with an increase in time spent studying there was an increased level of identity as a student (Butcher, op cit p32).

A final point relates to students who may identify as marginalised because of disability. In this instance distance learning presents something unique, especially in terms of community. Butcher describes how for some students with disabilities, distance learning can be seen as a lifeline among things like managing medication and hospital visits (ibid). In this case, an identity as a student may offer a very positive and future-facing alternative.

Some of these issues can be considered barriers, but they are not always insurmountable. For some students, the desire to enrich the learning experience with as many equivalents to those offered in a traditional higher education institution will be realised. For other students knowing there are options to engage with an academic institution can be a useful option even if they are not utilised. Community in this instance becomes a potential space, a feeling of knowing you are not alone, coupled with options to connect with others should the desire or need arise.

5. **Retention in Open and Distance education**

It has been proposed that in some instances, measuring retention is simply based on behaviours and interactions between students and the institution, but it has also been argued that these may not always be like for like comparisons across institutions. Not only may the measurement differ but the motivation and meaning may also be distinctive. Activities such as tutorial attendance may have different meanings in face to face and distance environments. For instance, a tutorial in a brick university will usually be at a set time and place, whereas for a distance university it could be an evening seminar, an online interactive tutorial, a day school, an asynchronous online forum etc. Attendance at any of these is, of course, measurable, particularly with the increasing availability of learning analytics. However, measuring and understanding the value of emotional engagement is challenging in a virtual environment, and this is where the student engagement literature (that includes these other measurements of interaction) argues that community and belonging also need to be factored into the mix.

In a similar way to a body having a spirit, community makes a difference in the way a student interacts with their learning, and for this reason measuring their behaviour is not considered a complete indicator of engagement. So HE providers are increasingly concerned with community and it is now considered that the HE provider should facilitate this to some extent (Coates 2005) because integration into an academic community is important for student success (Thomas 2012). The “What works 2 Student Retention and Success” 2017 HEA report uses case studies to expand on the 2012 report that had identified the theoretical background to positive student engagement. What Works 2 outlines case studies from the participating institutions, and identifies seven factors that are linked with improving retention and progression and five of these involve some kind of relationship building (Thomas, 2017). Staff student relationships, group based
learning, personal tutoring, peer relationships/cohort identity, and belonging to a particular part of the
University are listed as having a positive impact on student success. Many of these are facilitated in face to
face settings, and are initiated by the HE provider. Coates (2005), a leading figure in student engagement
research, argues that even when there may be a physical community present, community building is more
complex than a body of people, and Universities are also responsible for developing frameworks that
students can tap into. If community is implicated in student success and is based on physical interactions on
a University campus, the question about whether community can be facilitated in distance learning
environments is important for institutions like the OU, and the increasing number of brick Universities
offering a distance learning option. Indeed the barrier to belonging and engagement outlined in What Works
2 includes travelling to the place of study, caring responsibilities, limited access to a quiet space, having a
part time job and declaring a disability. Many of these form the rationale for choosing a distance learning
provider.

Whilst community and interaction are important in success, these aspects are challenging to measure and
also challenging to replicate in distance learning settings. However it may be that these aspects are realised
different ways by students in distance learning environments. The question about what community means
in distance learning is worthy of discussion.

6. The Open University UK
The Open University (OU) is the leading expert in flexible higher education. The OU also has an open access
policy and a commitment to widening participation. This means that anyone can study a level 1 module (EQF
level 4), but in some instances, students may not have sufficient skills or confidence for higher level study.
The student population is diverse: young, mature, full-time, part-time, UK based and international students
choose to study with the OU. Furthermore, some students do not speak English as a first language and there
are many disabled students. The specific nature of part-time distance learning and the associated barriers
were explored by Butcher (2014) and Butcher and Rose Adams (2015). They found that whilst choice and
flexibility appealed, these factors contributed to a lower level of retention and progression compared with
brick universities.

The OU specialise in effective distance learning designs, and in addition to the module materials that are
delivered to students which include physical (books) and virtual (multimedia material on the virtual learning
environment) aspects, students have access to optional online tutorials and forums. Students submit
assignments that are marked by their tutor. Completing and passing the minimum assessment is all that is
compulsory for students to complete a module and ultimately a qualification. The virtual nature of study
means that analytics relating to interaction with the VLE and submission of assignments is accessible, but
measuring the other aspects of engagement can be more problematic than it would be in a brick university.

In addition to tutorials and forums, the OU has a Facebook and twitter account, and the Open University
Students Association (OUSA) arrange physical and virtual events for students. There are also many student-
initiated social media groups that are not moderated by the OU. It appears that for some students, engaging
with other students is important, whereas others prefer to study independently.

One of the initiatives to develop an academic community is the Student Hub Live (SHL). For the OU, SHL
presents one way to offer open access, often part-time and/or mature, distance learners a chance to engage
in an academic community synchronously, and in parallel to their formal learning. This case study could be
used in a range of distance settings, and the format and use is expanding to include online business
exchanges and skills based workshops.
7. **Case Study: The Student Hub Live: The OU’s online interactive platform to develop community**

First developed in 2014, The Student Hub Live is a livestreamed interactive online event, designed as a platform to welcome new OU students to the academic community. The SHL was developed following the Student Connections Online conference, an idea generated within the faculty of Social Science (see Foley and Fribbance, in publication). Using a ‘breakfast TV’ style approach to create engaging content that is both informative and fun, SHL is an extra-curricular and optional event. It was shortlisted in the Times Higher Education awards 2016 in the “best support for students” category.

The Student Hub Live aims to create a dialogue between students and academics: there is an interaction between the remote audience and the studio panel and whilst sessions (usually a 25-minute discussion, quiz or demonstration) have planned parameters, the contribution from the audience influences the direction of the session. For example, in Q&A sessions, there could be a debate, or advice about good study skills might be discussed and shared. The audience engage exclusively online. The live audience access the interface via Stadium (developed by the OU) which showcases the livestream video with a chat panel and a range of interactive widgets. In addition to the studio panel there is a presenter who anchors the discussion and a “hot desk” that is moderated by two students. The purpose of the hot desk is to collate the points from the live chat discussion with emails, social media and widget data (interactive voting tools). These are then fed into the live discussion creating a fluid dialogue between onscreen and off-screen participants.

Another important point that differentiates the Student Hub Live from the traditional lecture is the focus on establishing an equal relationship between teachers and learners. Speakers are encouraged to establish the best way to communicate ideas without PowerPoint or scripts, and delivery is visual and interactive. An example of this is the Maths and Logic challenges that are demonstrated with children’s toys, “what do a Pina-colada and an Open Degree have in common” which included Chemistry experiments to demonstrate how combinations can involve additional components that are greater than the sum of their parts, and the interactive “Wheel of Ologies Quiz” where the online audience compete against two teams in the studio.

There is a catch up service through which live sessions can be accessed, and there is also a Student Hub Live YouTube site. Despite not being able to interact, the relevant content and also the value of the remote participants’ voice sends a reassuring message to students who want to be part of a community. The viewing figures on the catch up are impressive, with nearly 6,000 views of the Freshers’ induction event (both in real time and then on the catch up, September 2016) on an intake of approximately 8,000 new students.

Student Hub Live creates engaging events that benefit both the presenters and audience, but another important benefit of the format is that the comparable time spent creating the assets is significantly less than the video content that forms part of the OU learning materials within modules.

The informal nature of the Student Hub Live, with a presenter who anchors the session (and manages the contribution from the remote audience) and interviews guests enables academics to engage with students with their full attention, and without too much preparation time. The format also means that we can be agile in responding to National events, such as the UK referendum and Brexit. The interactive nature of the format can also be used to consult with students, for example, a session was recently run where students were polled on their interest in the development of new curriculum. Another example is where the Vice-Chancellor has used sessions to consult with students about how the university can make their journey into higher education more welcoming.
This quotation from a student sums up the value of participation:

*SHL is a great opportunity to allay anxieties about study and provide interesting information about courses. Although it cannot replace the human contact of tutors and tutor groups - I can’t emphasize enough how important real, human contact is to learning - but it does provide a window on the OU and OU study which is not otherwise available.*

8. Benchmarking and sharing best practice

Having outlined some of the issues in terms of policy and context, and providing a case study that addresses community as part of the retention issue, it is hoped that EADTU members can work together to establish common issues and also account for variations in our measurements as we seek to establish parameters of retention in distance education more broadly. It is hoped that in identifying parameters we are all able to make more accurate comparisons with brick universities, and also to share best practice in addressing areas of retention that are more specific to our contexts. We will be holding meetings with interested participants and aim to develop a survey that all members can contribute to. In addition we welcome the sharing of effective case studies so that we can capitalise on what appears to be effective in retaining our students.

9. References:


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The MOOC potential to address European challenges in CPD and continuous education

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Abstract
Despite being a relatively new phenomenon, MOOCs have started to be employed not just within higher education systems, but also within a corporate context for recruiting and training of new employees, human resource development (HRD), marketing, and even brand awareness (Grossman, 2013; Iversity, 2015; Radford et.al., 2015; Sreeleakha and Manikandan, 2015). MOOCs are seen flexible, innovative learning approaches, based on the skills required by today’s and tomorrow’s labour force, for improving the quality and relevance of Higher Education. Research shows that learners perceive MOOCs to benefit them in terms of improved job performance, personal improvement, and the development of skills for a potential new job. MOOCs are therefore considered to be a tool for designing a strategic opportunity to meet local requirements and develop related skills and capabilities (e.g., Patru and Balaji, 2016).

MOOCs’ potential to help graduates attain relevant skills before employment, as well as with continual up- and reskilling once employed, has been largely ignored in the published literature. Only recently some research was done on graduates’ skills, employability and the use of MOOCs to provide flexible and affordable learning opportunities to both employers and “new traditional” graduates (Calonge and Shah, 2016). Only limited data is available for the use of MOOCs in the European context although the potential is enormous (see for example CEDEFOP report on Skill shortages and gaps in European enterprises and Mourshe d et al., 2014). It is of interest of European MOOC platforms and universities to increase their offering that fits the needs of both citizens, the workforce and companies in each of their respective European markets.

To this end, this paper examines the perception, current use of and potential for MOOCs as continuing professional development (CPD) tools and beyond by businesses based in Europe. Based on recent research involving 56 business representatives across 11 European countries carried out as part of the BizMOOC project (see: http://bizmooc.eu), trends are discussed in current MOOC use and the potential for scaling the use of specific MOOCs for CPD and widening participation purposes. We also examine the current
relationship between MOOC providers (HEIs) and businesses, and the challenges to more widespread adoption of MOOC for CPD purposes and how these concerns can be mitigated. We conclude with recommendations for strengthening and further developing the relationship between HEIs and businesses going forward and the potential for further collaboration.

Keywords: MOOC, continuing professional development (CPD), continuous education, skills gap, widening participation, business, Europe, lifelong learning

1. Introduction
This paper examines the challenges facing continuing professional development (CPD) and continuous education in the European context. We assess the potential of Massive Open Online Courses (MOOC) to address these challenges through research carried out by the 3-year ERASMUS+ EU co-funded project BizMOOC (http://bizmooc.eu). BizMOOC has three overall aims connected to the context of this paper: to research current perceptions and use of MOOC by European businesses, to use this research in the development of three MOOC and to inform businesses and MOOC providers about the potential of MOOC for continuing professional development (CPD) and lifelong learning.

We present research conducted with 56 business representatives in 11 European countries during 2016-2017. This research examines business perceptions of MOOC providers, possible uses of MOOC for CPD and lifelong learning, challenges and barriers to uptake and how these can be addressed. We conclude with recommendations for facilitating collaboration between MOOC providers and businesses.

2. Background to BizMOOC
BizMOOC is a European-wide Knowledge Alliance funded by the European Commission for a period of three years. The project aims to enable businesses, labour force and universities across Europe to increase their activities and exploitation of MOOC. BizMOOC focuses on work force and Higher Education-training and the acquisition of labour market key competences through applying new methodologies for online teaching and learning. The development of these new methodologies requires the creation of common standards and frameworks for MOOCs and the integration of experiences from Higher Education (HE) and the business world. This paper focuses on current research dedicated to businesses and CPD and the findings of BizMOOC research conducted with businesses across Europe regarding CPD.

The consortium consists of eleven full partners and three associate partners out of eleven countries deriving from Higher Education Institutions (HEI) and Industry (large companies as well as SMEs), NGOs, networks, and a cluster. In the first year of the project BizMOOC collaboratively established a common body of knowledge on MOOCs and identified needs, gaps and reasons for businesses, labour force and HEIs to boost their MOOC activities. The findings resulted in guidelines published as an interactive, open access MOOC BOOK (www.mooc-book.eu). Based on the research to date, three Pilot MOOCs focusing on LLL (lifelong learning) and business key competences “Learning to learn (through MOOCs)”, “sense of initiative (in our case intrapreneurship)” and “innovation, creativity and problem-solving” are currently under development to test different methods and didactical approaches. Through the creation of these three MOOC, the consortium aims to benefit businesses, HEIs, teachers, learners and policy-makers. More details are available at www.bizmooc.eu.
3. **Background**

Calonge and Shah (2016) reviewed 16 studies or articles that explore the existing or potential role of MOOC in upskilling or developing the existing skills of employees, particularly those who have just graduated from university. Two foci of recent research are revealed.

First, there are a number of studies concerned with the perceptions and attitudes of a variety of stakeholders on the role of Higher Education (HE). In the research reviewed there is a clear disparity between how universities perceive the capability of their graduates and the view of employers and the students themselves (Calonge and Shah, 2016, 69-70). Indeed almost half of IT employers surveyed by the City and Guilds vocational award body in the UK in 2013 “…believed the “education system wasn’t meeting the needs of business”” (Calonge and Shah, 2016, 20).

The current tensions between employers, HEIs and students views and the perceived role of HE as provider of skills needed for employment post-university are also echoed by Tomlinson (2012). Tomlinson identifies a variety of factors that have contributed to this sense of general dissatisfaction over the past few decades including policy change, a move to “the new ‘knowledge-based’ economy” and the type of opportunities open to graduates, all contributing to a “ruptured” relationship between HE and employers (Tomlinson, 2012, 413 & 410). Yet, collaborative efforts between HEIs and employers are also currently limited. As Cedefop (the European Centre for the Development of Vocational Training) report: “…in the flash Eurobarometer survey 304 … few companies were found to cooperate frequently with higher education institutions in designing their curricula and study programmes or in recruiting their graduates: more than 40% of graduate employers reported in the survey that they had never done so” (Cedefop, 2015, 37).

Factors such as policy and “the increasing economisation of HE” (Tomlinson, 2012, 426) are more likely to be country specific and require further examination. As Tomlinson reports a number of research studies reveal European students often progress along a clearer trajectory into specific roles following graduation than their UK counterparts who face “…a more competitive and open labour market context.” (Tomlinson, 2012, 418). If UK graduates, for example, are beginning degree courses with no clear trajectory into specific roles, or a wide variety of options open to them post-graduation, it is likely that they may require further training or skills to ensure they are ready for a more specific role. This constant need to adapt, revise and learn new skills to stay relevant results in “…graduates’ increasing propensity towards lifelong learning.” (Tomlinson, 2012, 426 and also Calonge and Shah, 2016, 71). However, caution should be taken in overemphasising employer perceptions of workforce skill deficits, as Cedefop notes in *Skill shortages and gaps in European Enterprises*: “…The share of EU firms faced with genuine skills shortages is smaller than one would believe solely on the basis of employer surveys” and not only attributable to HE failing to deliver work-ready students, for example (see Cedefop, 2015, 8, 23, 54-55, 71).

Tomlinson’s (2012) survey of “graduate employability” and growing recognition of the role of lifelong learning dovetails with the second foci of research surveyed by Calonge and Shah (2016). Whilst employers view graduates as lacking soft or “transferable skills” (Calonge and Shah, 69), which are perhaps more difficult to develop in isolation via training, the perceived potential role of MOOC by both employers and employees working in fast-paced industries such as information technology (IT) was apparent. As Calonge and Shah (2016) notes: “…MOOC’s main competitive advantage is their ability and just-in-time training capacity to cater to employee’s immediate needs, in fast changing industries such as computer forensics or data visualisation.” (81) It is therefore arguably the case that MOOC focused on emerging skills, skills relevant to a wide range of employment settings or fast changing environments such as technology could be
particularly pertinent to graduates. In the research surveyed by Calonge and Shah (2016) it was clear that keeping one’s skills and knowledge up-to-date when working in these particular industries is essential (72). Indeed, the OECD and others have noted the potential for MOOC to provide valuable training for perceived gaps in skills (Calonge and Shah, 2016, 70)

4. Employer perceptions of MOOC

At the time of writing a number of publications had examined employer perceptions of MOOC. Radford, Robles, Cataylo, Horn, Thornton and Whitfield (2014) examined a range of employers’ human resource (HR) personnel in North Carolina, USA attitudes toward, and use of, MOOC for a number of purposes. Whilst just under a third of those surveyed were familiar with MOOC (Radford et al, 2014, 6) the extent and use of MOOC for specific purposes was dependent largely on the availability of relevant courses. For example, in the instance of “MOOCs for recruiting purposes” relevant courses only started to appear in 2012 (Radford et al, 2014, 9). However it is also the case that the use, or perception of the suitability, of MOOC for different purposes varies: MOOC for CPD purposes were perceived as having more traction and potential in a wider variety of industries in comparison to MOOC being used to for determining candidate suitability, for example (Radford et al, 2014, 9, 11 & 15). Similarly, MOOC were perceived as better suited to replace digital training provision rather than carried out currently face-to-face (see Radford et al, 2014, 17).

Many MOOC providers have strong connections with or were founded by HEIs. Given the reported current low level of collaboration between HEIs and employers, increasing synergy between these groups will perhaps become more of a priority as HEIs move from the more ‘experimental’ early days of MOOC provision to MOOC as embedded strategically in an HEIs provision (see also Calonge and Shah). At Strathclyde University in Scotland, for example, MOOC hosted on FutureLearn are an important part of their “widening access strategy” (see Pitt, 2016a) whilst at The University of Glasgow MOOC production started out as without “…any real preconceptions about what we wanted out of…” it and an opportunity to learn from the process of developing this type of course before becoming embedded more formally (see Pitt, 2016b). Radford et al report a number of main MOOC providers such as Coursera and edX have introduced the option of certification of course completion and are investigating monetizing “dashboards or analytics tools” to business (see Radford, 2014, 21).

Similarly as Calonge et al (2016) report there is a growing trend and range of benefits for non-HEI based MOOC platforms to collaborate with HEIs (Calonge et al, 2016, 80).

Employees or potential employees who independently engage with non-formal learning such as MOOC were viewed positively by the employers surveyed by Radford et al (2014). However, employers tended to view learners use of MOOC that are not formally integrated or recognised by a company’s CPD offerings as indicative of a specific type of personality rather than independently validating specific skills: “…our interviews did suggest that taking a MOOC was most often perceived as an “extra” that reflected more about potential employees’ motivation and desire for continued learning than about demonstrating specific knowledge - particularly knowledge equivalent to that acquired in a traditional degree program” (Radford et al, 2014, 10 and 14-15).

1 Differences between MOOC platforms and the way they operate also reveal ideological tensions. For example, with regard to how ‘open’ different MOOC providers are (in terms of open admissions/ accessibility, cost and licensing of content) as edX note: “we are the only leading MOOC provider that is both nonprofit and open source” (See: https://www.edx.org/about-us)
5. Challenges for MOOC in this context: Inclusivity, Uptake, Quality

How can we ensure inclusivity and make MOOC available to everyone for lifelong learning and CPD? As Christensen et al (2013) reveal in their survey of Coursera learners internationally in summer 2013: “the students who have participated in MOOCs thus far appear to be predominantly highly-educated and employed, and they are more likely to be men than women, especially in BRICS and other developing countries ... The findings of this study indicate that MOOCs are not reaching high numbers of less educated individuals in developing countries” (Christensen et al, 2013, 6). This type of finding is not unique to Christensen et al’s (2013) study: Hansen and Reich (2015), for example, report in their study “…that [MIT and Harvard MOOC] course participants from the United States tended to live in more-affluent and better-educated neighborhoods than the average U.S. resident” (1245). However, other studies such as Bayeck (2016) referencing work by Macleod et al. (2014) reveal that “in terms of gender representation, gender differences in traditional education courses [such as STEM] are replicated in MOOCs” (224).

De Waard, I. Gallagher, M. S. Zelezny-Green, R. Czerniewicz, L. Downes, S. Kukulska-Hulme, A. and Willems, J. (2014) analyse the context and potential of the OpenupEd MOOC platform in relation to marginalised groups (De Waard et al, 2014, 2). A range of challenges face European citizens and especially marginalised groups. These include access to internet enabled technologies, lack of digital skills, a deficit of existing suitable course materials, determining the best pedagogical approach for particular groups and MOOC reinforcing and reproducing existing narratives, ideologies and stereotypes (see De Waard et al, 2014, 4-8). Similarly other research such as Educause (2013), Ho et al (2015), Online Course Report (2016), Sharples et al (2013, 10), UNESCO, (2013, 4-6) also highlights that MOOC are more accessible to people who are digitally literate, educated by holding at least an undergraduate degree and able to find relevant training independently. In order to increase participation and engage with audiences beyond those that MOOC currently reportedly serve it is essential that these issues are addressed (Patru and Balaji, 2016).

Currently formal use of MOOC in CPD and continuous education remains relatively low and their use in business largely confined to tech, communication and entertainment companies (see Calonge and Shah, 2016, 72). However, it appears that informal use of MOOC by graduates and employees is happening regardless of formal endorsement by employers. Radford et al (2014) cites research by Christensen, G. Steinmetz, A. Alcorn, B. Bennett, A. Woods, D. and Emanuel, E.J. (2013) which reveals that “44% [of learners] are taking ...[MOOC] to gain specific skills to do their job better and 17% are doing so to gain specific skills to get a job” (Radford et al, 2014, 2 citing Christensen et al, 2013). Moreover, it would appear that in some cases learners’ positive experiences were leading them to suggest to their employers that MOOC be considered for CPD purposes in their organisation (see Radford et al, 2014, 8).

Educators using, or considering using, other ‘open’ content such as Open Educational Resources (OER) often have concerns regarding the “quality” of resources (see, for example, de los Arcos, Farrow, Pitt, Perryman, Weller and McAndrew, 2015). Similarly research on North Carolina state employer attitudes toward MOOC reveal concerns over the “…legitimacy, rigor and quality” of courses (Radford et al, 2014, 20-21). However, as with OER, MOOC are largely created by educators/trainers and are likely to have undergone a range of formal and/or informal development and review processes as part of their creation. Similarly, MOOC are often created by universities or public institutions, who brand their courses as such and have a range of stringent quality processes in place during a course’s development or who work collaboratively with MOOC platforms to ensure that their content is produced in a specific format.
To allay concerns around “quality” MOOC platforms such as OpenupEd, which host courses from a range of international universities, have three measures of quality for all MOOC they host including aligning courses to the European Qualification Framework, an independent “quality” check and provision of a statement of participation or more formal acknowledgement of participation (see: http://openuped.eu/mooc-features/48-quality-focus). In the instance of platforms that are hosted or supported by universities such as FutureLearn (The Open University, UK), Coursera (Stanford) and EdX (MIT and Harvard) institutions or “partner” organisations need to apply to host content on the platform and range from predominantly universities but also include foundations, non-governmental organisations (NGOs) and others. Jansen, Roswell & Kear (2016) discusses these different quality processes in more detail.

6. Overview of study conducted by bizMOOC

a. Methodology

According to Broom (2005), qualitative interviews are a good methodology for exploring the intricacies of different sectors and subsectors. On this basis a qualitative approach was used to explore the experiences and current practices of the business community and other organisations such as research institutes, non-governmental organisations (NGOs), industry etc. A semi-structured interview approach was deployed so that a full exploration of interviewee perceptions and use of MOOC, opportunities and conditions for collaborative activity and possible roles for MOOC within the context of CPD, could be conducted.

The interview was designed around existing literature in the field of qualitative business research, with special focus on MOOCs. A three-part interview guideline was developed with eight lead questions and twelve follow-up questions focused on the following aspects:

- A short introduction to the concept of MOOC and the perception of the interviewees of this phenomenon.
  - Familiarity with the concept of MOOCs (a definition of MOOC was facilitated to the interviewees);
  - Interviewee perception of MOOCs;
  - Expectations of MOOCs;
  - Perceived or experienced benefits of participating or developing MOOCs.

- More specific aspects of online courses and MOOCs.
  - Identification of the main activities of the organisation with regard to online training & MOOCs;
  - Identification of the availability and interest of the organisation to use, offer and produce MOOCs.

- Needs (and/or interest) in collaborating with other organisations on MOOCs.
  - Identification of the main reasons of the organisation (not) to collaborate with others on MOOCs;
  - Identification of the topics and services that are a prerequisite to an organisation working with others to produce MOOCs.

6.2 Sample

The eleven institutions of the BizMOOC consortium carried out 56 interviews with representatives of multinational companies, small and medium enterprises (hereinafter SMEs) and some micro SMEs (with less than 10 employees) as well as research institutes or industrial associations, among others. These organisations are located in eleven European countries. The geographical diversity of these organisations revealed a range of different perceptions and approaches to MOOCs in addition to highly varied knowledge levels and experiences of this type of online course.

19 persons from across the BizMOOC project conducted interviews between April-October 2016 via Skype, phone or face to face. A total of 56 interviews were considered valid for research purposes. Despite the relatively low range of organisations, given the international nature of many of them, the interviews are arguably representative of businesses in 80% of the countries worldwide (when taking into account all countries where the participating organisations are active, e.g. including subsidiaries).

6.3 Overview of findings of study

As is the case with other studies of employers and their perceptions of MOOC, the BizMOOC study revealed that there was a similarly low level of familiarity with the concept of MOOC in the sample interviewed. Only half of the organisations participating in the interviewing process are familiar with MOOCs, with the majority operating in Western European countries. Almost three quarters (71%) of the organisations interviewed were already involved in online professional development, especially in Western European countries, but a very low percentage (14.28%) of the interviewed organisations are involved in MOOC related activity. Moreover, out of the organisations interviewed, 28.6% are using their own platform, webinars or video tutorials for training their employees. 21.4% are using blended training approaches and 17.9% are already using or promoting the use of MOOCs among their employees.

Despite being facilitated online, MOOCs were perceived by organisations to be a good way of increasing learning opportunities to individuals, mainly because many MOOC are facilitated. They are expected to have a more practical focus in order to serve daily business activities and tasks - the knowledge gained must be applicable and relevant for day-to-day business activities. Furthermore, they are expected to provide updated and practical knowledge/information, in conjunction with expert guidance of the field covered. All information is available and accessible online and in one place with no need to print material. In addition, the platform on which the course is hosted tracks the learner’s progress whilst the learner can often access resources outside of a work context and on multiple devices (such as a mobile device), enabling study to occur at a time convenient to the learner. The tracking also raises some concerns with regards to confidentiality issues.

One interviewee noted that training is now highly personalised and can be tailored to the level, needs and wishes of the learner and delivered in a variety of ways including face-to-face and online. MOOCs could in that regard support personal educational interests, which the company cannot provide for. Despite personalization, interviewees acknowledged the capacity to increase a large number of employee’s professional knowledge simultaneously by MOOCs.

MOOCs were perceived by interviewees as having the potential to transform current learning environments in companies. A large number of organisations surveyed are considering MOOCs as a new and free way of
training their employees. But they are not just seen as a way of reducing employer’s training costs, but they could also become a complementary tool for higher education, vocational education and lifelong learning as well as a complementary education tool that might facilitate continuous professional development of the employees. The interviewees have high expectations of MOOC in saving costs, offering better networking opportunities, contributing to the modernization of education, unlocking new competencies and improving employee retention rates.

For organisations which are already applying eLearning, MOOCs could become a core component of HRD online training, for example, or at least complement existing resources and materials. Besides HRD (incl. on-boarding), interviewees underlined that they see the high potentials of MOOCs to be applied as a customer training, marketing and recruitment tool.

However, the interviewees also highlighted some issues that deserve attention. Selecting the most appropriate MOOC from the wide range of courses available can be challenging. The reliability of the knowledge shared within the MOOC, the means for an employer to monitor a MOOC and the validity of the certificates (if offered) are other aspects that seem to concern organisations. According to one of the interviewees, MOOCs could be perceived as inflexible, particularly in instances where automated responses to questions are used, in comparison to being able to ask a facilitator/educator. However, solutions such as chat functions were cited as possible workarounds. The interviewees also highlighted many unsolved questions with regards to legal limitations, unawareness of opportunities and challenges, lack of experience, confidentiality and technical issues. In some organisations there was a strong stigma regarding the validity of eLearning due to prior negative experiences. As with employers surveyed in previous research into employer perceptions of MOOC, the BizMOOC study also revealed that some businesses were skeptical about the quality of low cost or free offerings such as MOOC, or have (mis)conception that online and free is inferior to face-to-face and paid-for courses.

There are therefore a number of issues to be addressed in order to increase engagement with and use of MOOCs. In addition, some groups of employees are not digitally literate, Internet access is patchy in some regions and some individuals are more experienced in learning online than others. Missing digital literacy and online experience are also reflected as exclusion factors by the studies examined in the literature review of this paper. The self-directed nature of MOOCs and the perception that MOOCs are tackling mainly contemporary topics, but not necessarily core business competencies, is not helping to increase the number of institutions involved in offering/producing MOOCs.

Even if MOOCs seem to contribute to improving communication between and with learners, they are not perceived to increase the employability of those who have never had a formal job or have a low level of formal education. In line with the literature discussed, people already holding an undergraduate degree are more likely to embrace and succeed in MOOCs which potentially widens the educational gap instead of closing it.

Whether certificates of completion or badges offered by MOOCs are formally recognised or considered as valid additions to a curriculum vitae (CV) was also a concern raised by interviewees. According to our research, if a potential employee had completed a MOOC, this was not currently viewed as giving him/her “the edge” over other candidates. This finding echoes that reported by Radford et al (2014) around employers regarding studying through MOOC as indicative of a particular type of “motivated” character rather than evidence that an employee (or “potential employee”) has a particular skill set.
On the other hand, MOOCs are perceived as contributing to learner network growth and facilitating access education (see also next paragraph) - they are perceived as enabling access to highly sophisticated content at a low cost or even free-of-cost at the point of use - which could make the difference when learners are looking for a new/better job opportunity.

In addition, MOOCs are acknowledged to have the potential to widen access to education by offering learning opportunities to people previously unable to access Higher Education for various reasons. They were therefore perceived to have the potential to widen access to education and democratize knowledge acquisition by enabling learners to access material in multiple ways, free at the point of use and accessible 24/7. In line with this, the most attractive aspects of MOOCs are the characteristics “open, free, massive, scalable, without entry requirements, interactive and collaborative method for training/education”. The characteristic of “openness” was identified as bringing the most “added value” by over 70 per cent of the interviewees. Other identified important aspects of MOOC were their free provision (more than 55 per cent), the large number of participants (40 per cent), the quality of the learning materials (31 per cent), their scalability, the abundance of entry requirements, the collaborative element and the flexibility (between 25-28%).

MOOCs are considered by the interviewees to be suitable for large organisations, public organisations, secondary schools, higher education etc., but their perceived needs will vary. For example, MOOCs are suitable for large organisations that have offices in multiple locations. In the instance of small to medium sized organisations, MOOCs could be a way of ensuring up-to-date training as offered to employees in instances where there is limited or no available budget for training, or no HRD/eLearning unit.

Interviewees highlight the potential for collaboration between higher education institutions and business in relation to MOOCs focused on a range of topics including soft skills and technical expertise. More than 64 per cent of the interviewees are interested in collaboration with other institutions in offering/producing MOOCs. The following key reasons for collaborating with HEIs with a view to offering/producing MOOCs were identified from the analysis: Branding, attracting the best future employees, enriching knowledge in specific areas and updating, sharing knowledge on specific areas, marketing, capacity to contribute to MOOC content, improved strategic positioning of the organisation in the market, networking and bringing theoretical and practical knowledge together. However, to enable potential collaboration between business and HEI sector, work would need to be done to address the above-mentioned prior negative experiences of eLearning and the association of free of charge courses as being lower in quality.

Other issues that need to be addressed include digital literacy, Internet connectivity and a lack of experience with online learning. In addition, perceptions of existing MOOCs as not addressing core business competencies, but being focused on “trendy” topics (such as e.g. artificial intelligence). However, the authors of this paper observe a strong shift towards business and management topics offered by MOOCs. For example, Class Central (2017) lists in August 2017 1235 business & management courses, almost twice as much as topics in other categories.

Finally, interviewees highlighted the role of policy (both at a local and national level) to increase engagement with and in the production of MOOCs by a range of organisations and initiatives. To enable collaboration between businesses and HEIs, the role of regional/national legislation and initiatives to promote MOOC use/creation could be useful. Initiatives would contextualise, promote and incentivise collaboration and endorsement from regional and national government would help strengthen and reveal the relevance of MOOC to businesses.
7. Conclusions

Our research shows that a rather low number of the BizMOOC sample is familiar with MOOCs. More than 71 per cent of the organisations interviewed are already involved in online professional development, especially in Western European countries. Yet less than 20 per cent of those interviewed are involved in producing or using MOOCs. There is therefore room for improvement, particularly when comparing Eastern and Western Europe.

MOOCs were perceived by interviewees to be complementary to the traditional training/education system. According to McPherson & Bacow (2015), there is an increased interest in blended or hybrid concepts (e.g. the use of both face-to-face and online learning in a course). This could be an advantage for enlarging the awareness of MOOCs underlining their benefits and cost efficiency. Open, free, massive, scalable, without entry requirements, interactive and collaborative method for training/education are the most attractive characteristics perceived. Interviewees stress the need for stronger collaboration between higher education institutions and business in relation to MOOCs to maximise relevance and impact.

From face-to-face courses to open and online offerings, technology can facilitate the sharing and exchanging of experiences. As one indicated in the interview of one large organisation, MOOCs in general are a good way of offering learning opportunities, largely due to the “human factor”. For example, fora offer students from around the world the opportunity to interact and learn together; potentially creating a learning community.

Interviewees highlighted a number of opportunities for the use of MOOCs within a corporate context. In particular, MOOCs were viewed as particularly useful for HRD, customer training or as a marketing and recruitment tool. Some of these tools would need to be created by the organisations themselves whilst others could utilise existing MOOCs. The creation of MOOCs depends on available resources, existing training structures and a willingness to examine the possibility that MOOCs could offer the organisation.

A number of interviewees highlighted that MOOCs currently appear to offer no employability benefits to learners who have never had a career or have a low level of education. However, MOOCs were perceived as potentially widening the network of learners in addition to providing quality and up-to-date information, which could make a difference when looking to apply for a job or advance one’s career. This mixed picture is similar to that reported by Radford et al (2014) regarding employers perception of the increased “motivation and desire for continued learning [of MOOC participants rather] than about [participation in a MOOC] demonstrating specific knowledge.” Moreover there is more to be done to raise awareness of MOOC in key groups of people and increase access. This will require a collaborative, strategic approach involving a range of stakeholders beyond HEIs and businesses.

The low level of awareness of MOOC and misconceptions regarding their “quality” arguably present an opportunity for targeted awareness raising and information being cascaded appropriately. Showing clearly how courses relate to key competencies (for example as the OpenupEd initiative does in relation to the European Qualification Framework) in addition to MOOC platforms providing information on the review processes for their MOOC would be valuable. Highlighting MOOC specifically relevant to particular industries or highlighting platforms where the quality of MOOC can be easily ascertained would similarly be beneficial. Moreover, improving on the low level of HEI and business collaboration reported by Cedefop (2015) by developing stronger links and “collaborative efforts” would help to both build trust, increase positive perceptions of content and also mitigate reported perceptions of lack of “graduate employability.” Indeed, as MOOC increasingly become embedded strategically in HEIs and given reported employer interest in MOOC, increased collaboration seems likely in future.
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The Motivational Effects of Small Grading Shocks

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Abstract
Grading can become a convenient policy tool for motivating university students, if we clarify its motivational impact on students. This paper suggests one approach at identification of grading effects—using rounding shocks to grade point average (GPA). I study the effects of getting marginally higher initial grades on students’ further academic outcomes. I introduce a university data set and use exogenous variation in student first study period GPA stemming from a rounding shock to identify grading effects on subsequent course choice and grades obtained, as well as on dropout decision and thesis grade. The results show that the students are generally not sensitive to the marginal grading shocks, except for a sub-sample of international males whose subsequent learning outcomes show some decline after they experience a positive (compared to negative) shock to grading.

Keywords: academic grading, gender differences, higher education, Masters students, student motivation, university data set.

1. Introduction
University grades are complex tools that have been used to serve multiple goals. As grades can be convenient policy instruments (both potentially powerful and easy to alter), we are particularly interested in studying their role in motivating student effort. For an economist studying student behavior, the essence of grading can be seen in its role as a fuzzy performance measure that distorts students’ genuine incentives to study; and we are after learning this motivational effect of grades if we target at designing optimal grading policies as practitioners.

The aim of this paper is to try to identify grading effects using observational data, namely university transcripts. To approach this goal, I collect university transcripts data and use rounding shocks to first period GPAs as a source of exogenous variation to identify grading effects on students’ further learning outcomes. The main finding from this study is that the rounding shocks indeed have some potential of being used to identify marginal grading effects. However, a threat to identification can come from potential confounding with much bigger (unobservable) shocks to students’ course grades; furthermore, the magnitude of the rounding shocks needs to be big enough and/or the sample size should be sufficiently large in order for the marginal grading effects to be detectable. Still, even exploiting the tiny rounding shocks (on the order of 0.01 SD) in our data, we manage to find some robust effects for a sub-population of Masters students: international males with first period GPAs in the “Merit” range (3.33-3.66)—probably a competitive group of students—show some deterioration of their further learning outcomes having initially experienced a positive (compared to a negative) GPA rounding shock.

The paper is motivated by the demands of higher education practice and inconclusiveness of the research findings in the literature. Grading practices in universities are in disarray (Knight, 2002). Grading methods and systems (absolute, relative, blended) vary a lot in different countries, institutions, levels of education,
departments and courses, and there doesn’t seem to emerge any unified or optimized approach in the field. Grading impact is seldom rigorously tested in the field (at least, due to ethical issues), and lab experiments provide only some scant indirect evidence. Grades are usually applied “as they are”, without a scientific justification. It is largely unknown what this means for student motivation and how this affects student effort.

Economists, psychologists and educational researchers have studied grading effects from various perspectives, each contributing a piece of the whole, yet largely undiscovered, puzzle. While it has been found that graders are naturally biased in their grading practices (e.g., in favor of their own social group), little is known about what these grading shocks mean for the students ex post. In short, the variety of grading systems and practices, adopted ad hoc (Wilbrink, 1997; Grant and Green, 2013), without experimental testing, and the lack of clarity in grading effects suggest that current grading practices, due to their arbitrariness, might induce neither socially, nor privately optimal student effort, and there is room for further research and possible evidence-based or forward-looking policy improvements.

Although the inevitable arbitrariness in grading poses a problem for practitioners, it also opens an opportunity for researchers seeking external variation to identify grading effects. Econometric methodology has already successfully been applied to help education researchers identify various policy effects (Angrist, 2004). And it has also been expanded to the studies of grading effects. Adding to the stream of literature, we use regression methods to estimate how small (random) changes in initial GPAs can affect students’ further academic achievement.

The paper proceeds as follows: In section 2, we briefly overview the literature on empirical estimation of grading effects on university students’ motivation and effort. In section 3, a university data set is introduced and we discuss potential channels through which grades can affect students’ behavior, stressing the role of initial exposure to grading. In section 4, we discuss the empirical strategy and present the results. In the last section, we discuss the findings.

2. Literature review

Empirical research on grading effects in higher education approaches the topic from different angles. Several studies (Wilbrink, 1997; Hayek et al., 2014; Hossain and Tsigaris, 2015) examine the nature of grading and whether introduction of grading has any effect on student learning. There is also an ongoing debate on whether discriminating (letter-) grades motivate students better than the pass/fail grades do (e.g., Wittich, 1972; Harris, 2010; White and Fantone, 2010). Absolute and relative grading systems are also expected to motivate students differently, however a lot seems to depend on the context (cf., Bigoni et al., 2015; Paredes, 2012; Smith and Smith, 2009; Czibor et al., 2006; Cherry and Ellis, 2005; Covington and Omelich, 1984). There is supporting evidence in favor of a particular grading method—contract grading, where students can form their own grade composition (Pacharn et al., 2013; Dobrow et al., 2011; Parker, 1985; Polczynski and Shirland, 1977). A few recent field experiments also tested the motivational potential of framing grades as losses vs. gains, although yet without a clear consensus (McEvoy, 2016; Apostolova-Mihaylova et al., 2015; Bies-Hernandez, 2012; Docan, 2006). There are also studies evaluating policies designed to help students achieve higher results by tying grades to financial incentives, thus potentially strengthening the extrinsic motivational power of grades (e.g., Angrist et al., 2014 and 2009).

This paper analyzes marginal grading shocks and is most connected to the streams of literature considering marginal grading effects, informational effects of grades, and the impact of grading standards. The empirical results on the marginal motivational effects are inconclusive: On the one hand, Oettinger (2002), analyzing
academic scores of about 1,200 students in the same course taught by the same professor, shows that students strategically utilize the grade discontinuity by putting in effort just enough to hit a grade threshold. On the other hand, Grant and Green (2013), applying non-parametric methods to their data from two universities, argue that there is no evidence that the students who could gain the most from the exam preparation (i.e., were closest to a grade threshold) used that opportunity to get a higher grade. Rask and Tiefenthaler (2008), adding a gender dimension to the discussion, show that women are more sensitive to marginal differences in grades than men are when it comes to the choice of economics major: having faced the same low grade in an introductory class, they are more likely to choose another major instead.

Beyond providing the students with direct incentives, or extrinsic motivation, grades can also be used by the students to infer unknown knowledge about the difficulty of the course or grading strictness (ex ante grades), and about their academic productivity (ex post grades), and these kinds of knowledge can affect their decision-making regarding the course choice and study effort. Bar et al. (2009) exploit a grading policy change at Cornell University that since 1998 mandated provision of median course grades online, which made it possible for students to make predictions of how well they could score in different courses and, thus, choose them strategically. Indeed, the students opted more for leniently graded courses, though the effect on high-ability students was weaker. Stinebrickner and Stinebrickner (2012) analyze the effects of the student’s own grade information instead, and claim that this information can negatively affect the students and that a grade concealment policy could prevent 40% of dropouts in their data. Thus, although it might be helpful for students to learn about how others did in a course, it might also be detrimental for freshmen to learn about how low they scored initially themselves.

If ex ante or ex post grade information has an impact on student behavior, what happens if professors shift grades uniformly: either upwards or downwards? Two lab experiments with psychology students (Abrami et al., 1980; Nimeer and Stone, 1991) revealed no difference between strict and lenient grading. Analyzing selective university student records using regression discontinuity design, Main and Ost (2014) also find “no evidence that letter grades influence undergraduate students’ course-taking behavior or decision to major in economics”; however they also find that within a course, harder grading standards on the first exam can improve student performance on the second exam. A field experiment with accounting students (Elikai and Schuhmann, 2010) gives additional support in favor of a strict grading scale, even showing more pronounced effects for low-achievers.

In short, this paper contributes to the stream of literature analyzing marginal grading effects, with some connection to the grading standards literature (though the grading shifts we consider here apply to randomly chosen students—not uniformly to all) and to the informational effects of grades (the students in the sample learn about their grades and can also ask their peers’ about theirs). The motivational power of grading in our sample is also strengthened with some financial incentives provided for high-achievers.

3. University data set

3.1 Background

I introduce a data set of academic records and basic demographics of Masters students from an anonymous university located in Europe. The data cover eleven years in the early 2000s. Each year, around 500-600 freshmen, domestic and international, were enrolled in the university Masters programs: either one-year or two-year programs. For each course, in which a student enrols, there is a grade recorded (except for dropped courses). The course record contains the grade point, GPA weight, teacher code, student credit, effective year and study period, and indicators of whether the course is mandatory, or elective, or a language course.
The data also distinguish graduation results: whether and when the student graduated, their thesis grades, credit, and cumulative GPA. GPAs—both preliminary and final—are reported in the university information system rounded to two digits after the decimal point. The student’s academic rank is also reported and repeatedly recalculated. Students have full electronic access (only) to their own records throughout the length of their study program.

The university adopts the American grading scale. Positive grade points are 4 (the highest), 3.67, 3.33, 3, 2.67, 2.33, 2, 1.67, and 1 (the lowest); 0 means a fail (the corresponding awarded letter grades are A, A-, B+, B, B-, C+, C, C-, D, and F). Grades of 1.33, 0.67 and 0.33 are not applicable. A fail can be retaken (normally only once), and in case of success normally replaced with a grade of 2.33.

At graduation, students receive a diploma of the quality that depends on their final (rounded) GPA:

- a GPA of 3.67 or above results in a diploma with Distinction;
- a GPA of 3.33-3.66 results in a diploma with Merit;
- in some programs, a GPA of 3.00-3.32 leads to a diploma with Pass; in other programs—with a Satisfactory quality statement;
- in some programs, a GPA of 2.66-2.99 leads to a diploma with Pass, in others—results in no degree at all;
- students with a GPA below 2.66 normally receive no degree.

Also, a GPA below 2.66 in the first year of a two-year study program can result in the student enrolment termination.

### 3.2 Potential grading forces and channels

#### General impact of grading

The university grading system triggers the following forces that can influence student study behavior:

- a grade (imperfectly) measures the student’s learning in the course, and the amount of learning is believed to be positively dependent on the student’s academic background, ability and effort, the latter being controlled by the student within their study program; thus, the student can enhance their chances of getting higher grades by investing more effort in their studies;
- the higher the final GPA, the broader (ceteris paribus) are the labor market and postgraduate educational opportunities, making higher grades more desirable for some or the majority of students;
- the higher the current GPA, the better (ceteris paribus) are the opportunities for winning internally and externally funded scholarships, prizes and grants;
- the termination cut-offs (2.66 or 3.00) provide extrinsic motivation if the students want to graduate (or continue in the second year, for 2-year programs);
- the merit (3.33) and distinction (3.67) cut-offs provide incentives to study for students who care about appreciation of their achievement and/or want to use the reward as a signal of their ability and diligence—on the labor market or for post-graduate admissions;
- extrinsic motivation provided by grades can potentially crowd-out intrinsic motivation; students can begin to study superficially, just for the sake of higher grades;
• the perceived strictness of grading signals the “prices” (in terms of effort) of particular grades, that the students can take into account when choosing their optimal combinations of study and leisure time;
• the adopted absolute or relative grading systems (at some departments or in some courses) provide incentives to cooperate or compete with (and even sabotage) one’s peers, respectively;
• other potential peer effects (e.g., students might not want to fall behind their classmates or friends).

As can already be seen from this non-exhaustive list, grade incentives might be ambiguous: on the one hand, higher study effort almost always translates into higher probability of getting a higher grade (and thus, is “reinforced”), on the other hand, grades can significantly distort students’ pre-existing incentives to study, such as natural curiosity (crowding-out of intrinsic motivation) or labor market demands, making studies psychologically costlier or even creating incentives to sabotage peers’ learning (under the relative grading system).

**Special role of initial exposure to grading**

We expect that the first exposure to the university grading practices can have the greatest impact on the student study effort. For example, consider potential causal relationships between efforts and grades within a study program that consists of three periods. When choosing efforts in the second and third periods, the student takes into account the grades they have already received by the time of decision making. Thus, the second period effort can be influenced by grades received solely in the first period. However the effort in the third study period can already be influenced by grades received both in the first and second study periods. Note that there are also additional indirect impacts of period 1 grades on the third period effort: through the impact of period 2 effort (we expect efforts in different periods to be strongly positively correlated, e.g., through the status-quo effect) which was itself affected by initial grading, and through the impact of period 2 grades that depend on period 2 effort, which, in turn, again itself depends on initial grades. Thus, the first period grades have disproportionately more channels of influence (direct impact on the second and third period effort plus additional indirect effects on third period effort), compared to the second period grades (that have only one direct impact on period 3 effort), and the third period grades (that cannot have any impact on student effort within the study periods).

To clarify the impact of initial grades, we provide the following summary of psychological forces that potentially can have a significant impact on the student’s further choice of study effort:

• low initial grades can discourage some students and make them give up on studies (cf. learned helplessness, perceived controllability, attribution style, need for appreciation);
• undeserved high grades (“free lunches”) can destroy incentives to study;
• in the imperfect information environment (the university), grades—one’s own and those of the peers—can serve as reference points, trigger loss aversion and thus add to the motivation to study;
• students can use first period grades to identify themselves as “high/middle/low achievers” (cf. “nerds”, ”jerks” and “burnouts” in Akerlof and Kranton, 2002), sticking to their identities and acting respectively;
• the higher the initial GPA, the easier it is to achieve a desired cut-off (be it 3.67, 3.33, 3.00 or 2.66) in the end and the less probable it is to fall below one; after some point the student can perceive a cut-off as “achievable” and go for it, instead of “eating up” their first period grading surplus and sliding down close to an inferior level (e.g., having an initial GPA of 3.60, the student can either put...
in more effort and target an overall GPA of 3.67+ winning a diploma with Distinction, or they can relax and decrease their effort, putting in just enough to stay at 3.33+ and get a diploma with Merit); thus, this effect is ambiguous: boosting motivation by making a target more achievable (especially if the cut-off is very close), and depressing motivation by making a loss less anticipated.

Finally, we suggest that the impact of first period grading practices on further student motivation and achievement can be analyzed as acting through the following channels:

- observable:
  - ranking (students with higher GPA rank can have better opportunities within and outside the program);
  - feasibility of cut-offs (e.g., the average grade with a given number of credits they need to score, or the number of credits they need to earn with an A grade to hit the desired cut-off);
- unobservable:
  - reference points (students can stick to either their initial GPA or GPA of their peers or some other target, e.g. a cut-off);
  - identity (first period GPA can induce the student identity, depending on the classification it falls in, e.g. Distinction or Merit);
  - perceived controllability of the study process (if grades are unexpectedly very low, the student can lose faith that they can correct the situation in the second period);
  - students’ perceived appreciation of their efforts (vs. ability or background) by the teachers (especially if grades are the only feedback the students receive);
  - perceived strictness of grading (especially if students exhibit external attribution of their grade results);
  - perceived ability (especially if students exhibit internal attribution of their grade results).

4. Estimation of grading effects

4.1 Sample selection
The university records cover 5,943 Masters students spread across eleven academic years, but we cannot use them all. For a small fraction of classes, students were not uniquely identified due to differences in departmental semesters encoding (we exclude them from our data). We also exclude 191 students who took courses in overlapping study periods (from different departments), so that we cannot tell their first and second study period. We don’t use data on seven students with manually corrected student credit. We also drop four students who took courses that counted towards a couple of their degrees. We lose students with unknown GPA in the first period (e.g., some students enrolled, but never came, or dropped out very early, without sitting a single exam). Finally, we restrict the sample to regular (non-visiting) students, who have got clearly identified first and second study periods, such as modules or terms. The sample size reduces to 4,241 students (or 71.4% of the population).

4.2 Empirical strategy
We study the impact of initial grading shocks on further learning outcomes. We look for ways to control for period 1 learning outcomes, so that we could compare groups of students with similar academic achievement but (slightly) different initial grades. As we have no data on inputs (ability, effort), we have to proxy them with outputs (quantity of learning in terms of the number of courses and course credits, and quality in terms of grades).
We exploit tiny rounding effects, comparing students with favorably vs. unfavourably rounded period 1 GPAs. Thus, we analyze very small treatment “doses” and exploit the rule of rounding GPA to two digits as an external shock to grading. GPAs are reported as rounded to two decimal digits, thus students either receive a grading bonus (e.g. a GPA of 3.475 is rounded to 3.48) or a grading loss (e.g. a GPA of 3.474 is rounded to 3.47) or neither of them (e.g. a GPA of 3.47 is reported unchanged). 21.3% of the students received period 1 GPAs unaffected by rounding. 44.2% received a rounding bonus (ranging from 0.0003 to 0.0050, with an average of 0.0031), and 34.5% a rounding loss (ranging from -0.0004 to -0.0048, with an average of -0.0027). On average, GPA is altered by 0.0004 points upwards.

Rounding is not so random as it looks at first sight. Rounding applicability mostly increases with the number of GPA-affecting courses taken. The more such courses the student takes, the more likely their GPA will be rough, and, thus, the more likely it will be rounded unfavorably. Although students with favorably vs. unfavourably rounded period 1 GPAs don’t differ significantly in their background observables, they do differ in the number of degree courses taken in period 1: those with unfavorably rounded GPAs took slightly more courses (on average, 0.153 courses more). Four departments and two cohorts are also disproportionately present in the favorable and unfavorable rounding subsamples. Some of them remain significantly correlated with the favorable rounding dummy even after controlling for the exact numbers of GPA-affecting courses taken in period 1.

As long as conditional on the fact that the GPA was rounded upwards or downwards, and controlling for the number of GPA-affecting courses taken and department and year fixed effects, favorable and unfavourable rounding treatment seems to be “as good as randomly assigned”, we can estimate the impact of marginally overstated or understated period 1 grades on further learning outcomes. We have to keep in mind though, that the rounding treatments have extremely small “doses”, so we don’t expect to find anything significant unless grading effects are really strong for bigger grading shocks.

4.3 Effects of initial grades on further learning outcomes

In the second and further study periods, the students self-select either to continue in their programs, or to drop out. Ignoring this selective attrition could bias our further results, so first we consider dropouts and then produce the results for those students who continue.

Analysis of dropouts

63 students got their grades in the first period, and dropped out without going further; we call them “early dropouts”. This is 1.5% of the sample, or a quarter of all the sample dropouts (others quit having attempted at least one more for-grade course). 48 of the early dropouts quit with a GPA below 2.66; this might happen due to poor ability, background, or circumstances, but could also result from a harsh grading discouragement. 15 students with a GPA of 2.66 or above, however, had no explicit grade-related reason to quit: they were passing the threshold. They might have quit, e.g., due to worsened circumstances or due to an unknown grading effect. In the latter case, they might, having received their initial grades, either consider their grades to be too low to continue, or, in case of unexpectedly high grades, consider themselves to be too good to stay, and thus move to a better place.

To investigate whether rounding has any effect on dropout decision making, consider Table 1, showing how often different types of students were affected by rounding. Immediately, we can see that dropouts were 1.5 times—and early dropouts 2 times—more likely to get an unrounded initial GPA value. And with rounded GPAs, dropouts were much more likely (than the average student) to have it rounded favorably. That doesn’t
mean, however, that rounding, and especially unfavorable rounding, reduces dropout. Indeed, the link between rounding and dropout isn’t causal, as the last column of Table 1 already suggests: that spurious relationship appears due to the fact that students who drop out, especially early on, tend to take fewer courses in period 1; consequently, their GPA is less likely to be “rough” and, thus, unfavorably rounded. Supporting this point, regressions of early and general dropout dummies on the favorable rounding dummy for the population of students with rounded GPAs (controlling for the exact GPA1, the exact numbers of GPA-affecting period 1 courses taken, and department and start year fixed effects) show no significant effect of rounding.

Table 1: Rounding incidence in student populations.

<table>
<thead>
<tr>
<th>Population</th>
<th>% with unrounded GPA1</th>
<th>% with GPA1 rounded favorably</th>
<th>% with GPA1 rounded unfavorably</th>
<th>% favorably rounded/ % unfavorably rounded</th>
<th>Mean number of GPA1-affecting courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole sample (N=4,241)</td>
<td>21.3</td>
<td>44.2</td>
<td>34.5</td>
<td>1.28</td>
<td>4.92</td>
</tr>
<tr>
<td>Dropouts (N=237)</td>
<td>30.3</td>
<td>41.8</td>
<td>27.8</td>
<td>1.50</td>
<td>4.57</td>
</tr>
<tr>
<td>Early dropouts (N=63)</td>
<td>42.9</td>
<td>36.5</td>
<td>20.6</td>
<td>1.77</td>
<td>3.76</td>
</tr>
</tbody>
</table>

Digging a bit deeper, we can think of the relationship between initial grading and dropout as being part of a more complex system determining dropout decision. If we want to study causal impact of initial grades on dropout, we need to exploit external shocks to the reported GPA1. The latter can come from two sources: unobservable shocks to individual grades (e.g. harsh grading), and observable rounding shocks. To exploit rounding shocks, we need to control for the probability of rounding itself (i.e., probability of getting a “rough” GPA) and the probability of unfavorable rounding (which increases with the number of courses taken, as the GPA tends to become “rougher”), to have the shocks “as good as randomly assigned”. In reality, we cannot define this pair of probabilities easily. We can only note that for students with the same ability, effort and course choice it should be the same, because for them the expected grades are the same. Not having the opportunity to control for ability and effort, we can instead control for the exact initial GPA value (which reflects both ability and effort). And getting rid of students with “round” GPA values, we assume that controlling for exact GPA1 and the course choice should be enough to make rounding “as good as randomly assigned”. Now, carefully controlling for the course choice would require us to control for every actually used combination of course GPA-weights in two-courses choices, as well as in three-, four-, five-, etc., which doesn’t seem doable. That is why, as a first approximation, we control for the exact number of GPA-affecting courses taken in period 1 (thus, introducing a dummy for each number), the exact period 1 GPA, and department and start year fixed effects.

Though we have just provided some evidence that the tiny grading rounding shock did not have a significant impact on the early dropout decision making, larger grading shocks that originate from, e.g., harsh grading, might have significant differential impacts on student dropout decisions: the students who “survived” the first period might not be comparable to those who didn’t; as the “survivors” were probably more resistant to negative grading effects. As we don’t have the counterfactuals for those who dropped out (i.e., what their grades would have been had they chosen to stay), we can’t estimate grading effects for that part of the population, and, expecting grading effects to be stronger for that potentially vulnerable group, we suggest that the results for the continuing students could underestimate grading effects for the entire population.
Furthermore, the students that dropped out later are still present in our sample, and the grading effect on students’ course choices and grades is estimated including those “interrupted” transcripts. Thus we “silently” assume that the general effect we estimate is the same as the effect on those unrealized learning histories, which of course can be an unrealistic assumption. An alternative would be to control in the regressions for dropout and its interaction with the grading shock (i.e., with the rounding dummy). Even though the dropout dummy is technically a “bad control” here, it’s not significantly affected by the rounding shock, as we saw above, which allows us to separate the effects on dropouts from the effect on others (though the effect on these non-early dropouts cannot be adequately estimated, precisely because some of their counterfactual grades are not observed).

The effect on timely graduation, however, can be estimated straightforwardly: dropouts didn’t graduate, so this tautologically implies that they didn’t graduate on time, and we don’t need to lose them from the sample. Impact on thesis grade is, though, again a bit dropout-affected. Note first that a thesis isn’t required in every program, so we estimate grading effect here only on the respective subsample (thus, losing some observations). Assessing quality of a thesis, we introduce dummy variables for whether a thesis was submitted on time and scored a 4.00+, 3.67+, ..., 2.33+. The first indicator (thesis score 4.00+) equals one if the thesis was submitted and scored an A or an A+. The last dummy (thesis score 2.33+) indicates that the thesis was neither unsubmitted nor failed. All the dropouts get zeros on all these indicators, as they all fail to submit a thesis.

**Grading effects on continuing students**

Having made the necessary precautions, we proceed by estimating grading effects on further learning outcomes. Students that continue to study have to, first, choose their courses (observable), and second, choose their efforts (unobservable). Both decisions can potentially be affected by the grading effect, and then themselves, in turn, affect future grades (observable). Thus, to exploit these two primary channels for grading effects, we consider the course choices, the grades received, and the graduation results as dependent variables.

**Impact on course choice**

Grading can affect students’ effort by altering their choice of courses: how many courses they take, for how many credits, how demanding the chosen courses are. For example, with the same amount of course credits, students can choose to spread them among more courses, or with the same number of courses they can choose courses with higher credit workload, or courses that are harder. In reality, all these basic possibilities act in an interplay: e.g., one student can earn four credits by taking a “hard” 4 credit course, and another student by taking a “hard” 2 credit course and two “easy” 1 credit courses; and if the GPAs of the two students are equal, how can we tell who exerted more effort?

First, we estimate the effect of a more favorable rounding on the number of second period mandatory, elective, and non-GPA-affecting courses taken. In the pooled sample, we find a 1%-significant negative effect on the number of electives taken, suggesting that, when faced with a favorable rounding instead of an unfavorable one, students take on average 0.12 electives less in the next period. Interestingly, this loss is compensated with an equivalent increase in the numbers of mandatory (+0.05) and non-GPA (+0.07) courses, though none of the two coefficients is significant even at the 10%-level. The effect on electives isn’t very robust though. Although surviving the addition of dropout and program length controls, it shrinks to the insignificant -0.07 when we also add indicators for each number of GPA-affecting courses taken in period 1.
The effect is also heterogeneous across subsamples and significantly applies only to internationals, males, “distinction” and “merit” students; it is noticeable, that in those subsamples the reductions in the numbers of electives are also consistently accompanied by equivalent increases in the numbers of mandatory and/or non-GPA affecting courses, i.e., the students affected by the grading shocks seem not to increase their second period workload (in terms of the number of courses), but instead to strategically redistribute it between different types of courses. The effect is primarily driven by the effect on international “distinction” males (-0.26; 10%-significant). And again, almost the same size opposite effect (+0.30; 10%-significant) is observed on the number of non-GPA-affecting courses for those students. These two 10%-significant effects shrink to the insignificant -0.18 and +0.23, respectively, under the additional controls. Another subgroup strongly affected is a group of international “failing” males, though the results there are probably too suspicious and might be a chance finding.

Table 2 gives estimation results for further grading effects. To assess the impact of the initial grading on course choice after period 1, we first regress the numbers of all GPA-affecting and all non-GPA-affecting courses taken after period 1 on the favorable rounding dummy (controlling for the exact GPA1 value, the number of GPA-affecting period 1 courses taken, and the department and start year fixed effects). We find no effect on the number of GPA-affecting courses, and a subtle 10%-significant positive grading effect (+0.20) on the number of non-GPA courses, driven primarily by the effect on “Distinction” students (+0.53). Robustness checks with all the additional above-mentioned controls show only partial stability of these results: the coefficient in the pooled sample falls to +0.18 and becomes insignificant, and the coefficient for the “Distinction” students falls to +0.39 (5%-significant).

To see if a change in the number of courses taken comes with an accompanying change in the amount of credits earned, the grading effect on the latter also needs to be estimated. Though, with the current data set it is challenging to do, as some courses (especially the Pass/Fail courses) have missing credit hours. We’ve got to keep in mind that this needs to be done in a future research, as without estimating the impact on course workload we cannot consider our analysis complete.

Another possible channel of grading effect is through affecting the choice of electives in terms of their difficulty. The course difficulty isn’t easy to measure with our data though, so we leave it for a future research too, and approach our following results with a high degree of caution.

**Impact on grades**

We find no significant grading effect on the second period grades through the rounding channel (working with micro-subsamples, we have to significantly revise the p-values due to data mining issues). Calculating GPA of all after-period-1 courses and regressing it on the favorable rounding dummy (with all the respective controls) shows no significant grading effect either (see Table 2), even though the interaction with the dropout dummy, which itself is big (-0.70) and 1%-significant. Only when we turn to the micro-subsamples, do we find a single “5%-significant” coefficient (-0.06) for the effect on international “Merit” male students, which is, however, suspicious under the data mining issues, though robust to the introduction of additional controls.
Table 2: OLS estimation results for the average grading effects on further learning outcomes.

<table>
<thead>
<tr>
<th>Periods</th>
<th>GPA-assaying</th>
<th>GPA of the rest</th>
<th>GPA of the rest</th>
<th>4.00+</th>
<th>3.65+</th>
<th>3.55+</th>
<th>3.00+</th>
<th>2.67+</th>
<th>2.35+</th>
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<td>0.2400</td>
<td>0.1778</td>
<td>0.0109</td>
<td>0.0019</td>
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<tr>
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<td>0.0016</td>
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<td>0.0042</td>
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<td>33.39</td>
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<td>0.1778</td>
<td>0.0109</td>
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Notes: non-GPA courses are "for grade" courses (passing courses excluded) that have zero weight in GPA calculations; GPA of the rest is unrounded GPA of all passing courses (respective GPA weights applied) taken after period 1; graduation dummy equals one if the student graduated by the time of data collection, and zero otherwise; dropout dummy equals one if the student’s enrollment was terminated by the time of data collection, and zero otherwise; students who had to submit a thesis as part of their degree requirement could either submit and/or defend it and receive a grade of 4.33, 4.00, 3.67, 3.33, 3.00, 2.67, 2.33 or 0, or could postpone submission or drop out; reference group consists of students with unfavorably rounded period 1 GPA (observations with "exact period 1 GPA values; e.g., 3.47, are dropped to avoid mechanical differences); interpreting the number of GPA-assaying period 1 courses is realized by replacing the first control variable (the number of courses) with 16 dummy indicators, as in period 1 students took from 1 to 16 such courses, and an additional dropout dummy and its interaction with the favorable rounding dummy are introduced there as well (obviously, except in the regression for dropout); in the Robustness check 1, control for the number of GPA-assaying period 1 courses is realized by replacing the first control variable (the number of courses) with 16 dummy indicators, as in period 1 students took from 1 to 16 such courses, and an additional dropout dummy and its interaction with the favorable rounding dummy are introduced there as well (obviously, except in the regression for dropout); in the Robustness check 2, further we additionally control for the length of the program (1 vs. 2 years), and its interaction with the last start year dummy; standard errors robust; * 10% significant, ** 5% significant, *** 1% significant.
Impact on timely graduation

We regress an “on-time graduation” dummy on the favorable rounding dummy, again controlling for the exact GPA1 value, the number of GPA-affecting courses taken in period 1, and department and start year fixed effects. We find a 2 p.p. reduction in graduation rate for those with favorable rounding compared to the unfavourable one. The effect remains 10%-significant if we replace the single control for the number of period 1 courses taken with a dummy indicator for each actual number of courses and control for the length of the program (as well as its interaction with the last start year dummy). The effect, however, disappears if we add a dropout dummy, suggesting that timely graduation, if affected by the rounding shocks, is affected through dropout. This is a puzzle, as we saw above that dropout was unaffected by the rounding shock. Table 2 shows that the effect is also negative for all the 8 subsamples, and applies significantly to males, internationals and failing students. When we turn to the micro-subsamples, we find that the effect looks “1%-significant” for international males (-4 p.p.), driven by a “5%-significant” effect on international “Merit” males (-6 p.p.). When we test these results for robustness, they become insignificant for the former and reduce to -4 p.p. (5%-significant) for the latter, suggesting that there may go something beyond the impact on dropout decision making—students favorably shocked by grading can postpone their graduation also for some other (yet unknown) reason.

Impact on thesis grade

Table 2 also shows rounding effects on the thesis success. Even though being suspicious about the data mining issues here as well, we cannot help noticing systematic negative effects for those with favorable rounding, particularly for “Merit” students, internationals and males. In the micro-data, this finding also gets support with 5 (out of 6) thesis grade dummies being significantly negative for the “Merit” international males (see bottom parts of Table 2).

Obviously, the quality of thesis suffers. Experiencing the favorable rounding (compared to the unfavorable one) in period 1, those students get a 6 p.p. less chance for a timely, successful thesis, and in particular, those who don’t even drop out get a 4 p.p. reduction (so that the effect is not mainly due to increased drop out). Do higher initial grades cause students to procrastinate on further assignments?..

A sub-sample with remarkable grading effects

International “Merit” male students comprise a special sub-sample in the sense that grading seems to have some hard-to-ignore effects on their learning outcomes. There are 461 students in the group, 381 of whom enrolled in programs with a thesis requirement. By definition, the group is very homogeneous in terms of the initial GPA (3.33-3.66), however, it is heterogeneous in terms of age at the start of the program (20-45, median age 25) and nationality (students from 76 nationalities). Even though somewhat questionable due to the data mining issues, there appears some evidence suggesting a negative grading effect on period 2 grades for this group (a reduction of their GPA by 0.05 points, mostly due to the reduction in the share of “A” grades), as well as on all the post-period 1 GPA-affecting grades (reduction of the GPA by 0.06 points), an increase in dropout rate (by 3 p.p.), and—for those who didn’t drop out—a decrease in timely graduation rate (by 4 p.p.), and a deterioration of the probability of thesis success, variously measured (by at least 4 p.p.). The results remain robust to the introduction of additional controls. There is no effect though on the number of courses taken (see Table 2).
5. Conclusions

In this paper, we explore the potential of a small grading shock (namely, rounding of the reported GPA) to identify initial grading effects on students’ further learning outcomes. We divide students with “rough” period 1 GPA values into two groups: those whose GPA was rounded upwards (“favorable rounding”) vs. downwards (“unfavorable rounding”). Controlling for a number of observables, we make sure that the students in those two groups are as comparable as possible, and estimate the effect of having a marginally (1.2% of SD) higher GPA on the student’s further learning outcomes.

Possibly due to power limitations, we obtain mostly insignificant results. It is only in the sub-sample of international male students with initial GPA qualifying them for the diploma with “Merit” (but not with “Distinction”) that we find significant grading effects. In particular, those students experience a 0.1 SD reduction in the subsequent GPA, a 3 p.p. increase in dropout rate, and 4 p.p. decreases in timely graduation and thesis success rates.

The evidence is somewhat contradicting the research reporting women’s higher sensitivity to grades (cf. Rask and Tiefenthaler, 2008; Emerson et al., 2012). One possible explanation for our negative results for the international “Merit” male students is that the lower GPA can also potentially be the result of taking more difficult courses, demanding more, not less, effort (though we don’t have the data to investigate this possibility), thus, a slightly lower GPA later on isn’t necessarily a sign of decrease in motivation and effort. And the late thesis submission might also be seen as taking more time and effort to complete it.

Our analysis raises a few concerns. First, the “doses” of grading treatment (shocks) are tiny, and we run into the problem of a lack of power, suggesting that an (experimental) testing of bigger grading shocks needs to be conducted. Alternatively, a re-analysis can be conducted in another grading system, where rounding makes a bigger difference for students.

A second problem is a potential confounder of our analysis—the unobservable grading strictness (or other, bigger, grading shocks). In order for the analysis to be valid, favorably and unfavorably rounded GPA groups shouldn’t also differ in average grading strictness experienced by the students. As we found some imbalance, for example, in the distribution of rounding shocks among cohorts and departments, we cannot also be sure in the even balance in the distribution of the unobservable grading “strictness” among those with favorably vs. unfavorably rounded GPAs. On the one hand, if students in the “favorable” group also experienced (on average) more generous grading, then the discovered effects actually stem from bigger “doses” of treatment and are, thus, overstated. On the other hand, if the “favorable” group was exposed to (on average) more strict grading, then we have to change not only the scale, but also the signs of the discovered effects, as belonging to the “favorable” group would actually mean the opposite to its name: having understated grades. Only under the condition of equally fair grading in both groups (and within the subgroups) can we consider our findings valid.

A third problem is the potentially selective dropout attrition. Students might be dropping out precisely because of experiencing severe grading strictness. The continuing student population can then be biased towards inclusion of less grade-sensitive students. Hence the insignificant results.

To sum up, our analysis probably raises more concerns than it provides answers. We conclude that the rounding instrument has some identification power, as well as some important drawbacks, and suggest that further studies, especially experimental ones, need to be conducted to clarify the impact of grading shocks, so that the grading policies could be improved based on the scientific evidence.
6. References


The pre-participation experience of distance graduates

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Abstract
This paper explores the relationship between distance education and widening undergraduate university participation. Drawing on both quantitative and qualitative data from a Dublin City University (DCU) study, this paper illuminates the pre-participation characteristics, aspirations and higher education (HE) access experience of a group of online distance graduates. Three key findings emerge: first the homogeneity of the group in terms of social class; second the long-stranding preference of many for part-time study options and third the general paucity of information in the public arena about flexible study.

Participants in this DCU study are those who have graduated with an honours primary degree (level 8) through online distance education. Access to distance education at DCU is open, to the extent that those over twenty-three years of age are not required to meet the minimum entry requirements of the university. All those who graduated between 2012 and 2015 (n=268) are included in this mixed methods study. This paper reports on findings from institutional records, an online survey (n=126) and semi-structured interviews with a purposive sample of 17 graduates. Ethical approval was obtained from DCU’s Research Ethics Committee for this research.

Widening participation is a complex issue and is unlikely to be solved by the current practice in Ireland of funnelling funding almost exclusively into full-time course provision. This bias in the funding model creates an underdevelopment, and lack of awareness, of part-time study options. Policy makers must acknowledge that under-represented groups often want and need flexible study options.

Keywords: distance, graduates, access, participation

1. Introduction
There is vast and indisputable evidence that educational success is unevenly distributed by social class (Ianelli 2011; OECD 2013; Sutton Trust 2010; Thomas and Quinn 2007). There is also substantial evidence to disprove deficit models i.e. that intellectual ability is unevenly distributed by class (Kincheloe 2008; McNamee and Miller 2009). Factors other than economics can prevent, delay or otherwise impact on participation in higher education (HE). Social and cultural factors too have a profound influence (Nesbit 2005).

The aim of this paper is to describe and explore the pre-participation experience of a group of distance graduates, with a view to understanding how university access should be understood for this cohort. This topic is important as we know little about part-time students (Butcher 2015, Feinstein et al. 2007, Woodfield 2011). There is an assumption that part-time flexible HE contributes to widening participation (Butcher 2015), and that the most disadvantaged students are more likely to engage in part-time study (ARC 2013). However, there
is a lack of evidence (Bray et al. 2007; Butcher 2015; Woodfield 2011). Research points to the requirement for more evidence regarding the role distance HE plays in the widening participation agenda (Bray et al. 2007). This research is timely as it is set against the wider modernisation agenda for European universities (Haywood et al. 2016) and a well-publicised desire to increase the successful participation rate of non-traditional learners in Irish universities (HEA 2015). This paper focuses on two specific cohorts of non-traditional learners; adults and working class students, seeking to explore the intersectionality between both groups. The socio-economic classifications employed in this research are those used by the Irish Central Statistics Office (CSO p.75). While there is no widely agreed definition of social class, occupation and education attainment remain the most widely used indicators. In the context of this study ‘working class’ refers to those from lower socio-economic groups.

The paper is also set against the backdrop of an expressed desire to build digital capacity within the Irish HE sector (National Forum 2014). In recent years’ distance education has become synonymous with online/digital delivery. Framed by this more contemporary online/digital experience the study seeks to answer the following questions:

1. Are distance graduates new to, or from socio-economic groups under-represented in, university education?
2. What role does social class play in their university access experience?

2. The existing body of knowledge

The literature on full-time students offers some insights regarding the pre-HE experience of working class students. They are more likely to delay their entry to HE (Furlong 2010; Wells and Lynch 2012). This delay sometimes relates to concerns about participation transmitted through social class habitus; for example, understanding the college application process and funding issues more generally. It is no surprise then that mature full-time students, are more likely than younger students, to hail from a working class background (Chester and Watson 2014; Purcell et al. 2007).

Within the distance education literature gender and age are the most common demographic variables employed to analyse the pre-participation profile of students (Bozkurt et al. 2015). Those who participate in distance education are generally older than full-time students. But age is the reason for their participation, not its cause. This paper is concerned with causes rather than reasons (Brubaker 2012). Although some distance studies address the issue of social class (Bray et al. 2007, Priebe et al. 2008; Stöter et al. 2014), few studies employ social class to open up our understanding of why distance students are older, and how social class has impacted their access experience. In this respect most of the existing research on the diverse characteristics of distance graduates is overly descriptive, limiting progression of the research field.

\[1\] The generic term non-traditional student is applied to students who are normally underrepresented in higher education in relation to their number in the overall population (Field & Morgan Klein 2013)

\[2\] In Ireland a mature student is defined as one who is at least 23 years of age on or before 1st January in the year of admission to college. Participation rates for mature students in Ireland have only become available since 2010.
2.1 Institutional choice
There is much evidence from the US, Scotland, the UK, and Ireland to suggest that participation by non-traditional students in higher education is characterised by attendance at less elite or non-university tertiary institutions (Alon 2009; Ianelli 2011; Smyth and McCoy 2009; Sutton Trust 2010; Woodfield 2011). In Ireland the abolition of university tuition fees for undergraduates in 1996 facilitated middle class families to invest more heavily in second level education (Lynch 2006) and are better placed to perform well in the competition for university places (Denny 2010).

However, it is not always the case that working class students are out-performed in the competition for university, yet they regularly still apply for less elite institutions (Sutton Trust 2010). They often lack the confidence, knowledge and cultural capital to apply for elite institutions (Furlong and Cartmel 2005; Reay, 2001). Limited financial resources contribute to working-class students selecting institutions on the basis of proximity to the parental home, rather than institutional status (Cullinan et al. 2013; Greenbank and Hepworth 2008). This tendency saves accommodation and transport costs and limits borrowing. Finally, students understandably apply for institutions where they will feel most comfortable; where they will meet others like themselves (Furlong and Cartmel 2005; Reay 2001; Redmond, 2006).

2.2 Course choice
Social class has a strong impact on course choice in higher education (Allen et al. 2012; Fleming and Finnegan 2011; Ianelli 2011) with working class students more regularly choosing sub degree courses (Fleming and Finnegan 2011; McCoy et al. 2014). Financial concerns have been shown to result in students applying for institutions where courses will be shorter; almost inevitably less elite institutions, to facilitate earlier entry to the labour market, and consequent financial independence (Furlong & Cartmel 2005). Considerations as to whether they will be able to work while studying are also important. Furlong and Cartmel (2005) found that elite universities were more likely to schedule classes in a manner which makes part-time employment for students more difficult. While honours degrees, in particular high status vocational degrees (for example Engineering and Medicine) are regarded as more valuable in the labour market (Forfas 2013; OECD 2015), they take longer to complete.

Within-course work placements provide graduates with valuable capital but they also extend the timeframe for degree completion. Additionally, work placements can have hidden costs such as travel expenses, clothing expenses and sometimes accommodation costs. These additional expenses can militate against non-traditional students choosing courses which involve work placements (Allen et al. 2012). Disadvantaged groups are therefore often ‘locked out of gaining qualifications that hold out the promise of gaining a well-paid job’ (Smyth and Strathdee 2010, p. 505). Non-traditional students may enter HE with limited course choice due to low academic attainment at second level (often resulting from structural inequalities). Additionally, they may have obtained limited advice re course selection, with parents unable to offer guidance in this regard (Chen and Carroll 2005).

Jacob, Kelin and Ianelli (2015) found that having highly educated parents plays a significant role in how graduates select their field of study. Bukodi and Goldthorpe (2011) illustrate that there is a significant social

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3 The term elite or prestigious institution is used throughout the sociology of education literature to indicate institutions which are ranked highly in national and international league tables. Its use in this paper is in no way intended to equate to better.
class difference in various occupational outcomes. In the final analysis field of study is emerging as one of the most significant predictors of labour market success and consequent improved social mobility.

Those who study in a part-time/flexible manner sometimes face limited course choice and have little opportunity to individualise and accommodate their specific labour market needs or individual strengths or interests, let alone gain an elite vocational degree. In sum, educational expansion has not achieved equity of access to HE. Public policy plays a critical role in this arena. Social selection takes place both in terms of eligibility of entry to HE and differentiation of HE systems selected, relating to what Lucas (2001) calls ‘effectively maintained inequality’.

3. Methodology
The context for this mixed methods study was Dublin City University. Participants are those who have graduated with an honours primary degree, classified as a Level 8 degree and a Bologna first cycle qualification, through distance education. All those who graduated between 2012 and 2015 (n=268) are included. Findings were drawn from institutional records, a web-based survey (n=126) and face-to-face, semi-structured interviews with 17 graduates. Ethical approval was obtained from DCU’s Research Ethics Committee. Since all participants had already graduated, there was no risk that participants might envisage that their participation in this study would affect their programme outcome.

Institutional records are employed to provide the socio-economic characteristics at entry of all 268 distance graduates. The application forms had also asked why students were applying for the course. One hundred and forty-one (53%) future graduates responded to this question.

Survey data was collected between 2013-2015. The survey established the graduate’s socio-economic background (SEB) at entry using metrics employed by the CSO; primarily relating to parental education and employment. Data of this type had not been gathered in the application forms, so it was not possible to compare the SEB of survey respondents to the total distance graduate population. The survey expanded on data from institutional records by asking why graduates had chosen to study by distance education, why they had chosen the university and why they had decided to study for a degree (as opposed to a lesser qualification). All those who graduated between 2012-2015 were invited to complete the online survey (268 graduates). One hundred and twenty-six (126) graduates responded, representing a 47% response rate.

The face-to-face semi-structured interviews took place between April 2015 and January 2016. The interview was an opportunity to explore in more detail the pre-participation educative experience of the graduate and the path that led them to the university. Interviews were recorded and transcribed to facilitate in-depth analysis. It was decided to extend the pool of interviewees beyond recent graduates in order to access those who had spent a longer time in the labour market. While every effort was made to replicate as closely as possible, the overall graduate population when selecting candidates for interview, some anomalies did arise. Graduates resident in Ireland and Dublin are over-represented as they proved easier to recruit. Those who attained a first-class honours degree also proved more willing to be interviewed. A comparison of the characteristics of the total graduate population and the interviewees is outlined in table 1.

Interview questions included:

- Could you tell me a bit about your educational background? Start with your experience of secondary school.
- Tell me a little about the education/occupation of your parents/family members/friends
- What options did you consider at that stage? / What choices were open to you?
Table 1. Profile of interviewees compared to general profile of graduate population

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Graduate population</th>
<th>Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent*</td>
<td>Frequency (268)</td>
</tr>
<tr>
<td><strong>Degree type</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BA</td>
<td>74</td>
<td>198</td>
</tr>
<tr>
<td>BSc</td>
<td>26</td>
<td>70</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>57</td>
<td>140</td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>128</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-29</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>30-39</td>
<td>37</td>
<td>100</td>
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<td>40-49</td>
<td>35</td>
<td>93</td>
</tr>
<tr>
<td>50-59</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>60-69</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>70-79</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Nationality</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irish</td>
<td>92</td>
<td>247</td>
</tr>
<tr>
<td>Other EU/EEA</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Non EU/EEA</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td><strong>Country of domicile</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>95</td>
<td>253</td>
</tr>
<tr>
<td>Other EU/EEA</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Non EU/EEA</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Met Uni. entry requirements</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>35</td>
<td>93</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>69</td>
</tr>
<tr>
<td>Missing</td>
<td>39</td>
<td>106</td>
</tr>
<tr>
<td><strong>Entry qualification level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower secondary</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Upper secondary</td>
<td>30</td>
<td>79</td>
</tr>
<tr>
<td>Level 6 (higher certificate)</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Level 6 (part-time)</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>Level 7 (diploma/ordinary degree)</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>Level 7 (part-time)</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Level 8 (honours degree)</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Level 8 (part-time)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Level 9 (Masters’ degree) or higher</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Level 9 or higher (part-time)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Missing</td>
<td>19</td>
<td>51</td>
</tr>
<tr>
<td><strong>Accreditation for Prior Learning</strong></td>
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<td></td>
</tr>
<tr>
<td>APL</td>
<td>25</td>
<td>67</td>
</tr>
<tr>
<td>No APL/no prior learning</td>
<td>75</td>
<td>201</td>
</tr>
<tr>
<td><strong>Classification of award</strong></td>
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<td></td>
</tr>
<tr>
<td>H1</td>
<td>28</td>
<td>76</td>
</tr>
<tr>
<td>H2.1</td>
<td>54</td>
<td>143</td>
</tr>
<tr>
<td>H2.2</td>
<td>17</td>
<td>45</td>
</tr>
<tr>
<td>H3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>268</td>
</tr>
</tbody>
</table>
While quantitative data was analysed descriptively using SPSS, qualitative data was analysed thematically (Brawn & Clarke 2006). This involved initial transcription of all interviews and close reading of all responses. The next stage of the process was organised in two phases. The first phase involved the analysis of individual accounts. The second phase was concerned with more general descriptions of themes across all accounts. Themes that emerged included:

- Social class habitus
  - Protracted transitoning
- Field
  - Choice of distance education relating to time e.g. work and family commitments, geographic location
- Information
  - The paucity of information available on flexible study options

When reporting qualitative data, in order to preserve the anonymity of participants their age is categorized as follows: 18-39 = Young (Y), 40-59 = Middle aged (M), and 60+ = Old (O). Interview data is identifiable by the use of pseudonyms.

The qualitative data in this study is self-reported by the graduates. Additionally, the approach is interpretative and is characterised by this feature. Nevertheless how graduates interpret their experiences is revealing and some interesting findings emerge.

4. Findings and discussion

4.1 The class ceiling

Based on their socio-economic background, the graduates in this study are characteristically working class. Sixty-four per cent (n=81) of survey respondents came from a background where their father had either belonged to a lower socio economic group, was retired, deceased or otherwise missing from their lives at the time they, the graduate, completed compulsory education. Fifty per cent (50% N=62) of graduates’ parents (both father and mother) highest educational qualification is low secondary level or below (Delaney & Farren 2016).

The majority of interviewees (88% n=15) came from a working class background. They demonstrate a working class background as being fundamental to their reasons for non-progression to university. Albeit triangulated by retrospective recall, social class determined whether, when and how they progress to HE.

Eight interviewees had completed some form of HE before undertaking their distance degree at DCU (Table 1). Five had completed this prior learning on a part-time basis. One had completed a part-time level 8 honours degree, the remaining seven completed sub-degree qualifications. They regularly chose courses which were short and delivered at local institutions. Where possible, they chose courses which they were paid to complete, most regularly technology related courses, linked to the labour market (even if they felt entirely unsuitable for them):

\[ I \text{ put down IT in the (local) college... it would have been close, I would have got the bus up and down, and no accommodation costs. Carlow (both place and college name) was the only place I had access to. I didn't really look at anything outside Carlow...if Carlow did everything, I would have done History (BA James Y)} \]
The largest group of interviewees (nine) had not completed any form of prior HE. Some had considered university, as they met the entry requirements, but ultimately decided against it, for reasons relating to social class:

I realised my family couldn’t afford for me to go... It just wasn’t feasible...they had no money, ok? They kept saying we’ll manage; we’ll find a way. But can you imagine the pressure on me, like if I fail and they’re after borrowing...I just didn’t want that. I just knew myself that wouldn’t work. Right. So I didn’t do it. (BA Dominic M).

I wasn’t able to do it (full-time HE) because I would have had to support myself the whole way through...
I was really the one who was into the education and they (parents) would have pushed more for me to go to work (BA Bernadette Y).

Five of this latter group acknowledge they were not interested in progressing to HE on completion of secondary education. They wanted to work, wanted to have money in their pockets, something their parents were not in a position to provide them with. Una went to work as a cleaner. She recalls how the women she worked with pushed her to go back to education:

I thought it was great ...I was getting loads of money but weirdly enough the women that I worked with in there they were nearly all from the Towers in Ballymun (working class area of Dublin) and they pushed me every day...they said ‘this is not going to be your life’... and they pushed me to go back...
(Una Y)

Four interviewees tried full-time university but it had not worked out. Three of this group hail from working class backgrounds and entered university to transform their status. Each one of them dropped out during the first year. Julie was fed up with being short of money. Peter was interested in the Arts but ended up studying engineering in order to get a funded place. He hated the course and left primarily for that reason. Mary lacked family support and so when she was offered a well-paid job in the civil service, decided to take it:

...my mother really thought I was mad to turn it (i.e the job) down... and I thought you know this (continuing with university) is too hard and you know when you’re getting very little encouragement at home? And I thought ah no, I’ll do the other thing (job) and I can always go back. But of course once you start earning money it’s very hard to give it up (BA Mary M).

Emer, who hails from a middle class background, entered university to reproduce her status. Emer had gone straight to university when she finished school. Coming from a family of teachers she had always intended going to university. Originating from a small town in rural Ireland Emer explains what happened as follows:

I always intended to go, always wanted to go. But just when I got there, literally the only way I can describe it is, I just got swallowed up. I wasn’t I suppose ready for it, wasn’t prepared for it... I made mistakes, I didn’t stay on campus, I lived with my brother in the city and you know I made mistakes in not getting involved and I just never settled in...so I left after first year. But there was always the intention to go back; it was always unfinished for me.  (BA Emer Y)

Emer and Leo (also from a middle-class background) are anomalies in this study as they started out with a clear advantage over the other interviewees to the extent that their families were familiar with the conventions of HE. However, for one reason or another full-time study did not work out for them. They are important anomalies and highlight the value of flexible university options for everyone.
The aforementioned literature outlines how adults tend to delay their participation in HE for reasons related to social class (Chesters & Watson 2014; Croxford and Raffe 2014). However, a key finding from this study is that while some adults had delayed their participation (34% n=92) a larger group (47% n=176) had been participating intermittently since they left school, often on a part-time basis, and were steadily building towards the attainment of an honours bachelor degree. The majority (68% n=72) completed this previous qualification on a part-time basis (Table 1). Rather than their participation being delayed, it had been protracted for a complex range of reasons and entangled factors, relating to social class.

Protracted participation can lead to participants losing out on economic capital, as those with level 8 qualifications or higher, are known to perform better in the labour market. It can also cause them to lose out on academic capital, if their prior qualification is deemed unsuitable for accreditation on entry to university. Only 25% of graduates received recognition for their prior learning (RPL) (Table 1). Sometimes students do not apply for RPL. Other times the pre-existing qualification is not appropriate to the new course of study or is too old and is deemed by the university to have lost currency. Protracted participation also means students come to distance education when they are older and when work and family commitments are at their peak. This can impact persistence. Protracted participation can therefore have serious individual consequences.

**4.2 The only way**

In the survey, graduates were asked to rate the importance of a number of reasons in their decision to study by distance education. Figure 1 shows the percentage of graduates who considered the given reason very relevant or relevant to them.

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanted/needed to be available for work (N=122)</td>
<td>71%</td>
</tr>
<tr>
<td>Wanted to be in charge of my own time management (N=121)</td>
<td>69%</td>
</tr>
<tr>
<td>Had domestic/caring responsibilities (N=122)</td>
<td>51%</td>
</tr>
<tr>
<td>Lived a long way from a third level college (N=121)</td>
<td>17%</td>
</tr>
<tr>
<td>Lived outside Ireland (N=118)</td>
<td>6%</td>
</tr>
<tr>
<td>Had a condition which made attendance difficult (N=120)</td>
<td>4%</td>
</tr>
</tbody>
</table>

![Figure 1. Reasons for studying by distance education.](image_url)

The requirement to work or be available for work was the primary reason 71% of survey respondents chose to study by distance education. Graduates are at a time in their lives when they have financial commitments; 61% of respondents had others who were financially dependent on them. More men (75%) than women (49%) had financial dependents.
Graduates are often also building their careers. It is therefore the opportunity cost of full-time study rather than the financial cost per se which rules out studying full-time. One graduate’s comment sums up the views of many:

*It (i.e. distance education) was the only way I could get a third level education and still continue to support my family, giving up work to study would never have been an option for me.* (BA Female M)

Some reasons were proffered as to why distance study was preferred over conventional part-time study. Sometimes reasons related to distance from a third level institution.

*It was really my only option due to family commitments, distance from college and financial obligations.* (BA Female M)

*I looked at doing a degree in (Dublin college) which required attendance at college up to 3 nights per week. This was impractical, especially since I live in Dundalk.* (BSc Male Y)

Some graduates had tried evening studies but found that, together with the demands of employment, this mode of delivery simply did not work for them. Others found part-time study inflexible. Flexibility relating to attendance requirements was important to 69% of graduates:

*I knew that I would not consistently attend college lectures after a full day at work.* (BA Female M)

*I looked at electrical engineering and they ran a course out in UCC. You had to take time off work, a day and a half a week I think it was. So it wasn’t really part-time... and this place (employer) wouldn’t give me the time off. Well they said you can have it but we wouldn’t be paying you, so Jesus that’s going to doubly cost me* (Brendan M).

An important outcome of the major recession in Ireland over the period of this study, is the requirement for people to be willing to move to attain employment. This requirement of the labour force to be increasingly mobile has consequences for adult participation in campus based HE provision. There is evidence that the flexibility provided by online distance learning accommodates this mobility:

*...flexibility. I didn’t have to commit to living in one place for 4 plus years. With distance learning, if I needed to move it didn’t affect my studies.* (BA Female Y)

*My job at the time involved my working in Limerick, Dublin and Cork and therefore (distance) provided the only option for me.* (BA Male Y)

While flexibility was important to those who were working, it was also important to those who had domestic/caring responsibilities. This response was more common for women (62%) than men (44%).

*My son was the person with a medical condition that made it impossible for me to attend full time.* (BA Female M)

*I felt if I did that (fulltime study) it was going to completely change the tenor of the relationships at home and I didn’t want to go down that route...* (BA Mary M)

One student, who had dropped out of full-time HE, explained his reasons as follows:
After spending first year in (named University), full time college seemed a very inefficient use of time. Class time was low but spread throughout the week, limiting my ability to pursue work. (BA male Y)

This statement highlights a further difficulty for working class students in full-time HE, echoing the literature. A system, which incorporates course related term-time employment into more flexible course provision, would likely enhance the chances of recruiting and attaining more working class students in university courses.

Previous studies sometimes attest to the fact that part-time students would have preferred to study full-time (Butcher 2015). There was no sense that this was the case for graduates in this study. They seemed proud of their work and the financial security it brought.

I have completed an access course in UCD achieving 612 points studying History and Politics, however the timetable does not suit as I work full time as a project manager. (BA male M)

Secure in my employment but with a reduction in my hours (as the children begin school) I finally have the time and financial security to pursue a degree. (BA female Y)

The same held true for those with caring responsibilities. Their language indicated that they wanted to perform the caring role and find a way to fit study around that, rather than study full-time and allow someone else to do the caring:

I have a small child so cannot study by day (BA female Y)

I have always wanted to do a degree course and when my children are older I would like to return to work (BA female Y)

The discourse around adult participation in HE has tended to assume that adults will prefer to study full-time once associated costs, including childcare, are covered. In many ways this discourse drives policy around full-time course provision with the consequent under-development of flexible study options. Nothing the graduates in this study said, referred to a preference for full-time study. On the contrary they valued their work and the financial security it brought. They also valued their caring responsibilities and wanted study to fit in with those responsibilities, rather than eliminate them.

4.3 Information. What information?
The interviews revealed that distance graduates regularly made subject selection decisions in second level which rendered them ineligible for university entry. Usually their parents had not been to third level and were ill-equipped to advise them. Advice in relation to university entry at their schools was, they said, poor:

I didn’t know that you had to have at least two honours level subjects to apply for a university course. I didn’t know that....the school never told me that so I took all pass subjects (BSc Mark Y)

Mostly however, they were inclined to see their decision at this point in their young lives as ones of individual agency:

I didn’t have a language so as it turned out I couldn’t have gone to university. And I didn’t really like languages so I would have struggled anyway. So I suppose I selected myself out (BSc Greg M)
And I kind of made a decision (he seems a little reticent to say this) I’d be better off doing pass and getting good marks rather than doing higher (level subjects; necessary for university entry) and getting middle of the road (BSc Brendan M)

The advice these graduates received as they approached completion of second level education did not include information on part-time higher education options. There appears to be a lack of awareness of the likely importance of part-time and life-long learning opportunities, in particular for working class students. Advice, in relation to how they might build on low level qualifications to achieve their goals in a manner in which they could work and study at the same time, was lacking. These are issues which second level career guidance could usefully address. In the context of the National Plan for Equity of Access to Higher Education (HEA 2015) the state has a greater role to play here through the provision of a comprehensive guide to part-time study options. Notably, the current National Plan makes no explicit reference to study options available through online distance education. HE institutions are unlikely to provide this information as the Irish funding model is focused on full-time course provision.

Subsequently graduates spent a long time trying to find a way to complete the degree in a way that would accommodate their requirements to work and/or attend to family responsibilities, while studying. Nothing impacted their desire for learning, but in a society focused on full-time HE it simply proved difficult to actualise:

I have searched on and off for the last 5 years to find a course….This is the first time that I have felt that a course would allow me to study within my present circumstances (BA female Y).

I have always wanted to complete my degree and until now I have never found an option that would work for me (BA female Y)

Currently few people in Ireland question why information about different pathways for part-time HE is relatively inaccessible or invisible. The lack of this information is an important gap in promoting wider access to HE for the types of distance students involved in this study. Such people would benefit from being more aware of non-traditional pathways when making decision about their futures, especially if they are to break through the glass ceiling. the field of part-time higher education is inaccessible or invisible. Yet, as illustrated by the sample in this study, they display no sense of entitlement to this information.

5. Conclusion
The majority of distance graduates in this study were NOT new to HE. The massification of HE is having an impact on encouraging more working-class students into some form of post-compulsory education. A large group (40% n=106) of the people in this study had been participating incrementally since leaving school. Thirty four per cent (n=92) of the graduates never completed any form of prior HE. Seventy-four per cent (n=198) of graduates were new to university.

Currently in Ireland SEB data is not officially collected for adults or part-time students. Data which might be useful in helping us draw an accurate account of the impact of social structure on participation in HE is not gathered. The introduction of appropriate official instruments to gather equal access data on part-time students is important. More research in this area would assist in unpacking the role of social class in the choices distance education students make.

The literature identifies how adults have delayed their participation in HE for reasons related to social class (Chesters and Watson 2014; Croxford and Raffe 2014). The evidence from this study is that adults have not necessarily delayed their participation. Instead their participation has often been part-time, incremental and
protracted since leaving school. Again, more research in this area would usefully extend our understanding of the participation patterns of part-time flexible learners.

The provision of coordinated public information and guidance together with an ‘accessible, coordinated application system’ (HEA 2012, p. 5) could be made available to school leavers and others who might want to apply for part-time courses. This would help address the current invisibility of information regarding part-time/flexible courses

In the final analysis there may be a powerful amplifier effect from investing in online distance education for working class students, as valuable academic and cultural capital is shared with future generations.

6. References


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The systemic implications of constructive alignment of higher education level learning outcomes and employer or professional body based competency frameworks

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Abstract
The past 50 years has seen the development of schemes in higher education, employment and professional work that either identify what people should know and/or what they should be able to do with what they have learned and experienced. Within higher education this is usually equated with the learning outcomes students are expected to achieve at the end of studying a course, module or qualification and increasingly the teaching, learning and assessment strategies of those courses, modules or qualifications are being designed to align with those learning outcomes. In employment, there has been the emergence of job and role specifications setting out the knowledge and skills required of incumbent and recruits alike. Where professional bodies confer (often statutorily recognised) status in employment sectors they also increasingly set out their expectations of members through competency frameworks. This paper explores the varied relationships between these three means of measuring knowledge and skills within people including the nature of the knowledge and skills being measured as well as the specificity of the knowledge and skills being measured, using the case study of environmental management in the UK. It then argues that there needs to be a more constructive alignment between these three forms of measurement, achieved through a dynamic conversation between all concerned, but also that such alignment needs both to recognise the importance of less tangible ‘systems thinking’ abilities alongside the more tangible ‘technical’ and ‘managerial’ abilities and that some abilities emerge from the trajectories of praxis and cannot readily be specified as an outcome in advance.

Keywords: higher education, higher education institutions, employers, professional bodies, knowledge, skills, competency frameworks, alignment.

1. Introduction
Higher Education has many purposes as seen from the perspective of governments, employers, students, professional bodies, taxpayers and higher education institutions (HEIs) themselves, but increasingly higher education is deemed by most stakeholders to have an important role in providing an educated workforce, and one that meets the specific needs of organisations and different sectors of the economy at local, regional, national and international levels. This trend is seen within Europe both with developments at the European level (e.g. Crosier et al, 2015; Davies, 2017) and with reports at the national state level (e.g. BIS, 2016). Within such documents, academic publications and surrounding policy discourses much is made of improving the employability of graduates, ‘including measures supporting students’ transitions from higher education into the labour market’ (Crosier et al, 2015), of ‘tackling future skills mismatches and promoting excellence in skills development’ (European Commission, 2017), and of defining ‘competences’ (Lester, 2014; Davies, 2017).
In response to some of these policy level developments, and through its own innovations, the higher education sector has supported the application of qualification frameworks and qualification specifications (including vocational qualifications) that set out the intended learning outcomes that students taking a qualification would expect to achieve⁴. These learning outcomes variously describe the knowledge and understanding expected of that named subject as well as a variety of subject related and key/core/transversal skills⁵ These learning outcomes are themselves influenced by academic research and scholarship within a named subject and the wider application of that named subject within the work and activities of certain individuals and organisations for whom the subject is seen as relevant. Indeed, HEIs have often created work related or work based qualifications where appropriate and where there is a market need or statutory requirement.

In parallel, and also in response to trends in economies and policies, there has been an expansion in the number and range of professional bodies and/or competency frameworks as more professional job roles have arisen or existing job roles have acquired more ‘professional’ responsibilities and expectations on the part of governments, agencies, employers and the wider public (e.g. Johnson et al, 2013). Equally employers have also been more active in designing and specifying what they require for particular job roles (Oldham and Fried, 2016) or person specifications which are often expressed as both essential and desirable characteristics that in turn vary in the balance between what are seen as role specific characteristics and what are seen as wider employment related characteristics⁶. In some circumstances organisations have developed their own competency frameworks some of which are based upon or draw upon professional body competencies (Vincent, 2016).

Finally, some governments have also been explicit in developing policies, backed by funding incentives, to encourage employers and employer representative organisations to get involved in the defining of standards for vocational qualifications at all levels, but including higher education. This is seen most recently in the UK with the introduction of degree level apprenticeships⁴ that are funded through an Apprenticeship Levy (a 0.5 per cent tax on the wage bill of employers whose salary costs are £3 million or more each year)⁵. Thus a group of employers determine the standards expected of the degree apprentice⁶ and HEIs are expected to provide qualifications that meet those standards.

This very brief overview of the varying ways in which degree programmes, job roles and professional standards are specified and developed raises questions about whether and how these specifications should

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¹ See http://www.qaa.ac.uk/assuring-standards-and-quality/the-quality-code for examples of this from the UK
² See https://ec.europa.eu/escoportal/escopedia/Cross-sector_skills_and_competences and http://www.qaa.ac.uk/assuring-standards-and-quality/skills-for-employability for some brief details on these.
³ For example these are the requirements of a person specification as noted at https://knowhownonprofit.org/how-to/how-to-write-a-job-description-and-person-specification:
   - the technical, organisational, communicative, and creative skills and abilities you expect from an ideal candidate
   - any specific qualifications or education required for the role
   - the level of experience needed in either similar organisations or equivalent roles
   - the kind of personality that would fit in with your team, and with your organisation’s ethos
   - character traits that are likely to help them to do the job effectively
   - any preferred achievements, e.g. Volunteering.
⁴ See https://www.ucas.com/ucas/undergraduate/getting-started/apprenticeships-uk/degree-apprenticeships
⁵ See https://www.gov.uk/government/publications/apprenticeship-funding-from-may-2017 for more details
be aligned to improve employability prospects of higher education students and whether these specifications should be narrower or broader in scope to reflect the dynamic nature of employment and job roles. To examine these questions further the paper next outlines the key aspects of systems thinking and then uses these to look in some depth at a UK based case study which exemplifies the complex nature of defining and specifying what is expected of one subject/profession: environmental management (EM). The paper then concludes by arguing for a more constructive alignment between these three forms of measurement, achieved through a dynamic conversation between all concerned, but also that such alignment needs both to recognise the importance of less tangible ‘managing’ abilities alongside the more tangible ‘technical’ abilities and that some abilities emerge from the trajectories of praxis and cannot readily be specified as an outcome in advance.

2. Systems thinking in practice and knowing

Complexity and uncertainty can be features of any human activity system but this is more so when considering many larger scale situations (Ison, 2010). The number of facts and factors involved, the number of people with different perspectives and disciplinary expertise, all grow larger and seemingly more intractable. To be able to represent a complex messy situation by showing most of the components and how they are thought to fit and work together is therefore very helpful when understanding, researching, designing and implementing systemic changes that draw upon and integrates the thinking from many disciplines.

Drawing on some basic features of systems thinking, there are three generic elements underpinning systems thinking in practice:

- understanding inter-relationships (‘thinking’ about the bigger picture)
- engaging with multiple perspectives (the ‘practice’ of joined-up thinking)
- reflecting on boundary judgements (the praxis of thinking in practice)

In identifying ‘systems of interest’ in any particular situation it is helpful to appreciate three broad areas in which ‘systems’ are generally understood and used by people, practitioners and academics alike:

- Natural systems – living organisms or wider biophysical entities like ecosystems or the solar system.
- Engineered (purposive) systems – mechanical equipment, computers, heating systems etc., and
- Human (purposeful) systems – organizations, higher education, employment policies, etc.

Across these three broad areas the first two are usually approached using more systematic and positivist scientific methods and methodologies as the systems are more often seen as ontological realities (this is a system for ...) while the third area is more often treated through a systemic lens where the representation of the system of interest is used as an epistemological device and the systemic inquiry framed as constructivist (for the purpose of my inquiry I see this as a system for ...) (Checkland, 1999; Blackmore, 2010).

The underlying philosophy of purposeful systems thinking is to be holistic, to look for wholes (a ‘system of interest’) at the highest appropriate level, rather than to reduce things to ever smaller components (Checkland, 1999; Reynolds and Holwell, 2010). This concept of defining a system of interest as a collection of entities that are seen by someone as interacting together to do something (Morris, 2009) is both simple to state and yet complex to enact because of differing philosophical and practical approaches to the concept of a system, that have arisen from, and give rise to, different trajectories of understanding and action. In this paper I particularly follow the traditions espoused by Russel and Ison (2017) who, among other things, note:
‘All learning is experiential, and experience arises in the act of making a distinction in relation to oneself (to one’s history). In other words, appreciating that without distinction (difference) there is no experience is a key ingredient of institutional and praxis innovation.’ (p 500)

Multiple perspectives feature strongly in the discourses around knowledge, skills and competences and how different terms are defined and enacted:

‘Notwithstanding its widespread use in the technical and further education field, there is no one common definition of the term “competency”. Different disciplines and different contexts generate a variety of understandings. For educators and trainers, competencies typically refer to specified skills, knowledge, attitudes and behaviour that are of central importance to undertaking effectively a given task, activity or career.’ (Linard and Aretz, 2000)

This educational perspective can be compared to this professional perspective from the Chartered Institute of Ecology and Environmental Management (CIEEM) website:

‘Competencies are the skills, knowledge and behaviours that are required to perform certain activities well and which are critical to success in specific professional roles. Put simply you are competent if you:

- know what to do;
- know how to do it;
- know when to do it;
- know why you do it;
- can do it consistently well; and
- know your limits and when to seek help and advice.’

Both statements align reasonably with the four types of knowledge used within innovation studies (although there are also many different theories on knowledge and knowing):

- know-what: information, knowledge of facts;
- know-why: knowledge of scientific principles;
- know-how: skills or capability to do something; and
- know-who: social skills to access know-how of others (Lundvall and Johnson, 1994)

However, when such factors are set out as a list of learning outcomes, a job specification or a competency framework, they are describing an idealised set of characteristics (or conceptual model of behaviours) reflecting a point in time, against which people are variously measured and assessed. In the (higher) education sector Biggs and Tang (2011) have promoted the concept of constructive alignment whereby learning activities and assessment tasks should directly address the intended learning outcomes as learners construct meaning from what they do. Equally, competency frameworks attempt to align professional standing/standards and recognition with actual professional practice while job descriptions are set out to help match candidate abilities with the desired capabilities sought by an employer. But how well do each of these means of judging peoples’ potential (and actual) behaviours align with each other within and across subject areas?

7https://www.cieem.net/competency-framework
3. The systemic and systematic implications of assessing education and employment

To highlight the systemic and systematic elements of assessing education and employment outcomes I begin by systematically describing how both these sectors of the UK economy (through universities, employers and professional bodies) ‘view’ one subject – environmental management – before attempting to define a system of interest that helps outline possible boundaries and inter-relationships and suggest how constructive alignment between these different models of behaviours might or might not be helpful.

3.1 A case study of outcomes and frameworks: Environmental management in the UK

Environmental management (EM) can be complex and messy. Unsurprisingly systems thinking has been extensively applied to managing environmental situations (e.g. Seiffert and Loch, 2005; Ison, 2010; Gundill et al, 2012). As noted above a systems approach involves the identification of issues from a context via the perspective of a diversity of actors in that context. One of the founders of the systems approach West Churchman noted: ‘A systems approach begins when first you see the world through the eyes of another’. (Churchman 1968 page 23). What follows is an analysis using three sets of perspectives.

**EM as represented by degree titles and benchmark statements (the academic perspective)**

EM is but one formulation for describing academic interest in environmental matters. This can be seen in the variety of environmental degree titles just within English HEIs where the search term was EM (Table 1). The snapshot provided in Table 1 is itself partial in that the search using the phrase ‘environmental management’ provided a list of 133 degree titles rather than the 97 noted there, as many degrees without environment in their title mentioned environmental management as part of the degree course description or in keywords e.g. countryside management. Equally a search using environmental science throws up a similar sized but partly different list. Given the limitations of the search engine and even while 24 of the 97 do specifically have EM in their title it is clear, even without further probing, that the professional or employment sector these degrees are potentially aligned with vary. This variation itself represents diverse subject specific approaches to EM - from business studies to health care, from sustainability to geography; let alone the more conventional, science-based focuses of ecology and environmental science. The range is vast and contrasting, suggesting both single and multi-discipline approaches, and both systematic and more systemic biases among the various degrees. The potential student might be forgiven for considering “environment” to be a multi-purpose word of no-fixed-meaning and EM as a term with limited utility suggesting everything and clarifying nothing.

Table 1. An analysis from the Universities and Colleges Admissions Service (UCAS) website of undergraduate degree courses with environment in their title available from HEIs in England (search of course database conducted 12/2/16 using the phrase environmental management)

<table>
<thead>
<tr>
<th>Degree Title</th>
<th>Number of degree courses on offer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Management (EM)</td>
<td>18</td>
</tr>
<tr>
<td>Construction and the Built Environment</td>
<td>13</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>10</td>
</tr>
<tr>
<td>Environmental Resource Management</td>
<td>4</td>
</tr>
<tr>
<td>Sustainability and EM</td>
<td>4</td>
</tr>
<tr>
<td>EM and Sustainability</td>
<td>4</td>
</tr>
<tr>
<td>Countryside and EM</td>
<td>3</td>
</tr>
<tr>
<td>Environmental health</td>
<td>3</td>
</tr>
</tbody>
</table>

8 [www.ucas.com](https://www.ucas.com/)

9 The same HEI might offer degree courses with similar titles but different characteristics e.g. placement years or with a foundation year
Ecological and environmental science with management  2  
Geography and EM  2  
Business studies with EM  2  
32 other title combinations (6 with EM in the title*)  1  

In spite of this diversity, UK HEIs have to align their work by the codes of practice and related documents set out by the Quality Assurance Agency. One of these related documents is a Benchmark statement for undergraduate degrees in Earth Sciences, Environmental Sciences and Environmental Studies, first published in 2000 and then updated in 2014 (QAA, 2014), with the expectation that (undergraduate) ‘environmental’ degrees will align their learning outcomes as far as possible with this statement. Table 2 sets out what graduates must demonstrate across four skills areas. However the document fails to acknowledge the internal inconsistency of having three subjects in one document which, unlike most other subject benchmarks, does not reflect the external developments in the environmental sector since 2000 when the first benchmark statement was published. Notably, the benchmark has not been extended into Masters Level qualifications, which is surprising given that a search for UK based masters in EM using the findamasters.com website\(^\text{11}\) shows numerous entries (277 in a search carried out on 12/2/16).

More specifically there is almost no overlap in the list of subject knowledge and elements for earth sciences with either environmental sciences or environmental studies (in contrast the latter share about half of their knowledge and elements list). Also, while there is greater emphasis placed on sustainability, employability, multi- and inter-disciplinarily and practical skills development in this latest version there is still insufficient coverage given to the socio-economic, political and cultural contexts of all three areas as well as the contributions that each makes to those contexts as well as the environmental one. Most importantly, the past decade has seen substantial growth in the academic and professional field of environmental management and, although this gets some mentions, it by no means reflects the number of jobs or professional bodies with environmental manager/management in their title (as I discuss further below).

Table 2. What graduates of an honours degree in Earth Science, Environmental Science and Environmental Studies must demonstrate

| Intellectual skills (knowledge and understanding) | • knowledge and understanding of subject-specific theories, paradigms, concepts and principles  
| | • an ability to integrate evidence from a range of sources to test findings and hypotheses  
| | • an ability to consider issues from a range of interdisciplinary and multidisciplinary perspectives  
| | • an ability to analyse, synthesise, summarise and critically evaluate information  
| | • an ability to define complex problems and to develop and evaluate possible solutions  
| | • a critical approach to academic literature, data and other sources of information  
| Practical skills | • conduct fieldwork and laboratory investigations competently (as appropriate)  
| | • describe and record observations in the field and laboratory  
| | • interpret and evaluate practical results in a logical manner  
| | • undertake laboratory and fieldwork ethically and safely  
| | • plan, conduct and present an independent project with appropriate guidance  
| | • prepare, manipulate and interpret data using appropriate techniques  
| | • use appropriate numerical and statistical techniques  
| | • use appropriate technologies in addressing problems effectively  
| Communication skills | • an ability to communicate effectively to a variety of audiences using a range of formats  
| | • good interpersonal communication skills to enable effective team working  
| | • an ability to argue a case in an effective manner  

\(^\text{10}\) This includes the BSc (Hons) Environmental management and technology from the Open University UK

\(^\text{11}\) http://www.findamasters.com/
Personal and professional skills

- work effectively as a team member
- recognise and respect the views of others
- demonstrate an awareness of the importance of risk assessment and relevant legislation
- develop the skills for autonomous learning
- identify and work towards targets for personal, career and academic development
- reflect on the process of learning and to evaluate personal strengths and weaknesses
- display an appreciation of developing their graduate skills relevant to career pathways

EM as represented by job titles and descriptions (the employers’ perspective)

One way to define environmental management and environmental managers is by the jobs they do, the titles given to them, and the descriptions provide for them. Take, for example, the job description for an environmental manager that was provided on the Prospects website\(^\text{12}\) that claims to be the UK’s official graduate careers website:

> Environmental managers, increasingly known as sustainability managers, are responsible for overseeing the environmental performance of private, public and voluntary sector organisations. Examining corporate activities, you’ll establish where improvements can be made and ensure compliance with environmental legislation across the organisation.

> You’ll also create, implement and monitor environmental strategies to promote sustainable development. Your wide remit means you’ll review the whole operation, carrying out environmental audits and assessments, identifying and resolving environmental problems and ensuring necessary changes are implemented.

As already noted, the academic landscape of EM is confused and confusing, sweeping in a large number of subjects and domains of practice. This diversity is reflected in the tasks which Environmental managers are engaged with. Conventionally, EMs have an extremely varied workload and one that usually entails a range of strategic tasks, such as these from the Prospects website:

- develop and implement environmental strategies and action plans, to ensure corporate sustainable development
- take the lead on sustainable procurement for all goods and services
- coordinate all aspects of pollution control, waste management, recycling, environmental health, conservation and renewable energy
- lead the implementation of environmental policies and practices
- ensure compliance with environmental legislation and keep up to date with UK, European Union and international regulation and legislation
- liaise with relevant bodies such as local authorities, public bodies and competent bodies
- audit, analyze and report environmental performance to internal and external clients and regulatory bodies
- carry out impact assessments to identify, assess and reduce an organization’s environmental risks and financial costs
- promote and raise awareness, at all levels of an organization, of the impact of emerging environmental issues
- implement best practice in areas of corporate, ethical and social responsibility and address any issues arising
- develop and implement environmental management systems to continually improve the impact of the organization on the environment
- coordinate public hearings and consultations on environmental matters
- manage relations with the board of directors, senior management and internal staff

\(^{12}\) https://www.prospects.ac.uk/job-profiles/environmental-manager
- train staff at all levels on environmental issues and responsibilities
- participate in environmental education and research
- negotiate environmental service agreements and manage associated costs and revenues
- write environmental reports, assuming the lead responsibility with the company
- set organizational sustainability targets, and develop plans to meet those targets and oversee their delivery

This task list is largely systematic in tone and areas of analysis (e.g. implementation of practice, assessing compliance with legislation) as well as at times suggesting a potential for a more integrative and systemic approach (for example balancing the requirement for legal conformity whilst engaging with corporate responsibility and dealing with the results of public consultation). Nevertheless the list of transferable (transversal) skills on the website is more promising:

- understand and utilize systems to carry out problem solving
- show initiative, to recognize emerging problems and pro-actively develop solutions using methods such as systems thinking
- negotiate and organize
- stimulate and manage change
- demonstrate strong leadership and influence
- display a high level of computer literacy
- show commercial awareness and an understanding of business
- be self-motivated and able to motivate staff at all levels
- communicate effectively, both orally and in writing
- manage projects as well as produce and deliver presentations
- establish effective networks within the company and with external organizations

A further look at the website shows that although this career is open to all graduates, it would help to have a degree in one of the following subjects: bioscience, earth sciences, ecology, energy, environmental engineering, environmental health, environmental sciences or management, engineering with a sustainability focus.

These details reinforce the perceived breadth and depth of EM as a job as well as an academic subject although interestingly the Prospects website only has four job descriptions that include ‘environmental’ in their title: EM, environmental consultant, environmental education officer and environmental health practitioner. It does not include environmental scientist as such but does include ecologist (see below).

**EM as represented by professional bodies**

The idea of environmental jobs and related titles is relatively new and dates back 1980s. Although people already did the activities associated with these jobs, the titles have emerged as the environment has become much more to the fore in developed economies. These trends have parallels within a broad range of professional bodies and learned societies and their desire to have a strong independent body to champion and regulate the expertise of today’s environmental professionals. Thus the Society for the Environment has, since 2004, held the register through which individual members of licensed professional bodies can obtain professional recognition as a Chartered Environmentalist. Starting with eight licensed members the Society now encompasses 24 licensed bodies (see Table 3) representing between them over 9,000 Chartered Environmentalists working in a wide range of professions (however do not that each professional body has a larger membership of its own and only a small proportion will seek Chartered status).

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13 [http://socenv.org.uk/page/AboutUs](http://socenv.org.uk/page/AboutUs)
Another interesting development amongst all professional bodies is the way that they are defining membership of their profession, and routes to recognition as a Chartered professional (engineer, environmentalist, scientist, or ecologist) through a Competency Framework that describes the knowledge, skills and attributes of a professional person within the scope they define. The Society of the Environment has one such framework for Chartered Environmentalist (Table 4) but many of the licensed bodies have their own competency frameworks or skills map. Indeed, the three professional bodies that have EM in their names, CIWEM, IEMA and CIEEM all have such frameworks and these provide yet another perspective on how to define environmental management and environmental managers.

Table 4 Chartered Environmentalist Competencies

| A. Application of knowledge and understanding of the environment to further the aims of sustainability | A1 Have underpinning knowledge of sustainability principles in the management of the environment  
A2 Apply environmental knowledge and principles in pursuit of sustainable environmental management in professional practice  
A3 Analyse and evaluate problems from an environmental perspective, develop practical sustainable solutions and anticipate environmental trends to develop practical solutions |
|---|---|
| B. Leading Sustainable Management of the Environment | B1 Promote behavioural and cultural change by influencing others in order to secure environmental improvements that go beyond minimum statutory requirements  
B2 Promote a strategic environmental approach  
B3 Demonstrate leadership and management skills |
| C. Effective Communication and Interpersonal Skills | C1 Communicate the environmental case, confidently, clearly, autonomously and competently  
C2 Ability to liaise with, negotiate with, handle conflict and advise others, in individual and/or group environments (either as a leader or member) |
| D. Personal commitment to professional standards, recognising obligations to society, the profession and the environment | D1 Encourage others to promote and advance a sustainable and resilient approach by understanding their responsibility for environmental damage and improvement  
D2 Take responsibility for personal development and work towards and secure change and improvements for a sustainable future  
D3 Demonstrate an understanding of environmental ethical dilemmas  
D4 Comply with relevant codes of conduct and practice |
The Chartered Institute of Ecology and Environmental Management (CIEEM) was established in 1991 and ‘is the leading professional membership body representing and supporting ecologists and environmental managers in the UK, Ireland and abroad.’\textsuperscript{14} Its competency framework\textsuperscript{15} identifies 4 levels of increasing professional competence – Basic, Capable, Accomplished and Authoritative. The framework contains 40 competencies or areas of professional activity. There are 25 technical competencies (i.e. specific to being an ecologist or environmental manager) and 15 transferable competencies (i.e. common to most professionals). These competencies are grouped together into 14 themes (Table 5) and are the basis for determining the seven grades of membership (Fellow, Full, Associate, Graduate (CIEEM accredited degree or pathway), Graduate (non-CIEEM accredited degree or pathway), Qualifying, and Student), Continuing Professional Development requirements, and degree accreditation. The framework is presented as a matrix and as spreadsheet where all the detailed descriptors can be found.

Table 5 The main themes in CIEEM’s competency framework

<table>
<thead>
<tr>
<th>Technical Themes</th>
<th>Transferable Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surveying</td>
<td>Professional Conduct</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>Health and Safety</td>
</tr>
<tr>
<td>Environmental Assessment</td>
<td>Communication</td>
</tr>
<tr>
<td>Policy, Legislation and Standards</td>
<td>Formal Facilitation, Stakeholder Engagement and Partnersing</td>
</tr>
<tr>
<td>Scientific Method</td>
<td>Organizational Management</td>
</tr>
<tr>
<td>Education and knowledge exchange</td>
<td>Project Management</td>
</tr>
<tr>
<td></td>
<td>Information Management</td>
</tr>
<tr>
<td></td>
<td>People Management</td>
</tr>
</tbody>
</table>

The Chartered Institute of Water and Environmental Management (CIWEM) has its origin in 1895 and, “is the leading international [...] professional body dedicated to the water and environment sector.” Its 14 mandatory competencies mainly relate to 8 grades of membership (Fellow, Chartered, Non-Chartered, Associate, Technician, Graduate, Student, and Apprentice), but also degree accreditation, and are grouped into 5 themes (Table 6). While there are descriptions giving more details of what is required for each of these competencies these are not presented in a spreadsheet as is CIEEM’s framework.

Table 6 CIWEM’s mandatory competencies

<table>
<thead>
<tr>
<th>A. EXISTING AND EMERGING FACTORS INFLUENCING ENVIRONMENTAL AND WATER ISSUES</th>
<th>A1. Knowledge of wider environmental issues and trends</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2. Ability to develop strategies or plans to address changes in your sector</td>
<td></td>
</tr>
<tr>
<td>B. PLANNING, IMPLEMENTATION AND EVALUATION OF WORK</td>
<td>B1. Ability to analyse and evaluate environmental and/or water problems</td>
</tr>
<tr>
<td>B2. Ability to solve problems by identifying, developing and evaluating options</td>
<td></td>
</tr>
<tr>
<td>B3. Ability to initiate, implement and manage change</td>
<td></td>
</tr>
<tr>
<td>B4. Ability to plan and implement solutions and monitor their continuing performance</td>
<td></td>
</tr>
<tr>
<td>C. SAFE AND EFFECTIVE WORKING PRACTICES</td>
<td>C1. Ability to manage resources effectively and efficiently</td>
</tr>
<tr>
<td>C2. Understanding, promotion and application of Health and Safety (H&amp;S)</td>
<td></td>
</tr>
<tr>
<td>C3. Your contribution to sustainability</td>
<td></td>
</tr>
<tr>
<td>C4. Understanding, promotion and application of quality enhancement</td>
<td></td>
</tr>
</tbody>
</table>

\textsuperscript{14}https://www.cieem.net/about-ieem
\textsuperscript{15}https://www.cieem.net/competency-framework
The Institute of Environmental Management and Assessment (IEMA) notes: ‘we are the worldwide alliance of environment and sustainability professionals, working to make our businesses and organisations future-proof.’ They have a skills map covering 13 ‘skills’ which once again mainly link to seven grades of membership (Fellow, Full, Practitioner, Associate, Graduate, Affiliate, and Student). This skills map is displayed as an interactive diagram on IEMA’s website with the core skills presented as a wheel with different, detailed descriptors shown as pop-up text in each wheel at each level of membership (Figure 1).

Figure 1 A snapshot of (1) the core IEMA skills map and (2) an example of pop-up text describing expectations of that skill at that particular level of membership (practitioner in this example)

(1)
4. Environmental management as a complex adaptive learning system to meet both current and future needs

This descriptive account has only begun to touch upon the diversity of expression and coverage of what are the knowledge, skills, competencies, attitudes, behaviours and practices required for environmental management, and while this appears quite complicated, complex even, other subject areas (e.g. engineering and computer science) will also have many different actors and ways of describing what they can or should do. In the UK at least the advent of degree apprenticeships potentially introduces another set of, in this case employer defined standards. Such diversity can instigate different responses. One would be to try to achieve consensus between all concerned to produce one set of common descriptors and set of terms (e.g. see Kassler et al, 2012) or for someone like myself to try and map and match the different elements of each framework to find the precise similarities and differences (Steiner, 2013). However we should heed the cautionary note of Russell and Ison (2017) describing their experiences with agricultural research and extension in Australia:

*Over time we came to understand that consensus was a lowest-common-denominator position in which the only carry through action was from those who held the consensus position from the start; the process robbed the other pastoralists of their enthusiasm for action.* p491

They also note:

*If innovation as well as social and personal change could be achieved by “effective” communication and the ready availability of knowledge, the world operating under the current mindset would be a*
They go on to suggest that it is better to think of promoting a relational dynamic where actors are constantly explaining what they are trying to achieve to other actors and through those conversations are able to reach dynamic agreement on the similarities and differences and purposes of what they do and why they do it. Figure 2 is my attempt to show this dynamic visually in an influence diagram, where constructive alignment, where possible and desirable, is achieved through the conversations between the actors and in light of developments in real world situations that may throw up new challenges that all involved have to adapt to. However this highlights another issue of how willing, how able and in what spaces the actors undertake those conversations if some of those conversations appear to challenge their own positions of power and traditions of practice.

An example of this challenge can be seen in the systematic and systemic views of EM I have outlined here. It is my view that both the QAA benchmark statement and the professional body competency frameworks tend to be systematic in nature (although not exclusively) with partitioned elements of EM emphasising isolated blocks of skills – be they technical or social. The focus is on what EM needs to ‘do to’ the world and there is a notable lack of discussion of what EM is/needs to ‘be’ or ‘be with’ in the world if it is to be effective. I would also argue that the competency frameworks tend to focus on the contemporary existing market in established specialisms and expertise in professional practice, rather than providing a clear imperative for co-creativity, innovation and imaginative responses to current and future needs. There appears to be no clear way in which integration and interactions between different elements of competency frameworks and the QAA benchmarks can be handled in the overtly systematic approach currently in evidence.

Figure 2 An adaptive learning system for training and developing a workforce to meet both current and future needs showing the influences and flow of information and meaning between qualification learning outcomes, competency frameworks and job descriptions as mediated by the activities of practising and defining initial and ongoing knowledge skills, competencies and behaviours.
Based on my own and my colleagues’ previous research and teaching experience, I believe that both learning and practice needs to reflect the complexity of real-world problems faced by environmental managers (and many other professions) and that these challenges cannot be resolved by the singular efforts of specialists in any particular field. EM students and professionals need the ability to see ‘the bigger picture’ - the wider context within which environmental management dilemmas are situated, including the uncertainties involved, the different needs and understandings of the stakeholders involved, and the often rapidly changing social, economic and biophysical dynamics. The linearity and/or silos associated with conventional EM mind-sets are not adequate to cope with the complexity of rapidly evolving environmental situations. While the QAA and the EM Institutes are doing their best to manage professional competency frameworks and qualification specifications against a moving background the focus remains directed at traditional and ‘boxed’ outcomes and competencies. The complexity and integrative nature of environmental issues suggests that Environmental Managers now require skills sets and understanding of the systemic aspects of EM which takes the individual beyond the observation and application of systematic ‘fact’. Facts are contested and such ‘facts’, if they are to be useful in EM policy and practice need to be cross-referenced with value systems, multiple perspectives and the combinatorial or ‘wicked’ problems which EM faces. Equally, all complex adaptive systems will exhibit emergent properties and behaviours, which is why specifications and frameworks need to be seen as ‘living’ documents subject to change and interpretation.

5. Conclusions
In this paper I have tried to highlight that there are multiple ways in which an educational subject can relate to professional employment and vice versa and that different actors can specify the knowledge,
understanding, skills and competencies, attitudes and behaviours that can be associated with that subject and profession. I used the case of environmental management in the UK to explore this dynamic, where the nature of environmental education and employment has evolved over the years leading to many different developments. Studying for, and working in, environmental subjects is both diverse and specialised and the way in which students and employees are expected to demonstrate their knowledge, understanding and skills/competences varies as to whether it is Universities, professional bodies or employers that set out the criteria, although there are many areas of overlap, particularly on ‘transversal skills’

This diversity is both a strength and a weakness as it is able to encompass a wide range of possibilities and perspectives as the subject evolves over time but equally there are significant transaction costs for individuals and organisations to understand and match themselves and their activities against different frameworks. This might suggest that it would be better to try and create a single overarching framework but I have argued that such consensus may lead to an impoverished framework and lack of trust between the different actors. Instead I have argued that the constructive alignment of such frameworks can best be achieved through constant and ongoing conversations between the actors so as to resolve any unnecessary differences but to enable requisite diversity to meet the many complexities of the real world and I have provided a diagrammatic representation of the boundaries, relationships and conversations that could be involved. But I also acknowledge that there are no simple mechanisms for creating and maintaining those relationships and conversations.

6. References


The Use of Film in Online Teaching: The Story of My Difficulties (and Solutions)

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Abstract
What enhances the retention of non-traditional, online students in history courses? The answer to this question constitutes the topic of this presentation. The more the professor can close the gap between the students’ cognitive representations and reality the better. To do this requires a variety of teaching aides to enrich each topic covered. Many differing voices, both extemporaneous and recorded, add to this variety. Short film clips, immediately following important points that the professor has made, clearly serve to stimulate students’ comprehension, better than a single lecture. When students understand soon after each point that the professor makes, they find it easier to grasp the course material and they are more willing to continue the course. It is not easy to do this within legal constraints, given the complexities of clipping copyrighted film material. Disentangling such constraints requires both an understanding of international copyright law as well as complicated processes to clip films precisely. Also, using foreign films to represent examples of points one tries to clarify, helps retain students from different minority groups. This serves two purposes: first, to acquaint all students with differing cultures and second, to familiarize migrants and refugees with their adopted cultures. This presentation will include examples from history courses that I have taught including general education as well as more specialized upper division courses from different eras. In conclusion, I will share not only my personal mishaps, but also the solutions I have found.

Keywords:
Higher Education for a divers future
- Social inclusion
- Higher education for minorities (refugees, migrants)
- Multi-cultural education

Engaging students for learning at all stages of life
- Retention issues

1. Introduction
The retention of non-traditional (as well as traditional), online students in history courses has always been a difficult prospect. But, the more a professor can close the gap between the students’ cognitive representations and reality the better. The lecture of a single voice, no matter how thoroughly researched the topic, is almost an obsolete method of relating information. A large variety of teaching aides enriches each topic covered and tends to hold the students’ attention. Short film clips preceding or following a point clearly work to prompt students’ understanding. The legal constraints of international copyright law as well as the complicated processes to clip films precisely requires more time in preparation, but it is well worth the effort. The more interactive students become using their computers to involve themselves with the topics covered, the more they will be able to think critically about their own lives.
2. Background Research

In his landmark book, *The Death of Character: Moral Education in an Age Without Good or Evil*, James Davson Hunter echoes Nietzsche’s dictum, “God is dead” by saying, “Character is dead.” He argues that there is a moral “values deficit” today because of the way even well-intentioned parents attempt to train their children to be moral, to give them great self-esteem, to be decent and prepared for adolescence. (Hunter, xv). He contends that we fail to produce, in the end, what he calls moral character.

One of the reasons for this deficiency is the way we attempt to teach complicated ideas through “sterile abstractions” such as, “Be cool, follow the rules,” “Just say no,” “Do the right thing”, etc. Instead of instilling the intricacies of a moral education and other complex ideas, young people remember the sayings themselves and not much more. To add to this, many students cannot extrapolate on these sayings and therefore cannot explain their deeper meanings. They are at once shallow and powerful.

Perhaps the most dangerous implication of widespread short slogans is that students’ draw very different conclusions from them. Students will fervently state their opinions, believing they are couched in fact, but, at the same time, they do not understand the complexities and consequences of these thoughts. The ideas become so entrenched in their minds that even a clear and supported explanation of them will not dissuade their original assumptions.

In their recent book, *The Knowledge Illusion: Why We Never Think Alone*, Steven Sloman and Philip Fernbach claim “The mind is a flexible problem solver that evolved to extract only the most useful information to guide decisions in new situations. As a consequence, individuals store very little detailed information about the world in their heads. In that sense, people (and my students) are like bees and society a beehive: Our intelligence resides not in individual brains, but in the collective mind. To function, individuals rely not only on knowledge stored within our skulls, but also on knowledge stored elsewhere: in our bodies, in the environment, and especially in other people. (Sloman, Fernbach, 5)

3. Two Examples of Partial Understanding

Hence students hear opinions, judgements, and definitions from their professors, their classmates and their environment which they remember without understanding the whole of the thought processes that would explain why they believe what they do. Their opinions are thus based on partial information and according to Sloman and Fernbach, they only think they understand things better than they do.

Here are some examples currently in popular parlance:

A US senator claimed that President Obama forced schools to let teenage boys shower with teenage girls’. The statement omits the fact that this senator is referring to “boys whose gender identity, expression or behavior is different from those typically associated with their assigned sex at birth.” (*Washington Post*, 4/26/2016)

Another erroneous claim:

President Trump repeatedly said he built his business with only a “$1 million loan from his father.” But his father provided him with tens of millions of dollars in loans, trust funds and inheritance — not to mention crucial contacts in the real estate world. (*Washington Post*, 4/11/2016)
Both of these claims lead to generally negative conclusions about these particular politicians. As time goes on, people equate them with all politicians of one party and finally their already flawed negative opinions include all politicians.

With all this in mind, and with an eye towards teaching students to have more considered opinions especially about philosophical questions, I have changed my style of teaching.

**4. Pedagogical Approach**

I begin with the very thing people can remember: a short clip, slogan or advertisement. For instance, I try to avoid a direct confrontation with the male students about wearing hats inside the classroom:

www.youtube.com/watch?v=Xv3SeUdRBZM

In the end, the film does the admonishing rather than a stern directive from me.

I can also introduce basic approaches to scholarship without simply showing a list of rules. Here is clip which shows students the difference between primary and secondary sources.

www.youtube.com/watch?v=vTSmbMm7MDg

This is an illustration that they probably will not forget because it is set in modern day New York City. I then explain which actor is the primary source in case it wasn’t obvious enough. Here is where I attempt to go into after this, I can relate this clip to the origins of this difference in sources which historically comes about at the beginning of Renaissance humanism which counters the scholasticism of the Middle Ages. I reinforce this information further when I explain how to begin their first research papers at the university. In this way, students can learn a common skill without being ordered to write in a certain way and they can improve their way of thinking about writing without destroying the confidence they have in their own writing.

To include the many foreign students in international online classes one only has to look to foreign films for illustrations: The use of foreign film augments students’ understanding of other cultures and also includes those who may not understand the nuances of language.

It is more difficult of course to convince students to persist in their work and to attempt consistently to do well. I find however, when they judge each other rather than simply submitting their work and having the professor judge it initially, they learn more. When students lead class discussions using questions they make up themselves, they sense that they must have irrefutable evidence for their claims.

**5. Interactive Software**

In their presentations, some students have become very inventive with their methods of persuasion. Recently, students presented a summary of a book in the form of interactive multiple-choice questions. Each student submitted two questions and a list of all of them was distributed to the class. The student leaders of the seminar then used these as the subject matter for their presentation. This required students to participate using their computers. This interactive software they used also provided a polling mechanism that measures percentages of students’ correct or incorrect answers. This too became a point for discussion by asking students why they answered the way they did.

Demonstration of interactive game.
6. Conclusion

My goal throughout the class time is to find ways for students to interact with me and with each other. The more they interrelate with the subject matter and its finer points the better the chances are of them remembering not only the catchphrase that typifies their conclusions, but also how they reached those conclusions. Hopefully, they will develop the curiosity to continue to reflect on and retain details about important issues to better engage in the wider world.

7. References

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Tutoring and support in open online education – a students’ view

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Abstract
In order to reduce drop out and improve academic integration, after 30 years of ‘guided self-study’ the Open Universiteit introduced in 2014 a new educational model ‘active online education’. This new model provides more structure, puts more emphasis on tutoring and support, the visibility of the tutors and lecturers is increased and more f2f and virtual meetings are integrated in the courses.

In this paper we try to answer three questions:

1. How many students actually use the tutoring and support on offer? What are the reasons not to use it? Is there a difference between the old and the new model?
2. How do students value the tutoring and support on offer? Is there a difference between the old and the new model?
3. What do we know about our students’ expectations and needs as far as tutoring and support at the Open Universiteit is concerned?

The first results indicate that students like the increased teacher-student contact. The attendance of f2f-meetings and virtual meetings has gone up but these meetings only get high ratings when students experience real added value.

1. Introduction
In 2014 the Open Universiteit of the Netherlands introduced a new educational model to improve study success and student involvement and to reduce drop out. There were two key changes: more structure on the one hand and a bigger emphasis on tutoring and support and a more prominent role of the tutor or lecturer on the other.

In the evaluations of the new model we found that students express mixed feelings about tutoring and support. Most students like the increased teacher-student contact and they appreciate the fact that they do not have to travel to attend the virtual classrooms. However they are fairly critical about the face-to-face and the virtual meetings and often wonder about the added value of these meetings.
In general we notice that our students are extremely satisfied with the materials, the content, the tutors and the testing but the scores for tutoring and support meetings, virtual and f2f, although still quite high, are always lower than the rest. Moreover we see that less than half of our students actually attend the (virtual) meetings if they are not compulsory.

As the new model focuses on an increase of tutoring and support the Open University decided to conduct a meta-analysis on all the data we have collected over the years about our courses, our programs and our services in order to get an answer to the following questions:

1. How many students actually use the tutoring and support on offer? What are the reasons not to use it? Is there a difference between the old and the new model?
2. How do students value the tutoring and support on offer? Is there a difference between the old and the new model?
3. What do we know about our students’ expectations and needs as far as tutoring and support at the Open Universiteit is concerned?

2. Tutoring and support at the Open Universiteit: the new model versus the old model
There is a huge difference between the system of and the philosophy about tutoring and support in the old model and in the new model (Schlusmans, van den Munckhof & Nielissen, 2016b).

The old model of the OUNL can be described as guided independent learning. The model was extremely flexible, students could start a course whenever they wanted and they could write the exam whenever they felt they were ready for it. The focus was on the self-study materials and in most courses tutoring and support were a backup for those students who felt they needed support with the self-study. Our previous director used to say ‘If students need tutoring, there is something wrong with the materials.’. Only about one in five courses included face-to-face or virtual tutor meetings. Most courses were completely self-supported and only if students had questions, they could contact a tutor. Tutor-student contacts were always student initiated. Tutors were not supposed to contact the students on their own accord.

In 2014 the Open Universiteit introduced a new educational model which is called active online learning. The reasons for the change were twofold. One was the huge drop out of students. The very flexible system was excellent for the happy few independent learners but there was a large group of students who started to study and just never finished the course. In 2014 70% of the students dropped out in the first course and did not get a certificate. In subsequent courses the drop out was about 50%. The second reason for introducing the new model was the change in our pedagogical paradigm. Studying in higher education should be more than acquiring knowledge in interaction with (online) materials but should emphasis skills such as presentation, oral communication, discussion and cooperation, all of which did not get enough attention in the old model of guided self-study. The new model was first introduced in our master programs in September 2014. In September 2016 it was gradually introduced in the bachelor programs. In the bachelor programs however there are two types of courses: fixed courses which resemble the master courses and variable courses which resemble the courses in the old model.

In order to reduce drop out and to accommodate the new pedagogical paradigm two big changes were implemented in the new model: more structure and more tutoring and support. It was decided that each course should have a fixed starting point and at least three events which could be used to monitor students’ progress in the course. Those events could have several forms: an assignment (with feedback), a virtual or f2f-meeting, a test or a one-to-one session with the tutor. The tutors were also advised to be more visible
during the run of the course by introducing themselves and by setting up online discussions and meetings. Moreover study advisors were appointed to help the students with the planning across courses.

3. Method

In this analysis we limit ourselves to three forms of tutoring and support.

1. Individual tutoring and support which includes contacting the tutor with questions and receiving feedback on assignments, this can be f2f, via the telephone or online.
2. F2f-meetings: tutor-meetings with a group of students at a study center or another location. This includes lectures, workshops and practical exercises.
3. Virtual meetings: online-meetings with the tutor and other students.

In order to carry out the meta-analysis on tutoring and support we used several sources:

- The annual student surveys (2011-2017),
- The additional surveys for the students in the new model (2016)
- The national student survey 2017
- The results of the student interviews 2016
- The field tests 2014-2017
- The course evaluations 2015-2017

Annual student surveys: Every year at the Open Universiteit a student survey, called Studentinzicht, (student in sight) is sent out to measure the satisfaction of students with several aspects of our courses and programs. In these surveys also beginners and students who only study one or more courses are included but when conducting the meta-analysis we only looked at the data of our experienced students, students who studied with us for six months or more, who indicated that they wanted to do a degree program at the OUNL. In attachment 1 we included a list of the surveys and the number of experienced student who responded.

Additional surveys: When the new educational model was introduced additional surveys were sent out to students who studied in the new model (Schlusmans, van den Munckhof & Nielissen, 2016).

National Student Survey 2017: Since 2013 the Open Universiteit participates in the National student Survey (NSE). In 2017 we analyzed the open answers of the NSE (van den Munckhof, Schlusmans & Winkels, 2017).

Interviews: In 2016 we carried out interview with students who studied in the new programs (Schlusmans, van den Munckhof, Nielissen & Giesbertz, 2016).

Field tests: Each new course at the Open Universiteit is tested extensively with a so-called field test. This is a questionnaire with a set of standard questions about the different parts of the course and additional questions selected by the course teams. In 2017 all the data of all the field tests were collected in one data base which made it possible to analyze these data across courses.

Course evaluations: When a student finishes a course he/she gets a standardized survey with seven questions about several parts of the course. A new course evaluation system was introduced in 2016 which allowed us to collect all the data in one database.

In order to answer the three research questions we scrutinized the different reports we wrote over the years and analyzed all the data we gathered about tutoring and support. One of the problems we encountered
when we carried out the analysis of previous research reports was the fact that questions and answers were not standardized, which made it sometimes difficult to properly compare results.

We used the database of the field tests and the course evaluations to compare the tutoring and support system in the new and in the old model. As the new model is only fully implemented in the master courses and only partially in the bachelor courses we were able to compare the new master and bachelor courses with the old bachelor courses. When we introduced our new evaluation system in 2016 the old master courses were not evaluated anymore, so we do not have systematic data about the old master courses.

4. The use of tutoring and support

The data we have about the use of the different tutoring and support activities are quite limited. There is no central registration of usage and in previous student surveys we only gathered global data.

In our student survey in 2013 (Studentinzicht XII, 2014, p. 18), we asked the students if they had ever contacted the tutor or lecturer to ask a question if so, how often. It turned out that 40% of the students had never even once asked a question. This percentage decreased if we looked at the length of the study but even 30% of students who had been with us for 5 years or more had never contacted the tutor on their own accord. If we only look at the master students this percentage was lower, but still 23% of our master students had never once asked a question.

In the same survey we asked the students how often they had participated in a f2f-meeting or a virtual meeting.

Of all the students 40% (32% of the master students), had never once participated in a f2f-meeting and another 22% less than 5 times (p.17). The most important reasons for not participating in f2f-meeting were that there were no meetings (23%), the meetings were held in a faraway location (29%), they were not compulsory (18%) or they did not have any added value (14%). Of all the students 72% (60% of the master students) never participated in a virtual meeting. However if we look at different faculties we see huge differences: in information technology 48% of the students and in educational sciences 24% of the students had participated in 5 meetings or more. In the other faculties in 2013 there were hardly any virtual meetings.

In two surveys in 2012 and in 2014 (Studentinzicht XI, 2012, p. 61 and Studentinzicht XIII, 2015, p. 35) we asked a group of experienced students, to which extent they had experience with different forms of tutoring and support. About 50% of the students had experience with individual support and feedback of the tutor. The amount of students with experience with f2f-meetings dropped from 58% in 2012 to 45% in 2014 but the experience with virtual classrooms increased from 19% I 2012 to 32% in 2014.

In 2015-2017 we asked in the course evaluations if the students had attended f2f-meetings or virtual meetings. We made a distinction between bachelor courses in the old model and fixed master and bachelor
courses in the new model. In the figure beneath attendance of f2f/virtual meetings in the old and new model is compared.

**Figure 1 Attendance of f2f-meeting in courses in the old model and in the new model (course evaluations)**

In the new model we see that there are more f2f-meetings. Most courses have one or more meetings and often these meetings are part of the course and are in fact semi compulsory, students are expected to attend them. We see that more students attend (all) the meetings. If we look at the group where meetings were available, only 12% of the students in the new model indicate that they did not attend compared to 70% of the students in the old model.

**Figure 2 Attendance in virtual meetings in courses in the old model and in the new model (course evaluations)**

If we look at the virtual meetings the differences are even more pronounced. In the new model there are about the same percentage of meetings but the attendance is better. If we only look at the courses in which meetings were available 55% of the students who filled in the evaluation attended all the meetings and another 20% part of them. In the old model 80% of the students did not attend the meetings. One explanation might be that meetings are more presented as integral part of the course and are semi-
compulsory. In the old model attendance of meetings was voluntary and meetings were often an optional extra.

5. Satisfaction with different forms of tutoring and support

In 2012 and in 2014 (Studentinzicht XI, 2012, p. 61 and Studentinzicht XIII, 2015, p. 36) we asked the students who had experience with the different forms to rate the quantity and the quality of different forms of tutoring and support. These are all students who studied in the old model.

Table 1 Satisfaction with tutoring and support in 2012 and 2014 (old model)

<table>
<thead>
<tr>
<th></th>
<th>2014 (N=438)</th>
<th></th>
<th>2012 (N=410)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Quantity</td>
<td>Quality</td>
<td>N</td>
</tr>
<tr>
<td>Individual support/feedback</td>
<td>204</td>
<td>5,8</td>
<td>7,6</td>
<td>206</td>
</tr>
<tr>
<td>F2F-meetings</td>
<td>195</td>
<td>5,8</td>
<td>7,6</td>
<td>238</td>
</tr>
<tr>
<td>Virtual meetings</td>
<td>140</td>
<td>5,3</td>
<td>7,0</td>
<td>76</td>
</tr>
</tbody>
</table>

All the different forms of tutoring and support score low on quantity, this is even more so in 2014 than in 2012. Just before the introduction of the new model, students definitely were not satisfied with the amount of tutoring and support they received. The quality of the different forms of tutoring and support was rated higher although virtual meetings in 2014 got lower scores than the other forms. One reason for the lower scores of virtual meetings was the fact that there were lots of technical problems with the virtual classroom at that time.

In 2014-2017 we asked the students who study in the new model in the field tests to rate the quality and quantity of different forms of support.

The majority of the students is very satisfied with the quantity. Only 20% of the students would like more meetings, most of these student study cultural sciences or law. Most About 5% of the students indicate that they would prefer less f2f meetings.

Figure 3 Quantity of tutoring and support
If we look at the quality of tutoring and support in the new courses on a five point scale we see that the majority is satisfied. 68% is satisfied with the quality of individual tutoring and support (of which 22% very satisfied), 63% with the quality of the f2f-meeting (of which 18% very satisfied) and 56% with the quality of the virtual meetings (of which 14% very satisfied). But we also see that 7% is dissatisfied with the individual tutoring and support, 10% with the f2f-meetings and 14% with the virtual meetings.

![Quality of tutoring and support in Field tests](image)

**Figure 4 Quality of tutoring and support in Field tests**

We also asked the students (2014-2017) about the added value of the tutoring and support activities. They felt that virtual meetings had the least added value and the individual support and feedback of the tutor the most.

![Added value of different forms of tutoring and support](image)

**Figure 5 Added value of different forms of tutoring and support (Field tests 2014-2017)**

In 2013 (Studentinzicht XII, p. 18) we asked the students what would be the added value of a F2F of virtual meeting. Two things were mentioned: interaction and a deeper understanding of the content. Students felt
that by discussing the materials and interacting with the tutor and other students, they would get a better understanding of the subject matter and it would improve their motivation.

In 2015-2017 we asked the students in our course evaluations how they rated the different kinds of tutoring and support. We compared BA courses in the old model and fixed BA- and MA-courses in the new model.

Figure 6 Ratings for different forms of tutoring and support in course evaluations

In the new model the ratings for the tutor or lecturer are higher than in the old model. In the new model the tutor is more visible and there are more assignments with personal feedback. It appears that student appreciate this and are more satisfied.

However the ratings for f2f meetings and even more so virtual meetings were higher in the old model than in the new one. One explanation is that attendance in the old model most of the time was voluntary, so students who filled in the evaluation attended the meetings because they wanted to while in the new model, quite a lot of meetings were semi compulsory and student felt they had to attend meetings which they felt that did not have added value. Also in the new model we have introduced virtual classrooms on a larger scale and maybe tutors and students were not enough prepared for this. Looking at the open answers we find that students complain about bad preparation and inexperienced tutors in the virtual classrooms. And although technical problems have been reduced by upgrading the system we find that in quite a lot of meetings there are still smaller or bigger issues with sound and picture.

However, looking at the individual courses we see huge differences. Some activities students really like. Examples of those are a visit to the zoo where students have to carry out several scientific activities, a mini-conference where students and PhD-students meet and attend workshops about the different research projects, an interactive game played online but also a meeting where researchers show what they are doing and let students ask questions.

In 2016 we also interviewed 57 students who studied in the new master courses and we looked at the open answers in the National Student Survey 2017 (Schlusmans, van den Munckhof & Winkels, 2017). About 20% of the students who filled in the National Student Survey 2017 mentioned one or more aspects of tutoring and support. We found out that students appreciate the individual attention and contact with tutors. They give high score for quick responses and personal feedback. They like well-organized meetings, with lots of interaction and focus on content more than on process and procedures. The f2f-meetings as well as the
virtual meetings should not be a substitute for information sharing which can also be given in the materials. Good, well-structured materials are our core business and students appreciate this. They do not want this replaced by information sessions.

Students give low scores when their emails get lost or if they do not get any response. They want real feedback on their assignments and not just a mark. Students are most critical about the extensiveness of the feedback (Studentinzicht XV, 2017) They want the tutors and lecturers to be confident in using the virtual classroom. They hate it when f2f-meetings are disorganized, and badly prepared and when student who have not prepared for the meeting use up all the tutors’ time with questions which they could have had answered, had they read the materials.

6. What kind of tutoring and support would students like?
We asked our students in our 2012 and our 2014-survey (Studentinzicht XI, 2012 p. 62 - Studentinzicht XIII, 2015, p. 37): what kind of tutoring and support they would like more of. Students indicated that they would prefer more help with keeping track of their progress, study coaching and selecting the right courses. They would also like more explanation of the subject matter and more preparation for exams.

In our 2013 survey (Studentinzicht XII, 2014, p. 21) we asked the students about the amount of tutoring and support they would like. 28% of the students would like more contact with the tutors or lecturers, about 40% of the students would like more (virtual) meetings but the majority (58%) said that they prefer studying by themselves and only having contact the OU when they feel it is necessary. A student once said ‘I would like more contact with the OU but I want it at the time and place when and where I need it.’.

![Figure 7 The kind of tutoring and support students would like. % of students who agree](image)

In the same survey (Studentinzicht XII, 2014, p. 19-20) we also asked the students what makes a good distance tutor. They often used words such as ‘approachable’ and ‘accessible’. Students also said that a good tutor should be communicative and be enthusiastic about teaching and the subject matter.

“A good tutor inspires me to talk enthusiastically about the subject. I am also pleasantly surprised if I notice that the tutor shows that he knows me from previous contacts and is interested in my progress. A good tutor is also someone who can give good feedback.” (A student in our survey 2013, p. 20).

We also asked our students how often and how far they are prepared to travel for a f2f-meeting. (Studentinzicht XIV, 2016 b, p. 7). Students are on average prepared to travel one hour and nearly 40% is
prepared to travel once a month. Only 18% of our students say that they want as little f2f-meetings as possible.

![Bar chart showing preferences for meeting frequency]

**Figure 1** How often do students want f2f-meetings?

7. Conclusions and recommendations

In 2014 the Open Universiteit introduced a new educational model with more emphasis on tutoring and support and more visibility of the tutors and lecturers and more f2f and virtual meetings. At the start of our paper we asked three questions:

1. How many students actually use the tutoring and support on offer? What are the reasons not to use it? Is there a difference between the old and the new model?
2. How do students value the tutoring and support on offer? Is there a difference between the old and the new model?
3. What do we know about our students’ expectations and needs as far as tutoring and support at the Open Universiteit is concerned?

Although it sometimes was difficult to compare the old and the new group of students as questionnaires were not always standardized and the old master students were not included in the more recent evaluations, some major trends emerged from the analysis.

We found out that in the old model in general students were not satisfied with the amount of tutoring and support they got but also that a large group did not use the tutoring and support on offer. We were surprised to find out that 30% of our very experienced students had never contacted a tutor to ask a question. Also less than half our students had ever participated in a tutor meeting. In general however the students who used the tutoring and support on offer were quite satisfied. The majority of students also said that they prefer studying on their own.

In the new model we see that more students use the tutoring and support on offer. More sessions are in fact semi compulsory. There is more contact with the tutors and lecturers and the appreciation of the quality of the tutors or lecturers is higher in the courses in the new model. The meetings however score lower in the new model. Less so in the f2f-meetings but certainly in the virtual meetings. We also found in the open answers and the interviews that students are quite critical of the added value of the meetings.
What students really seem to want is tutors they know and they can contact when they need them. They want quick replies to their questions and good personal feedback. They appreciate it when a lecturer or tutor knows them and knows about their progress.

F2f-sessions are fine but only occasionally and f2f-meetings really have to offer something the materials cannot such as lots of interaction with other students and the tutors, exchanges of ideas, interesting lectures with discussions. F2f-meetings which are integrated in the courses where students have to give presentations or attend workshops or practical tend to score higher.

With the virtual meetings we see huge differences in different courses. Students appreciate the fact that they do not have to travel. They want sessions with experienced teachers, who know how to set up an interesting virtual classroom which offers them something the materials do not.

Based on these findings, we would like to give the following recommendations:

1. The high visibility of the tutors and lecturers in the courses is a good thing and should even be more prominent in the online materials and communities.
2. Use the f2f-meetings sparsely and only when they have real added value. Rather have a couple real memorable f2f-meetings than a lot which can easily be replaced with online materials.
3. Develop good interactive formats for virtual classrooms and train the tutors and lecturers to use them in such a way that they add value to the courses.

8. References
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Usefulness and effectiveness of the Mobile Digital Resources (MDR) Conceptual Model for improving integration in the educational process of disadvantaged students

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Abstract  
This paper describes the European research project mRIDGE (Using mobile technology to improve policy Reform for Inclusion of Disadvantaged Groups in Education, PROJECT Number 562113-EPP-1-2015-1-BG-EPPKA3-PI-FORWARD). Within the project, a MDR model has been created for the development of mobile applications with augmented reality whose aim is to improve the educational integration of disadvantaged students.  
One of the hypotheses of the project is based on discerning and evaluating how useful and effective the MDR model is for improving the integration of the groups taking part in the project. Thus, usefulness and effectiveness of the MDR model are the variables measured. Results obtained with several online questionnaires and the analyses of the responses to the open questions are detailed in this paper. One questionnaire is designed for students and another one for teachers.
According to the results obtained with the questionnaires, both teachers and students consider that the proposal of a MDR model has been very positive and in the open questions they share a series of suggestions for improving the model. In general data shows that the users (teachers and students) are satisfied with the system and they consider that the educational resources designed with this mobile augmented reality system are useful and effective, thus contributing to improve the learning process.

Keywords: system of applications with augmented reality, usefulness, effectiveness.

1. Introduction
The current knowledge/information society is providing new means for communication and transmission of knowledge to all people. ICT (information and communication technologies) "have defined in recent years new virtual scenarios for communication, teaching and learning in a global digital environment interconnected through the Internet" (Villalonga and Marta-Lazo, 2015: 138); thus, they should be available especially to those people who need them for achieving their own goals.

According to Kon and Dela Vega (2014: 2) technology "fulfills the right of people with special needs to get the best quality of life", understanding that these tools make integration easier and give more opportunities for those in need. In this sense, technologies applied to education are considered to be key tools for promoting equity in education; hence, physical access to technologies and the development of digital skills required in today's society must be considered a right of every human being (Prefasi and others, 2010).

Mobility, portability, interactivity and individuality (Klopfer & Squire, 2008), along with immediacy, connectivity, ubiquity and adaptability of the new devices will increase their educational potential and if they are adapted to the needs of groups at risk of exclusion they will be true drivers of socio-educational changes. However, the way in which knowledge is transmitted today must be seen as a step beyond traditional education, either face-to-face or distance education; it must also be understood as a key point that does not depend on technological changes but rather, as stated by Aparici (2010: 18), "with new or old technologies it is imperative to search new ways of teaching and learning. Methodological changes, the search for new pedagogical models and dialogue-based interactive practices are matters beyond the use of one technology or another". Therefore, technology is necessary and important for social changes that favor the integration of populations at risk, but these tools must be based not only on essential technological changes but also on methodological changes that ease the teaching-learning process for the population they are addressed to.

Currently mobile technology has transformed the educational landscape, and m-Learning as a methodological approach has emerged to address the lack of collaborative, flexible, spontaneous and problem-solving learning. As Cantillo, Roura and Sánchez (2012: 3) point out, "a tool that was originally designed for communication has been reinvented to be used in teaching as an educational resource, reconceptualizing and recontextualizing terms such as distance and mobility, previously considered to be absolute ".

Several authors (Villalonga and Marta-Lazo, 2015; Cantillo, Roura and Sánchez, 2012; Attewell et al, 2009) declare that mobile devices are tools that focus easily on users' needs, can increase motivation, sociocultural integration and commitment during the learning process, facilitate communication, collaboration and integration among users, make the learning process faster, easier, more attractive and acceptable for students with social, cultural, educational and physical disadvantages. And as Fombona, Sevillano, Ángeles, & Madeira Ferreira (2012) state, they are socializing elements that, through their universality and versatility, favor living conditions, learning and social integration of those people in need of special support.
Under these assumptions, the European research project mRIDGE (Using mobile technology to improve policy Reform for Inclusion of Disadvantaged Groups in Education PROJECT Number 562113-EPP-1-2015-1-BG-EPPKA3-PI-FORWARD) has been developed.

2. The mRIDGE project

In order to address the needs of disadvantaged groups, and taking into account the social and educational advantages technology can offer to this population, the European research project mRIDGE (Using mobile technology to improve policy Reform for Inclusion of Disadvantaged Groups in Education) is being developed. The objective of this project is the design of digital resources for mobile devices to improve the educational integration of disadvantaged students - groups at risk whose ethnical and cultural features, special needs or socioeconomic status significantly constrain their possibilities for receiving a suitable education.

The target population for this research is the so-called groups at risk, i.e., people who are disadvantaged because of their ethno cultural characteristics, students with special socio-educational needs and unemployed people. Thus the focus of the project will be the use of mobile technologies to improve and support the implementation of innovations in education for the following disadvantaged groups:

- Roma children and their teachers
- Hearing impaired children and their teachers
- Students with musculoskeletal disorder (MSD) and their teachers
- Unemployed people

The partners of the mRIDGE project are the following educational institutions:

- Plovdiv University “Paisii Hilendarski” (PU), Bulgaria
- Universidad Nacional de Educación a Distancia (UNED), Spain
- Ravensbourne Higher Education Institution (RAVE), United Kingdom.
- The University of Craiova, Romania
- Primary school “Geo Milev”, Sadovo, Bulgaria
- Secondary Vocational School for Children with Hearing Disabilities “Prof. Stoylan Belinov”, Plovdiv, Bulgaria
- “Special gimnazial school Sf. Mina”, Craiova (Mina), Romania
- [RIA - Smolyan] The Regional Industrial Association, Smolyan, Bulgaria
- Plovdiv Municipality, Bulgaria.

The hypothesis which the research project is based on assumes that digital resources developed with mobile technology and the use of these technologies in the deployment of digital resources in the learning process will assist in reducing the dropout rate and a better use of learning materials in the education of students with special needs, thus favoring their teaching-learning process and their chances for a higher integration of disadvantaged students in the current educational system as well as the possible inclusion of people isolated due to socio-economic reasons.

The mRIDGE research project started in November of 2015 and will conclude at the end of 2017; thus the results described in this paper are data collected in one of its phases. These phases or steps are consistent with its specific objectives, which derive from the hypothesis of the project and the aforementioned global objective. These specific objectives are:

1. To analyze the users’ needs (both teachers and students) in different contexts, paying special attention to their socio-educational limitations and the current curricula in Bulgaria and Romania. In
this phase of the project it has been necessary to evaluate the use of technology by students to understand how IT tools can assist in their integration in the learning process.

2. To design the MDR model and its digital resources as support of the educational features of mobile technologies and augmented reality that can be used for improving the learning processes, but taking into account that it is necessary to adapt these resources to the specific educational conditions of the groups of people the project is addressed to.

3. To carry out a technical and pedagogical design (MDR Model) adapted to the different educational scenarios. Having in mind the conditions and limitations of the addressees of the mRIDGE project, the aim of the methodological and technical design of the MDR model is to enhance interactivity in teaching using mobile devices. The use of multimedia resources in education with mobile devices would be suited and beneficial for the motivation of minority groups. On the other hand, mobile devices offer visual stimuli that support the information storage process aiding teaching and learning of hearing impaired students. It is also important to point out that learning with mobile devices potentially increases access to education for people with reduced mobility by creating a learning environment free from spatial barriers, irrespective of time and place.

4. To improve the existing socio-educational policies and good practices for the development of new ones for disadvantaged groups of people in the member states of the EU.

The mRIDGE research project is based on the MDR model, and from the improvement of this model new educational modules for students at risk will be created based on teaching methods that use mobile technology and devices.

The results presented in this paper - although taking into account that the mRIDGE project is not ended yet - currently focus on assessing how well the mobile application system with augmented reality for educational purposes is developed and adapted to the needs of the different scenarios, as well as how well adapted are the digital educational resources for mobile devices to the specific features of the DIPSEIL platform for e-learning; i.e., to learn in detail about the MDR model, whose features and different phases are described in the following section.

3. The MDR model

The MDR Model is based on the development and use of educational digital resources, mobile devices and augmented reality, and how they influence the teaching-learning process. In this model the use of mobile devices and digital resources in education provides innovative solutions to cover the needs of the groups at risk object of this research, since these devices make available to teachers resources for making complex presentations to improve understanding and study of different subjects according to the educational needs of the students.

Intelligent mobile devices - the tools used in this project - are, among other main features, flexible and specific, necessary for them to be adapted to the educational needs of the users whom this project is addressed to, as these technological tools give students autonomy and frees them from limitations of time and space. As well, students can use these technologies both in the classroom and outside it at any moment and access to a large amount of information resources.

The MDR model is supported by an electronic learning platform, DIPSEIL, which makes possible the design, development and supply of resources for the educational process, assuring assistance to students when necessary and as much as necessary for enabling them to deal with real work in a problem-based context.

The partners of the mRIDGE project have detailed in an extensive report the main elements of the MDR model such as its educational framework, the physical characteristics of the mobile devices the MDR model
works with and its technological features, all of them aimed at promoting education and learning of disabled students.

3.1. Features of the MDR model

For the design of the MDR model the different theories on learning through mobile devices (mLearning) have been taken into account. Behaviorism, cognitivism and constructivism have provided the guidelines on how to implement mobile technology for enhancing students' learning processes.

The educational design follows theories for mobile learning such as cognitive load theory and learning with principles of split attention, modality, redundancy, segmentation, sequencing and stimuli of students, as well as the principle of collaboration. Minimalism and guidelines on technological affordance have also been taken into account.

Within the different strategies for efficient mobile learning, the MDR model focuses on learners’ attention. As in the case of Cantillo, Roura and Sánchez (2012), the mRIDGE research project has always sought teachers to provide contents but it is essential that the educational design eases the development of effective learning strategies; these elements have been taken into account in this model, thus highlighting the importance of the materials and technological tools that gain and hold the attention of the different groups which this research is addressed to.

The pedagogical design of the MDR model of the mRIDGE research project aims at students to be motivated with the subjects to be studied, and therefore it must provide relevant content according to the curricular objectives and the educational needs of students at risk of exclusion. As Coll (2013) states, activities and resources proposed must foster educational interactivity by providing opportunities for practice and feedback, favor transfer of knowledge and must be adapted to place and context.

The physical features of MDR mobile devices share a series of common hardware features such as display, battery, an input mechanism to allow the user to interact with the device, an antenna, etc. These features may be different in the diverse types of mobile devices used (mobile phones, smartphones, tablets, laptops), but also must be in accordance with the pedagogical design that focuses on mLearning (Attewell et al., 2009).

As part of the physical features, a series of aspects related to the screen size, the weight of the device and the interaction method used have been taken into account. The different ranges of screens have been considered, combining sizes and real densities, and focusing mainly on size: small, regular, large and extra large. The densities have been generalized in: ldpi (low), mdpi (medium), hdpi (high) and xhdpi (extra high). And for the interaction method in the design of the MDR model, two types of interaction have been defined:

- The standard interaction through a physical keyboard
- The touch screen allowing to control the device simply by touching graphical buttons and images appearing in the screen, which detects the pressure of the fingers

Technical aspects of mobile devices such as multi touch screen and accelerometer should also be considered when creating interactive content, including educational games and simulations. Magnetometer, GPS and cameras present in the latest mobile devices fully support learning based on location and augmented reality for educational purposes; for this reason in the MDR model some of the sensors of mobile phones have been used for m-Learning: proximity, accelerometer, magnetometer, image, touch, GPS.
Among other technological aspects, the features, advantages and disadvantages of the most common mobile operating systems have also been taken into account. The most used operating systems are:

- Google Android
- Apple iOS
- Blackberry OS from RM
- Microsoft Windows Phone

Augmented Reality (RA) has also been used in the design and implementation of the MDR model. Augmented reality is an environment that includes experiences from the real and virtual worlds. This technology has the potential to create a learning environment suited to satisfy students’ interest in exploring the world during their different educational tasks. Augmented reality (RA) is an important feature of the MDR model. It is based on intuitive perceptions and personal preferences, and offers many opportunities to foster interest and motivation in the long term. There are two main forms of augmented reality currently available to educators:

- the first one is based on the visual metaphor, the so-called "markers" like the QR code, which are visual signals that can be seen by the camera of the mobile device. These markers are used to accurately determine the location and nature of the object.
- the second one is based on spatial positioning and has a GPS and a compass, for determining the location and provision of digital resources to locate objects in a place.

As Díez (2012) points out, with the technological design in line with the pedagogical design of the MDR model adapted to the needs of the students it is addressed to, an innovative learning that promotes students to enthusiastically and proactively accept the subject to study occurs when using every innovation related to these technologies. It leads to greater motivation for active participation in the learning process, an important improvement in memorizing school materials and, due to students using more senses, makes learning easier for disadvantaged students, thus being education more effective.

3.2. The MDR model at present

As aforementioned, for the creation of the MDR model a series of phases were set as part of the mRIDGE research project. It is important to analyze and describe them in order to understand the purpose of this paper, especially the current intermediate stage of the project. The first step was to carry out an analysis of needs, where the partners responsible for the project – knowing in-depth the specific features of the population under study - detected the training needs, the use of technology and knowledge of the different addressees. This step is the key to the creation of the MDR model, flexible in both its computer applications and its pedagogical design for it being able to be adapted to any circumstance.

From that point on, and once the system was created, the model was presented to partners, to teachers and specialists in training of every group involved in the project. In this second phase the technical and conceptual features of the MDR model were defined and they were adapted specifically to the training and personal needs of the different groups.

At that moment, once the MDR model was designed and presented to the different partners, teachers and specialists of the different groups the project is addressed to, the MDR conceptual model was evaluated to verify that the basic components of the conceptual model had been identified and, according to results,
reflect on the design of the model based on the needs of the different educational scenarios. Thus, the subsequent third step was the evaluation of the MDR model. From this point it is necessary to:

- Verify that the basic components of the conceptual model have been identified.
- Reflect on the design of the model based on the needs of the different educational contexts.
- Evaluate the definition of the training methods and the work of teachers and students at risk according to different scenarios.

In order to collect data in which the evaluation of the MDR model was based on, an online questionnaire on the features of the MDR model adapted to each of the scenarios or population it was addressed to was created as an instrument for gathering information. The variables measured are efficiency, usefulness and utility.

The variable usefulness is defined as "the extent to which a product can be used by certain users in order to achieve its purposes with efficiency, efficacy and satisfaction in a specific type of use" (Pérez, 2016; Bevan, 2009). From this definition we can verify how the three variables analyzed in this paper are interrelated and complementary; but also, as Rodríguez Jiménez and others (2016, 38) state, it is important to identify and determine usefulness in the ease of use, to be “user friendly” for both students and teachers and their effectiveness in promoting learning. On the other hand, and related to the concept of usefulness, Benítez et al (2015) define efficiency as "the requirements and indicators that allow evaluating the activities that are carried out or can be undertaken with the support of mobile devices and how they are organized according to the learning outcome, if they are different, new or better than with other means depending on the functionality (mobility) of the devices used ”.

From the description of the MDR model, the characteristics of the phase in which the mRIDGE project is at present and objective of this paper - defining the variables that are researched – hereunder, the methodology used and the results obtained are detailed.

4. Methodology

Results obtained on effectiveness, efficiency and usability of the MDR model during one phase of the mRIDGE research project will be detailed in this paper, analyzing the strengths and weaknesses as well as the results of the two questionnaires designed for this phase of the research.

Two online questionnaires have been created for the above mentioned objectives:

- Questionnaire for students on the evaluation of efficiency, usefulness and utility of mobile applications and educational digital resources
- Questionnaire for teachers on the evaluation of efficiency, usefulness and utility of mobile applications and educational digital resources

One questionnaire is addressed to teachers and the other one to students; both focus on effectiveness, efficiency and usability of the system. As they will be answered by different groups of participants, the online questionnaires have been adapted to the specific features of each group.

The variables measured in these tools are:

- Dependent Variable (DV): Effectiveness/Efficiency/Usability.
- Independent Variable (IV): Digital Educational Resources
Each questionnaire consists of 18 questions divided into three blocks – one for each feature to be measured – and a final open question. Each of the three blocks consist of 5 closed questions that can be rated on a Likert scale of 1 to 4 (1= Strongly disagree; 2= Disagree; 3= Agree; 4= Strongly agree). Thus the highest score that can be given to each question is 4, meaning to totally agree with the statement, and the lowest score is 1 which means to totally disagree with the statement. In the open question, respondents can describe the elements to be improved or changed.

These questionnaires are addressed to:

- Students at risk of exclusion (groups detailed in previous sections of this paper)
- Teachers of disadvantaged groups of students (Roma children; hearing impaired students; students with musculoskeletal disorder and unemployed people)

5. Results

Results from the answers of the participants on the variables of the project, obtained with the aforementioned measuring tools are detailed hereunder.

5.1. Variable: Efficiency

The scaled results obtained from students’ responses in “Part 1: Efficiency” are shown in the following chart:

![Figure 1: Mean obtained from students’ responses in the variable Efficiency](image)

In general it can be said that efficiency of the MDR model has been very positively rated by students, since very high scores have been obtained with means above 3 out of 4.

As per data, students scored the highest item 2 of the variable efficiency, referring to self-assuredness when using the DIPSEIL system the digital resources of the MDR model are based on. This item has obtained a mean of 3.63 out of 4. Question 5 closely follows; with a mean of 3.57 out of 4 it shows that students think that the digital resources and mobile applications of the MDR model are effective for promoting the study of the different subjects.
Results from the open question addressed to students in this part of the questionnaire are:

- All students are satisfied and enthusiastic about the system of the MDR model
- However, students share very positive advise on improving the MDR model, and in particular its efficiency through:
  - more interactive lessons that encourage active learning of students
  - the possibility of communication between students through the DIPSEIL system
  - improving the communication tool between teachers and students, making it simpler
  - the MDR model offers many utilities, and therefore it can be more efficient in its teaching-learning process, but system is not used to its full potential

Figure 2 shows in detail teachers’ responses for the Efficiency variable:

![Figure 2](image_url)

**Figure 2. Mean obtained from teachers’ responses in the variable Efficiency**

As per data on the chart above, we can say that the variable efficiency of the MDR model has been very well rated by all teachers, since it shows a mean well above 3 over 4.

Teachers, as students, have given the highest score to item 2 of the efficiency variable that refers to self-assuredness when using the DIPSEIL system which the digital resources of the MDR model are based on. This item has obtained a mean of 3.68 over 4. It is closely followed by question 5, with a mean of 3.59 out of 4 and showing that teachers think that the digital resources and the mobile applications offered by the MDR model are effective for promoting study of subjects. Question 3 scores high as well, with a mean of 3.59 out of 4.

In the open question on efficiency, results show that teachers are very satisfied and enthusiastic about this MDR model but they also offer improvements that to a great extent coincide with those proposed by students such as the use of more interactive lessons for encouraging active learning as well as other improvements not suggested by them:

- the possibility to save on resources for mobile devices and work offline
• simpler and more attractive applications
• the chance for using interactive whiteboards connected to virtual libraries

In general, and according to results obtained with both questionnaires, it can be said that teachers and students consider the system to be efficient and are satisfied with it (with a mean above 3 in all questions). On the other hand, teachers think that the DIPSEIL system offers the requested information on time and when necessary, while students give a positive but lower score to this question. As well, students feel that the DIPSEIL system offers them help when needed, and teachers – although answering in a positive way - do not give such a high score to this question. The question where students and teachers coincide as an area of improvement is the time it takes the DIPSEIL system to retrieve information if there is a mistake in it.

5.2. Variable: Usefulness

The scaled results obtained from students’ responses in “Part 2: Usefulness” are shown in the following figure:

![Graph showing mean values for question 7, 8, 9, 10, 11 in the Usefulness variable](image)

According to students responses, the variable usefulness of the MDR model has obtained a mean above 3.5 out of 4.

As per data, students scored the highest question 10 on recommending this system to other students - with a mean of 3.69 over 4. Closely follows question 8 which refers to them considering that this DIPSEIL system within the MDR model has been designed according to the educational needs of students, with a mean of 3.6 out of 4.

In the open question referred to this variable, students are satisfied and think this system to be well suited to their learning needs.

Figure 4 shows in detail teachers’ responses for the Usefulness variable:
Teachers have scored above 3.5 out of 4 the variable Usefulness, thus no having relevant areas of improvement. In the open question teachers generally are satisfied with this system, although some consider that it is not applicable to all subjects.

Teachers, such as students, have scored the highest question 8, which refers to students considering that this DIPSEIL system within the MDR model has been designed according to the educational needs of students. This question has a mean of 3.77 out of 4. Closely follows item 10 with a mean of 3.68 out of 4, showing that teachers, as students, would recommend this system to other students.

Both teachers and students consider that they are satisfied with the usefulness of the applications for mobile devices (with means above 3 in all items). Teachers think that the digital learning resources assist students in learning and completing assignments, while students score this question high but lower than teachers.

5.3. Variable: Utility

The scaled results obtained from students’ responses in “Part 3: Utility” are shown in the following figure:
Students have scored questions of the variable Utility above 3 out of 4. Question 17 has obtained the highest score, 3.75 out of 4, and refers to how easy learning is when using the DIPSEIL system. Follows question 14 referring to the easiness of navigation when using the DIPSEIL system, with a mean of 3.57 out of 4.

Figure 6 shows teachers’ answers for the variable Utility:

As per data in the questionnaire for the variable Utility, teachers have scored question 14 the highest, with a mean of 3.59 out of 4 and referring to the ease of navigation when using the DIPSEIL system. However, for teachers the items receiving the highest scores are 15 and 17, with 3.4 out of 4 respectively. Teachers’ scores in this variable show that for them the system used is simple and comfortable, which can favor the teaching-learning process.
Teachers and students alike think that the system is efficient and they are satisfied (with a mean above 3 in all questions). Open questions in teachers' and students' questionnaires show very positive answers, and no areas of improvement have been suggested. However, there are two points worth mentioning in both questionnaires:

- they consider that by using this system students can complete their tasks
- they have scored lower the question on students' knowledge and skills required for using this system

6. Conclusions

Teachers and students have considered the MDR model to be a very effective tool for promoting active and participatory learning and, according to results, with a high degree of usability. They describe it as innovative, attractive and useful, which makes us think that it can achieve high scores in the next phases of the project, and especially in the pilot phase.

According to data collected users confirm that the MDR model proposed by the international mRIDGE project has been very favorable, and through the open questions they offer brief recommendations for improving the current system. In general, data shows that users (teachers and students) are satisfied with the system obtaining in all cases a score above 3 on a scale of 4.

The use of mobile devices through the MDR model - which includes the technical part and the pedagogical design – scores high in efficiency, usability and effectiveness for the teaching and learning process. According to the results obtained in this phase of the project, the MDR model is effective and has great educational potential for students as well as for all those involved in this research. As per data, and especially with the open questions, it can be said that the respondents consider the MDR model to be attractive and useful thus being a motivating element in the teaching-learning process, in particular for this specific group of people.

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Abstract
Formative assessment and personalised feedback are commonly recognised as key factors both for improving student’s performance and increasing their motivation and engagement (Gibbs, 2005). Currently, in large and massive online courses technological solutions to give feedback are reduced to different kinds of quizzes. Using multiple-choice questions shows serious shortcomings when it comes to the assessment of learning activities, based on written expression and higher-order thinking analysis. Thus, at present, one of our challenges is to be able to give feedback for open-ended questions through semantic technologies in a sustainable way.

To face such challenge, our academic team decided to test a Latent Semantic Analysis-based automatic assessment tool, named GRubric, developed by researchers at the Developmental and Educational Psychology Department of UNED (Spanish National Distance Education University). The first experience was launched in 2014-2015. By using GRubric, automated formative and iterative feedback were provided to our students to different types of open-ended questions (70-800 words). This feedback allowed students to improve their answers and practice writing skills, thus contributing both to a better concept organisation and the building of knowledge.

Open-ended questions allow instructors to assess the achievement of learning outcomes adequately. In fact, higher-level outcomes such as analytical skills, construction of arguments or precise writing can be more effectively assessed via open-ended questions. Because of this, many instructors show a strong preference for this kind of learning activities, even if they are more time-intensive and harder to grade. The problems, however, arise when it comes to the reliability and fairness of grades. As will be shown, the use of GRubric
could cope simultaneously with both problems, namely inter-examiners variability and intra-examiner reliability.

In this paper, we present the promising results of our first experiences in UNED Business Degree students along three academic courses (2014/15, 2015/16 and 2016/17). These experiences show to what extent an automated assessment software such as Gallito-G-Rubric is currently mature enough to be used with students, obtaining quite satisfactory results regarding giving them an enriched and personalised feedback. Furthermore, GRubric would help to deal the problems related with grading above described. Our final goal is not to replace tutors by semantic tools, but to give support to tutors in grading student’s assignments.

**Keywords:** formative assessment, latent semantic analysis, writing to learn, open-ended question, automatic feedback, student engagement, automated essays assessment, AEA.

1. **Introduction**

In the last years, we have seen an increasing demand for higher education and life-long-learning programs. At the same time, the budgets of public universities have experienced severe cuts, at least in Spain. To respond to this demand a growing supply of large online courses and new modalities such as MOOCs have been put in place. More demand and fewer resources have had as consequences that quizzes are the main assessment tool; that means a poor feedback and a lack of personalisation of the learning process.

Furthermore, our students, as users of technologies, expect a quick and iterative feedback. They love learning by trial and error. Nevertheless fast and iterative feedback only can be provided by the use of technology. However, feedback based on technologies still offers limited solutions.

As Economic History teachers, our learning outcomes include not only knowledge referred to this subject, but also, the acquisition of soft skills like analysis, critical thinking, and so forth. We realise that quizzes have serious shortcoming to assess these learning outcomes. To evaluate these learning outcomes, we should mix a different kind of assessment activities such as multiple choice questions, short open-ended questions about concepts, historical processes and written comments of text, maps, graphs, statistical data, eg.

Then our challenge was how to give quick and iterative feedback for open-ended questions in a sustainable way; that was the main reason to make use of semantic technologies as a way to achieve our goals.

1.1. **The role of feedback on performance improvement and students’ engagement**

According to different researchers (Black & William, 1998), feedback is the most powerful single factor to make a difference to students’ achievements (Gibbs, 2005).

The economies of scale provided for online courses are difficult to achieve for assessment. Furthermore, writing comments on assignments remains a major component of lecturer’s workload. For this reason, the feedback to individual students in online courses has declined significantly as number students enrolled increased.

The effects of formative assessment are well known. The feedback helps to reactivate prior knowledge, focus attention on most important aspects of the subject and encourage active learning strategies. Moreover, it gives students opportunities to practise skills and consolidates learning providing corrective feedback. Finally, the feedback allows students to monitor their progress and develop skills of self-evaluation and critical thinking (Crooks, 1988, Gibbs, 2005).
1.2. The challenge: how to give personalised feedback on large online courses

Easily adapted to computer interfaces, testing devices delivering automatic assessment are nowadays an important piece in the Virtual Learning Environments (VLE) flourishing in our campuses, both face-to-face or online. These mostly display multiple-choice questions, but also a wider range of assessment tools, including true-false, fill-in-the-blank, matching or numerical questions. Many include different sources of feedback and can be embedded in multimedia materials. More sophisticated tools are conceived every day, but all share one common trait: to provide an objective assessment. In this sense, these tools have to deal with a limited, predictable range of possible answers.

However, how fast, objective and precise this process can be, still presents serious drawbacks. The current burst of MOOCs (Massive Online Open Courses) has brought to the fore the need for more nuanced and flexible means to assess more complex exercises when thousands or even tenths of thousands of participants are engaged in one course. In this context, quick and yet trustable assessment is needed, but qualified instructors cannot provide it. The combination of precise grading and rich feedback in these courses has been lately addressed resorting to peer-assessment based on detailed, well-structured rubrics that break assessment operations into smaller pieces which can be reasonably be entrusted to the very students taking the courses. However, although this may sound promising, there is still plenty of room for automated assessment devices based on semantic technologies.

1.3. Semantic technologies are helping us to cope with such challenge

Automated Essays Assessment (AEA) has a long history. The development of technologies such as word processing and the Internet encouraged the improvement of AEA systems. Also, the advances experienced since the 1990’s in computational technologies of natural language processing facilitated the analysis of morphology (word structure), syntax (sentence structure) and semantics (meaning). The analysis of content was carried out through lists of keywords, synonyms and the analysis of the frequency with which certain terms appeared (Shermis & Burstein 2003).

In the last two decades, three AEA products were developed. Two of three “MY Access” and “Criterion”, provided numerical scores and some evaluative feedback, which were comparable to that produced by humans raters. The scores were obtained by comparing the essays to score with human-scored essays of the same prompt. The third scoring engine, the Intelligent Essay Assesor, made use of latent semantic analyses, in which the semantic meaning of a given text was compared to a broader corpus of textual information (Landauer et al., 1997). This system has been focused on evaluating conceptual content paying less attention to the text’s style and the grammar structure. This approach will require fewer human-scored essays to pieces scoring because it is laid on semantic analysis rather than statistical comparisons to previously scored essays (Warschauer, M., & Ware, P. 2006). According to this previous research, AEA scoring tends to be accurate. Some AEA systems have become embedded within automated writing evaluation systems than assign scores along with feedback on errors and may include instructional scaffolds and learning management tools (Roscoe & McNamara, 2013).

Paradoxically, there is not so much research in Distance Education institutions, despite that massive numbers of students should have encouraged this field (Jorge-Botana et al., 2015). Concerns about plagiarism and identity-control issues have presumably hindered progress in this specific context, along with logistical matters related to access to computers at the examination place. At present, MOOCs represent, indeed, an open field for the implementation of this kind of application.
What we present here is a pilot testing of one of such devices: a LSA-based automated free-text assessment system, named as G-Rubric, designed by a team of researchers at UNED’s Department of Developmental and Educational Psychology and tested on a group of first-year college students of Economic History at the same university. G-Rubric has proved able to provide fast and precise numeric assessment of free-text short answers (75-800 words), as well as an enriched, personalised feedback that allows students to improve their answers through a series of successive trials. Although our test has been limited to formative assessment, results –both regarding reliability and student-satisfaction-- seem promising enough to consider applying G-Rubric to regular summative assessment (grading). First steps towards this aim will be presented in this work.

1.4. What Grubric is and how it works

Latent semantic analysis (LSA) is based on the concept of vector space models. This means using linear algebra for allocating lexical units in an n-dimensional vector space. LSA is a set of different procedures by which a textual corpus, usually lemmatised and curated, is transformed into a semantic space. In a first step, this corpus is expressed into an occurrence matrix, which usually includes its terms as rows and paragraphs as columns. A second phase is applied to this matrix, which smooths the asymmetries in word frequencies. The third step has made LSA famous which is applying to this matrix a dimension reduction technique using singular value decomposition (SVD) which provides a suitable space in which words and texts are represented in a few but relevant latent (with no meaning) dimensions. This space is handy to represent expert and student answers and calculate similarities between them. The more similarity among student-expert answers, the higher score. However, recently, some authors have developed a very promising procedure called inbuilt-rubric (Olmos, Jorge-Botana, León & Escudero, 2014), which transforms the k first latent dimensions of the original space into non-latent dimensions. The k first dimensions no longer reflect latent knowledge but reflect conceptual axes spread from relevant words of the academic topics. It is handy to offer a conceptual feedback. The scores of the student answers in such k first dimensions indicate if the relevant concepts of the rubric are present in his answer. This technique has reached satisfactory results in real contexts (Olmos, Jorge-Botana, Luzón, Martín-Cordero & León, 2016). This is just the procedure G-Rubric, the AEA of this study, uses.

For the Economic History teachers involved in this study, the essential characteristic of G-Rubric is its ability to provide the student with three different kinds of feedback. First, a numeric grade for content; second an additional numerical grade for writing quality and finally, a detailed graphic feedback, which plots the score in each conceptual axe of the rubric.

Teachers had to provide/create three different types of inputs (which are the inputs to make gallito API work) to develop the task:

a) **Some texts for to build the the corpus:** this is the raw material of the course (e.g. handbooks, reference texts and so forth.), to be inserted on the corpus. For the development of our experience, we built a corpus on Economic History using six different World Economic History textbooks, all of them written in Spanish and published in the last twenty years.

b) **An Specific semantic space.** To generate the space from the corpus, a specific program called Gallito Studio was used (Jorge-Botana, Olmos, & Barroso, 2013). Then, the resultant space, including inbuilt-rubric space, is uploaded to a specific API (Application Programming Interface) called GallitoAPI (www.gallitoapi.net). The web interface for assessment of free-text was named as G-Rubric, and we will usually refer to the whole system with this name, although it is important to retain than
managing of the multi-vector semantic space, which is the heart of the system, is conducted via GallitoAPI.

c) Several learning activities based on short open-ended questions had been developed. For this task, we also used Gallito Studio. Later, we will see an example of these activities. To accompany each activity; we prepared a canon answer (or ‘golden text’) with which students’ answers would be compared. A series of ‘conceptual axes’ (three-five per question) were prepared for each question, all of them constituted by a series of keywords that depict different regions of the semantic field the answer should cover. This ‘golden text’ and ‘axes’ were tested with actual students’ answers taken from past exams to check the accuracy of the numerical grade and the visual feedback drawn from conceptual axes.

Several iterations were needed to reach acceptable GRubric’s activities for a trial with students. This material allows the system to process and assess free-text answers and provide students both with numerical grades for content and composition and a graphical feedback regarding conceptual axes. A web interface, named as G-Rubric, allows users to select questions easily and submit answers, receiving feedback almost immediately.

To help to understand how Grubrics works, we offer a sample of those activities proposed to our students.

Once the student registers in GRubric website and chooses the activity, he/she can write down/paste an answer. We have opted for a learning activity on the concept of Mercantilism.

First attempt, student’s response:

“Mercantilism is a set of ideas and policies deployed in early modern Europe (16th, 17th and 18th centuries) aimed at strengthening the State through economic power, and specially focused on trade-balance surpluses and accumulation of precious metals (bullionism).

After submitting an answer, he/she receives the feedback that can be seen on the left side of the Figure 1. After examining this feedback, the student can review the earlier answer and make a new attempt adding, for instance, some new ideas about mercantilist policies (bold text in the second attempt).

Second attempt

“Mercantilism is a set of ideas and policies deployed in early modern Europe (16th, 17th and 18th centuries) aimed at strengthening the State through economic power, and specially focused on trade-balance surpluses and accumulation of precious metals (bullionism). Amongst mercantilist policies, some outstanding, i.e. those focused on attaining surpluses in trade balance through tariff protection, prohibition of exports of gold, silver and raw materials, the creation of chartered trade companies, navigation acts and commercial monopolies”.

A new feedback is produced, as seen on the right side of Figure 1. Then, the student can try again using the new feedback to improve his/her answer.
1.5. Experiences using Grubric to give formative assessment (2015-2016)

It is important to point out, that the trials carried out along the 2015 and 2016 were focused on providing a formative assessment. Our goal was to promote deep learning through iterative feedback, not just grading student’s assignments. GRubric offers two main advantages regarding formative assessment: it allows as many attempts as lecturers set and give students immediate rich feedback. All trials have been conducted with first-year Business Administration Degree students.

1.5.1. First experience with GRubric (May 2015)

With this first experience we had two goals: first to determine the efficacy of GRubric to promote learning and second to establish its reliability to mark student’s assignments. To develop this first trial, we asked for volunteers between our students and offered them a little reward (adding 0,25 point to their final mark). We got 132 volunteers, and we split them randomly into three groups establishing different conditions for each cluster. Group 1 received rich feedback, both numerical and graphical, and had six attempts to answer. Group 2 received poor feedback (only numerical) and also had six attempts. Finally, Group three was the control group and received poor feedback, and only one attempt per object was allowed.

The students taking part in the trial would answer five short open questions (between 70 and 200 words), similar to those they would find in their final exam. For each question, the student got a set of instructions referring to the number of words expected to write, how to use the tool to answer, and guidance for using the received feedback. Groups 1 and two could use six attempts to improve their answers according to the received feedback. Each student could decide how many attempts he would make. The difference between the worst and the best mark achieved in each of the activities was used to measure the learning improvement of each student. Also, a questionnaire was used to measure student’s agreement with the grades assigned by G-Rubric to their answers.

As can be seen in Table 1, in general, there was a learning improvement for group 1 as well as for group 2. Also, the difference between highest and lowest grades was higher for the group 1, which received rich feedback.

Table 1. Trial 2015. Improved learning indicators
### Table 1: Average Grade G-Rubric (/10) and Difference between max-min grade

<table>
<thead>
<tr>
<th>Item</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>G1</th>
<th>G2</th>
<th>G3(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Demographics regimes</td>
<td>6,9</td>
<td>6,5</td>
<td>6,4</td>
<td>0,52</td>
<td>0,69</td>
<td>0</td>
</tr>
<tr>
<td>2 Consequences of the Neolithic Revolution</td>
<td>6,5</td>
<td>5,9</td>
<td>5,6</td>
<td>1,06</td>
<td>0,95</td>
<td>0</td>
</tr>
<tr>
<td>3 European agrarian economies during Middle Ages</td>
<td>6,2</td>
<td>7,4</td>
<td>5,5</td>
<td>1,10</td>
<td>0,78</td>
<td>0</td>
</tr>
<tr>
<td>4 Mercantilism</td>
<td>7,7</td>
<td>7,5</td>
<td>6,6</td>
<td>1,95</td>
<td>1,15</td>
<td>0</td>
</tr>
<tr>
<td>5 (Final) Colonial Commerce (2)</td>
<td>6,2</td>
<td>6,3</td>
<td>6,1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

(1) G3 was the control group and had only one attempt per item; then there was no option to improve.

(2) For Item 5 only one attempt was allowed.

As for student’s agreement with the grades received it marked quite well, as we can be seen in figure 1,

![Figure 2. Student’s agreement with the grades received](image)

**Figure 2. Student’s agreement with the grades received**

### 1.5.2. Second experience with GRubric (April-May 2016)

The goal of this second trial was to improve the design of G-Rubric objects to fostering learning and increasing student satisfaction. To carry out this second trial, we devoted time to set up new questions, increasing from five to seven the number of objects offered to the students. To increase the number of volunteers the reward was got an upgrade from 0,25 to 1 point. This reward was associated with the number of attempts performed, rather than with the grades produced by G-Rubric because after the first experience we discovered that learning improved after several attempts at answering.

According to data in table 2, the average grades obtained were satisfactory. It should be taken into account that we had recommended to the students that they should review the textbook before producing an answer. As we can see, after students accessed to the feedback, they were able, on average, to improve their marks in the following attempts.

It is also worth to note that the best students were able to obtain high scores, very close to those of the "golden text” produced by the lecturer and used by the system as a reference to mark students’ submissions.
Table 2: Trial 2016. Student’s scores by item.

<table>
<thead>
<tr>
<th>Item</th>
<th>Item 1</th>
<th>Item 2</th>
<th>Item 3</th>
<th>Item 4</th>
<th>Item 5</th>
<th>Item 6</th>
<th>Item 7</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest grade</td>
<td>6,19</td>
<td>4,51</td>
<td>5,10</td>
<td>4,95</td>
<td>5,39</td>
<td>5,02</td>
<td>5,66</td>
<td>5,19</td>
</tr>
<tr>
<td>Highest grade</td>
<td>7,41</td>
<td>5,53</td>
<td>6,12</td>
<td>5,81</td>
<td>6,74</td>
<td>6,29</td>
<td>6,78</td>
<td>6,31</td>
</tr>
<tr>
<td>Difference in points</td>
<td>1,22</td>
<td>1,02</td>
<td>1,02</td>
<td>0,86</td>
<td>1,34</td>
<td>1,27</td>
<td>1,12</td>
<td>1,12</td>
</tr>
<tr>
<td>Difference %</td>
<td>19,67</td>
<td>22,62</td>
<td>19,95</td>
<td>17,45</td>
<td>24,93</td>
<td>25,36</td>
<td>19,80</td>
<td>21,66</td>
</tr>
</tbody>
</table>

To analyse learning improvement (i.e. “learning”) we used the difference between the lowest and highest grade obtained by students. Table 2 shows the difference by item, both in absolute term and as a percentage. A 21,6 % improvement average could be considered as remarkable, given that only three attempts were allowed. The different degree of improvement by item could be a consequence of various factors such as the quality of the question design, difficulty of the question, eg.

To conclude the analysis of this second trial, we would like to point out some results of the satisfaction questionnaire that students completed after the experience (Figures 3 and 4).

Figure 3. Trial 2016. Utility ad satisfaction with G-Rubric app     Figure 4 Student´s agreement with grade obtained

According to Figure 3, students considered the experience very useful and believed that they were better prepared for the final exam. Global satisfaction was also high.

Regarding the student's agreement with the grades received it could be said that it was quite satisfactory, as can be observed in Figure 4.

To summarise, given the results of these trials, GRubric could be considered as a useful tool to provide accurate and formative feedback for short open-ended questions (Santamaria Lancho et. all, 2017). Our next goal was to analyse, in which way this software could give support to the tutors on marking assessment.
2. Beyond formative assessment: How semantic technologies can help tutors to mark TMAs

After the above-explained experiences on formative assessment, a new experimental design was designed to evaluate how GRubric could support manual marking. The manual marking of open-ended questions presents two main problems, which has been broadly described and analysed in the related literature, namely inter-examiners variability and intra-examiner reliability (Wakeford, 2003). In our opinion, semantics tools as GRubrics could help to avoid both of them.

2.1. Are humans reliable to mark open-ended questions?

Open-ended questions can be valid as far as they allow instructors to assess the achievement of learning outcomes adequately. In fact, higher-level outcomes such as analytical skills, construction of arguments or precise writing can be more efficiently assessed via open-ended questions. Because of this, many instructors show a strong preference for this kind of learning activities, even if they are more time-intensive and harder to grade. The problems, however, arise when it comes to reliability and fairness.

Whereas fairness is a qualitative dimension, reliability can be mathematically measured. For instance, we can establish the existence of inconsistencies across examiners (poor inter-examiner reliability) if there is one standard exam, and the assessment is more or less randomly assigned. The extent of theses inconsistencies can be, even more, precisely established if different examiners independently grade the same exams. An analogous procedure could be followed to determine intra-examiner reliability, carrying out two successive assessments of the same exams at two different moments in time. Statistical analysis of the marks awarded to various questions can also determine their adequacy if they show robust and consistent deviation from averages. All these measurements, however, require time and resources, which most teachers prefer to allocate to other tasks. Especially if results might prove what many students suspect and most of the teachers refuse to consider: that a severe reliability problem exists in existing procedures.

Closely related to reliability is the issue of “fairness”. Students often view grading and assessment of free-text questions as “subjective”, i.e., as unfair or unreliable (Valenti, Neri & Cucchiarelli, 2003). That could be interpreted as having a high degree of variability depending on who, when or how assesses the essays, with an ample allowance for personal inclinations or sheer arbitrariness of the instructor. In contrast, automated test assessment is perceived as more “objective”, providing a high degree of consistency over time and space and excluding any flaw derived from human intervention.

One of the advantages of having every year numerous students to grade, and different teachers grading them, is that we compare significant trends. That is the case of UNED, especially concerning first-year students, who are counted by thousands. As mentioned before, Economic History is a subject corresponding to junior courses both in Economics and Management (ADE) degrees. Usually, high numbers of exams require several teachers grading the same questions, and we can thus measure inter-examiner reliability.

In our experience, a double-grading happened accidentally in two different years, when two teachers of the academic team, independently and unknowingly, graded the same exams. Thanks to this event, we could evaluate our inter-judges assessment. The results indicated significant differences in grading (Figure 5). The differential was in an average of 1.5 points over 8 (the total grade for the free-text questions of the exam), and 0.65 points over 3 in the case of essay questions only (a text or graph commentary). Furthermore, we could observe that there was a visible pattern, with one “generous” (dove) examiner systematically assigning higher grades than his hawk colleague (with two exceptions) and only one instance of coincidence of marks, corresponding to an awful exam (0 points). This difference would make the student's final grade differ substantially, meaning in 9 of 24 exams (37,5%) that the student would/would not obtain a passing grade.
In June 2013 there was another allocation mistake that led to double-grade 76 exams from Valencia UNED Center (figure 6). Again, differentials in marks showed up, even though more limited (0.9 points on average over a total of 8 points at stake), and again with a clear upward bias in the case of instructor 2 (a lenient one) as opposed to stricter instructor 1. There were six occurrences of a higher grade awarded by instructor 1, but always with differences under 0.5 points (Figure 6). Even if we could consider ‘acceptable’ grading differentials below a 0.5 points threshold, there would still be 49 out of 75 exams (almost two thirds) with substantial differences in grades depending on the instructor, going up in some cases as far as 3.4 points. Again, in many of these instances (16) the differential would affect the passing/not passing the exam.
Referred to 76 Econ. History final exams from Valencia-Alzira Regional Center (June 2013)

In both cases, this variability happened despite efforts made to promote homogeneous grading, with a shared, agreed rubric including correct answers and grading criteria (although not entirely disaggregated). Although there were differences between the grades assigned by the examiners, high correlations were found between the marks corresponding to both the global score and the short questions. A lower correlation was found in the text comment scores (Table 3). This was probably due to the greater complexity of scoring a text commentary over concise questions.

Table 3. Correlation between grades assigned by two examiners in 2012 and 2013.

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>20</td>
<td>76</td>
</tr>
<tr>
<td>GLOBAL GRADE</td>
<td>0.82</td>
<td>0.88</td>
</tr>
<tr>
<td>SORT QUESTIONS</td>
<td>0.85</td>
<td>0.87</td>
</tr>
<tr>
<td>TEXT COMMENTARY</td>
<td>0.70</td>
<td>0.67</td>
</tr>
</tbody>
</table>

These differences, even when detected in such small number of instances, appear to justify claims of ‘subjectivity’ or unfairness hold by students, especially when this evidence arises not from systematical testing, but from post facto analysis of accidental occurrences.

Claims of lack of reliability of short-answer free-text questions provide a solid motive for the development of automated tools that could be used either alone or combined with a human assessment to produce more reliable evaluation.

The use of GRubric could cope simultaneously with both problems, namely inter-examiners variability and intra-examiner reliability. We hypothesised that semantic tools such as GRubric would help to deal the problems above described. Our goal was not to replace tutors by semantic tools, instead to give support to tutors in grading student’s assignments.

2.2. Reliability and validity of human and LSA-based evaluation of students’ essays

According to previous research, LSA-based evaluation agrees with human graders as human graders agreed between them. Human and computer-assigned scores correlate around 0.80 to 0.85, with 40 – 60 % perfect agreement and 90 – 100 % adjacent agreement (human and computers scores within 1 point) (see summaries in Cohen, Ben-Simon & Hovav, 2003). This agreement is not depending whether scoring was based on one “gold standard answer” or a sample of previous scored assignments. Even more, LSA-based evaluations or students’ assignments predicted student’s result in a final exam (Seifried, Lenhard, Baier, & Spinath, 2012).

2.3. First attempts giving support to tutor in grading TMAs

Taking into account the previous evidence, the present study aimed at evaluating GRubric’s capabilities to provide support to the tutors in grading. In our first approach to this main goal, the objective was to compare the marks provided by tutors and GRubrics to a certain number of TMAs. Economic History students had to write two TMA per semester. They had to comment a text, graph, statistical table and so forth. The TMAs had an average of 800 words. Using GRubrics to mark this kind of assignments supposed a new challenge because previously it had only been used to mark short, simple questions (200 words) with a more delimited answer than the required longer commentary in the new task.
To carry out this experience, the teaching team in charge of Economic History first-year subject established the following arrangements:

- A fragment of "the Wealth of Nations", by Adam Smith, was selected to be commented by students.
- A rubric was built to minimise inter-examiners variability.
- A GRubric's object, similar to those above described, was designed and their axes were aligned with the rubric used by tutors to mark the students' assignments.

Once everything was ready, the students sent their TMA in a digital format through the Moodle platform, as usual. Then the tutors graded these assignments using the rubric. Next, the teaching team used GRubric to grade the students' TMA again. A total of 252 TMA were marked twice, both by a tutor and GRubric. The 252 TMAs were graded by 37 tutors, although only 8 of them marked more than 10 TMAs.

2.3.4. Main results

Concerning our research questions, main results can be summarized as follows.

2.3.4.1. Grades distributions: analysis of frequencies

According to marks, grades distribution was structured in 5 different meaning ranges. Figure 7 displays the percentages for both, TMAs graded by tutors and GRubric. Both distributions showed some differences, as GRubrics marks were more homogeneously distributed in comparison with the higher concentration of the Tutors' marks in the ranges between 5 and 7.

![Figure 3. Percentage of TMAs graded by tutors and GRubric by Grade range](image)

2.3.4.2. Correlational analyses between Tutors and GRubric marks and Mean differences analysis
Pearson correlations between GRubric’s and tutor’s marks (all tutors globally considered) yielded a large effect size (.549**). An independent samples t test yielded no significant differences between the means of Tutors and GRubric marks, t(251), p=.720, ns.

Table 4. Main Descriptives of Tutors and GRubric marks (N=252)

<table>
<thead>
<tr>
<th>M</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor's Marks</td>
<td>5.95</td>
<td>1.45</td>
<td>1.55</td>
</tr>
<tr>
<td>GRubric Marks</td>
<td>5.92</td>
<td>1.61</td>
<td>2.13</td>
</tr>
</tbody>
</table>

Additionally, a new variable was created (Mark difference) subtracting the Tutor’s mark from GRubric one. The mean difference between both marks was -0.03 (SD=1.46, Min=-3.79, Max=4.23) for the total number of students.

2.3.4.5. Analysis of the homogeneity of GRubric and tutors’ marks

The previous analyses were conducted without taking into account that 37 different tutors had marked students’ TMAs, therefore introducing a potential source of variability among tutoring groups. For a closer analysis of the inter-group homogeneity of GRubric and tutors’ marks, Kruskal-Wallis non-parametric analyses were conducted being Tutoring Group the independent variable and Marks (Tutors and GRubric gradings) and Mark difference the dependents. The number of students-per tutoring group varied between 1 and 48.

The results yielded by this analysis are shown in Table 5. As can be appreciated, Tutors’ mark presented a significant inter-group variability, as well as Mark difference. On the contrary, GRubric marks did not differ significantly between these same tutorial groups, proving, thus, its higher levels of homogeneity.

Table 5. Kruskal-Wallis analyses for the evaluation of Marks homogeneity between the 37 tutoring groups

```
<table>
<thead>
<tr>
<th>Tutor Mark</th>
<th>GRubric Mark</th>
<th>Mark Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-cuadrado</td>
<td>69,14</td>
<td>47,21</td>
</tr>
<tr>
<td>gl</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>p</td>
<td>.001</td>
<td>.100</td>
</tr>
</tbody>
</table>
```

This same analysis was conducted, again, taking only into account the 8 Tutoring Groups with 10 or more students. Results confirmed the previous ones, being even clearer (Table 6).

Table 6. Kruskal-Wallis analyses for the evaluation of Marks homogeneity between the eight tutoring groups with 10 or more students

```
<table>
<thead>
<tr>
<th>Tutor Mark</th>
<th>GRubric Mark</th>
<th>Mark Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-cuadrado</td>
<td>69,14</td>
<td>47,21</td>
</tr>
<tr>
<td>gl</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>p</td>
<td>.001</td>
<td>.100</td>
</tr>
</tbody>
</table>
```

1 **. The correlation is significant at the 0.01 level (bilateral)
Finally, t-test for dependent samples was conducted to analyse mean differences between Tutors and GRubric marks for each one of the eight tutoring groups with more than ten students. Only two groups yielded significant differences between tutor and GRubric Marks (Group 15, t(32)=2.69, p=.011, and Group 32, t(12)=2.19, p=.051) in the direction of higher tutor’s average marks (Figure 6).

<table>
<thead>
<tr>
<th>Chi-cuadrado</th>
<th>27.671</th>
<th>5.248</th>
<th>12.506</th>
</tr>
</thead>
<tbody>
<tr>
<td>gl</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>p</td>
<td>.000</td>
<td>.630</td>
<td>.085</td>
</tr>
</tbody>
</table>

* p<.05

Figure 4: Means of Tutors and GRubric Marks and results of t-tests between marks for the eight Tutorial Groups with more than ten students

3. Conclusion. What’s next?

Some conclusions can be drawn from our experiences:

a) Automated-assessment software such as Gallito-G-Rubric is currently mature enough to be used with students obtaining quite satisfactory results regarding acceptable accuracy. Results regarding students’ satisfaction are also encouraging.

b) The experience of adapting such a system to assess open-ended questions to Economic History proved reasonably affordable regarding time and effort invested. Learning to work with G-Rubric was also easy for students, although some indications mastering the system ---and specially fully understand visual feedback-- could take them a little more than expected.

c) The trial’s results seem to point out that interacting with G-Rubric can improve learning by giving detailed feedback in some ways.
   - It encourages devoting more time to the task.
   - It increases ‘earnings’ in the quality of answers.
• It increases motivation to work on activities
• It helps students to achieve better final answers. In this sense, it may soon become a viable tool for formative assessment.

d) Comparing tutor’s marks versus GRubric’s grades, a remarkable correlation and no significant differences between the means has been found. Additionally, Tutors’ scores presented a significant inter-group variability. On the contrary, GRubric marks did not differ significantly between these same tutorial groups, proving, thus, its higher levels of homogeneity. For these reasons, we think that GRubric could also be a useful tool to deal with the problems that characterise summative assessment such as inter-examiners variability and inter-examiner reliability. To do that, we propose that the students’ essays will be grade first using GRubric, afterward tutors will grade again to validate or modify the grades given.

4. References


What is it like learning with an eportfolio for online distance learners?

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Abstract
This paper reports on a doctoral research project which examines the nature of the learning experience of using an eportfolio and whether it enhances the development of critical thinking among online distance learners. It aims to interrogate the process of the development of critical thinking rather than the product. The project adopts a case study approach, following 24 online distance learners over the course of one academic year in a Dublin based third level institution.

The research question for the study is: How can eportfolios enhance the nature of the learning experience and the development of critical thinking among online distance learners? This study is using an exploratory holistic single-case design where the “object of the study” is the of the learner experience of using an eportfolio and the process of developing critical thinking are investigated.

The participants are intermediate online distance sociology learners studying a module called Soc3A- Power, Social Order, Crime, Work and Employment as part of the BA (Hons) in Humanities which is a modular humanities programme whereby learners can study a combination of history, sociology, literature, psychology and philosophy. Participants have used their eportfolios to create a critical commentary of their learning and completed five eportfolio entries over the course of one academic year at key points in their learning journey. Eportfolio entries follow a prescribed structured template of critical questions intended to encourage reflection about their learning.

Within this case study 37 interviews were conducted for an in-depth exploration of the learner experience of using an eportfolio and the development of criticality. The participants were interviewed with their eportfolios, written, visual and physical artefacts from the participant’s eportfolios were used as stimulus during the interviews using the technique of “photo elicitation”.

Keywords: eportfolio, online distance learners, critical thinking, assessment as learning

Introduction
Eportfolios are common in American higher education, with 57% of colleges using eportfolio. (Eynon & Gambino, 2017) Similarly in the UK, a survey carried out in 2014 highlighted that 78% of universities now have a centrally supported e-portfolio tool. (UCISA, 2014) However in Ireland, there has been a relatively slow pace of adoption of eportfolio, a recent report carried out by the (Irish) National Forum for the Enhancement of Teaching and Learning found that less than 10% of Irish higher education students were engaged in portfolio based assessment. (National Forum, 2016) There are indications that pockets of Irish higher education institutions are beginning to engage with eportfolio, a recent national project ePortfolio Hub carried out a faculty survey which found 31% of respondents were only beginning to use eportfolio which indicates an increasing interest in eportfolio in Irish higher education. Dublin City University is the exception to this slow adoption of eportfolio in Ireland, with the introduction of a campus wide learning portfolio called Loop Reflect for 16,000 students in May 2017.
As one of 17 eportfolio pilots carried out in 2016/17 in Dublin City University, this case study details the introduction of an eportfolio based assessment to online distance learners studying on the DCU Connected BA Humanities/BA Humanities (Psychology Major), supported by the Open Education Team, in Dublin City University (DCU), Ireland. The case study reports on a doctoral research project which examines the nature of the learning experience of using an eportfolio and whether it enhances the development of critical thinking among online distance learners in higher education.

**Theoretical frameworks**
The case study is bounded by two theoretical frameworks; a critical thinking skills framework and an eportfolio framework.

Critical thinking is a fundamental academic competency and is not just a skill but rather a state of mind. This study places itself firmly in the normative tradition of critical thinking which centres on values, quality of thinking and formulation of evaluative judgement. (Fisher & Scriven, 1997) In this case study, critical thinking is “a judgement process. Its goal is to decide what to believe and/or what to do in relation to the available evidence, using appropriate conceptualizations and methods and evaluated by the appropriate criteria.” (Facione & Facione, 2008, p.1) Core critical thinking skills are: interpretation, analysis, inference, self-regulation, evaluation, and explanation. (Facione & Facione, 2008) This critical thinking framework has shaped the design of the case study, in particular the data gathering instruments; the eportfolio critical questions template and the interview protocol.

The conception of eportfolio in this case study brings together three distinct theoretical approaches to eportfolio practice; Zubizaretta’s learning portfolio, Chen & Black’s folio thinking and Eynon & Gambino’s Catalyst framework for high impact eportfolio practice. Zubrizarretta’s model brings together eportfolio and critical thinking. In particular, the elements of Zubirizarretta’s learning portfolio model that emphasise critical thinking and developmental process, “the intrinsic merit of learning portfolio is that involving students in the power of reflection, the critically challenging act of thinking about their learning and constructing a sense of the learning experience as a coherent, unified, developmental process.” (Zubriezetta, 2008, p.1) Chen & Black’s folio thinking highlights that eportfolio practice should be a “pedagogical approach that focuses on designing structured opportunities for students to create eportfolios and reflect on their learning experiences.” (Chen & Black, 2010) This focus on eportfolio practice and pedagogy rather than technology is fundamental and is shared by Eynon & Gambino’s Catalyst framework for high impact eportfolio practice. The Catalyst Framework provides a much needed evidence based approach to eportfolio practice, the features of the framework of particular relevance to this case study are the three design principles of inquiry, reflection and integration and the strong focus on pedagogy. (Eynon & Gambino, 2017)

In summary, the model of eportfolio based learning for this case study is the process of eportfolio based learning is transformative, personal and empowering for learners. Effective eportfolio based learning can stimulate critical thinking, integrate learning, provide space for learners to experiment and apply theory and reflect on their learning journey. The process of learning with an eportfolio is meaningful, authentic and promotes deep learning. (See figure 1 below)
Figure 1: My conception of eportfolio based learning

The Setting
Dublin City University (DCU) is a young, dynamic and the fastest growing university in Ireland. With over 16,000 students studying across a range of disciplines; education, science, engineering, computing, humanities, nursing, psychology. DCU considers itself “Ireland’s most innovative University” and has a unique mission to “transform lives and societies through education, research and innovation”.

The setting is the Open Education Unit, which is part of the National Institute of Digital Learning and is a provider of online, ‘off-campus’ DCU Connected programmes. By providing traditional Distance Education programmes beginning in 1982, and now online, ‘off-campus’ programmes, the unit has as its core mission the provision of programmes that provide students with the opportunity to attain their educational goals without being required to attend campus-based lectures/tutorials on a regular basis. As an Open and Distance Learning (ODL) provider it has a special remit to afford educational opportunities to students who have not managed to access more traditional entry routes into higher education.

This case study relates to the DCU Connected Undergraduate Humanities Programmes offered by the Open Education Unit, which includes three qualifications: the Bachelor of Arts (Hons) in Humanities; the Bachelor of Arts (Hons) in English and History; and the Bachelor of Arts (Hons) in Humanities (Psychology Major). The original Humanities Programme began in 1993 while the other two programmes were created in 2011 and 2014 respectively.
The Humanities programmes are modular degrees whereby students can study a combination of history, sociology, literature, psychology and philosophy. The modules are delivered through a blend of virtual online tutorials and face to face sessions. The majority of Humanities learners are adults over the age of 23 combining study with time consuming life commitments, such as work and family.

Our pilot of eportfolio practice, was one of 17 pilot studies involving 3,000 users and fifteen staff across the areas of humanities, education, science, nursing, theology, careers, work placement, student support in DCU in 2016/17. The aim of the pilots was twofold, firstly to test a new university eportfolio platform called Loop Reflect, a customised Mahara instance, before scaling up campus wide in 2017/18. Secondly there was a need to fulfil a key strategic aim for the University outlined in the 2012-17 strategy which was to “support the learning and personal development of our students by mainstreaming and further developing Generation 21 and introducing personal archives (e-Portfolios) for every student to record and reflect on the aptitudes developed by them.”

**Eportfolio Practice Detailed Description**

The case study follows 24 online distance Humanities learners over the course of one academic year, which piloted the use of an assessment as learning approach using an eportfolio. There were 35 learners, of whom 24 opted to take part in the research study. The participants were studying an intermediate sociology module called Soc3A- Power, Social Order, Crime, Work and Employment as part of the BA (Hons) in Humanities/ BA (Hons) Humanities (Psychology Major).

In the context of the outcomes assessment sector of the catalyst framework for high impact eportfolio practice, our introduction of eportfolio practice is a new element in the development of a programme focused assessment and feedback strategy, which the Humanities programme team has been working on since 2013. The aim of this initiative was to design a systematic programme focused assessment and feedback approach which ensured that students had a reasonable opportunity to meet all of the programme learning outcomes. (Brunton, Brown, Costello, Walsh, 2016) By developing a programme focused approach it would ensure a wide variety of assessment types that were appropriate to the disciplines and had a customised appropriate feedback approach for each assessment.

The development of the programme focused assessment and feedback approach was underpinned by Hassan’s “assessment drives learning” philosophy, coupled with the important role of feedback to the student experience, and that the function of assessment is not just to measure learning but rather that it encourages student engagement and development of learning. (Hassan, 2011) This began by auditing the programme learning outcomes and assessments. Then an assessment and feedback matrix was created for each programme, whereby the assessment was mapped to the modules and to the programme learning outcomes. (See table 1 & 2 below) Now in its fourth iteration and the assessment and feedback matrices have evolved and changed each year and now include varied assessments such as reflections, eportfolios, online discussions, peer review, presentations, research reports and group work. One aspect currently under development, is to shift the focus from assessment of learning to assessment of learning and assessment as learning. (National Forum, 2016)
Table 1: Soc3a Assessment Plan 2016/17

<table>
<thead>
<tr>
<th>Soc3a assessment plan 2016/17</th>
<th>Assignment 1</th>
<th>Assignment 2</th>
<th>Assignment 3</th>
<th>Assignment 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Literature review</td>
<td>Online Discussion</td>
<td>Reflective eportfolio</td>
<td>Case study</td>
</tr>
<tr>
<td>Weighting</td>
<td>10%</td>
<td>20%</td>
<td>20%</td>
<td>50%</td>
</tr>
<tr>
<td>Maps to Learning outcomes</td>
<td>1,2,3</td>
<td>4,6,7</td>
<td>5,6,7</td>
<td>1-7</td>
</tr>
</tbody>
</table>

In the sociology module Soc3a, the eportfolio assessment activities were designed following the Catalyst for Learning Framework for eportfolio practice, in particular focusing on the sectors of pedagogy and outcomes assessment and were intended to promote assessment as learning within the module. As part of the module’s assessment design process, we ensured that the new assessment plan which included eportfolio aligned with the module learning outcomes and the programme learning outcomes.

Table 2: Soc3a Module Learning Outcomes 2016-17

Soc3a Learning outcomes
On successful completion of this module the learner will be able to:
1. Analyse relevant theories on power with reference to social order.
2. Illustrate how the concepts of the state, civil society and social-order can be understood in Irish society through functionalist, conflict and post-structural perspectives.
3. Contrast the ways in which major sociologists saw social order as a voluntary activity with the perspective which sees social order as created through coercion.
4. Assess the difficulties in coming to an agreed definition of crime, the different theories regarding the causes of crime and the connections between crime, drug use and deprivation.
5. Reflect on their own development as a student of sociology and their approach to learning within the module.
6. Examine the major issues in the sociology ranging from the traditional writings of the founding-fathers of sociology to more modern theorists.
7. Critically reflect on the application of social theory to everyday life.

Following the three Catalyst for Learning design principles of inquiry, reflection and integration for the Soc3a eportfolio assignment in which the participants used their eportfolios to create a critical commentary on their learning in the module, their learning processes, their challenges, being a sociology learner and the experience of learning with an eportfolio. Eportfolio entries follow a prescribed structured template of critical questions intended to encourage reflection about their learning. (See figure 2 below) In this way reflective learning is “critical to helping students connect and make meaning from diverse learning...
The critical questions template is modelled on the Facione & Facione critical thinking framework which focuses on six critical thinking skills: analysis, interpretation, inference, self-regulation, evaluation, and explanation. (Facione, 2013) The reflective prompts were designed to encourage learners to link academic learning with life experience, a key element of integrative learning. (Eynon & Gambino, 2017) The critical questions template was not proscriptive but rather as a guide for reflection.

The learners completed five reflective eportfolio entries of five hundred words over the course of the academic year 2016/2017 at key points in their learning journey. For each entry, learners were asked to provide three pieces of evidence of their learning to support their reflection. Learners were given freedom to include any evidence they felt was relevant and to provide a few lines of context alongside the evidence. (See Figure 3) Learners received formative feedback after the first entry and then summative feedback and a final mark after final submission in April 2017.
Methodology

The project adopts a case study approach, using an exploratory holistic single-case design where the “object of the study” or the single issue the of the learner experience of using an eportfolio and the process of developing critical thinking are investigated. (Creswell 2007, Yin 2014) In order to gain a rich, thick and personal description of the experience of using an eportfolio the following data collection methods were selected; physical artefacts contained in an eportfolio and interviews. The main source of data was the written, visual and multimedia artefacts from the learner’s eportfolios, and the focus of the interviews was the learner’s eportfolios and their experience of the process of learning with an eportfolio.

Participants have used their eportfolios to create a critical commentary of their learning and completed five eportfolio entries over the course of one academic year at key points in their learning journey. Eportfolio entries followed a prescribed structured template of critical questions intended to encourage reflection about their learning.

Within this case study 37 interviews were conducted for an in-depth exploration of the learner experience of using an eportfolio and the development of critical thinking. The participants were interviewed with their eportfolios, written, visual and physical artefacts from the participant’s eportfolios were used as stimulus during the interviews using the technique of “photo elicitation”. (Prosser & Loxley, 2008) Interviews were conducted at two points during the data collection process, at the midpoint and at the end of their eportfolio. The rationale for having two sets of interviews is to explore the learner progress and development in terms of critical thinking and reflective learning and to collect personal description and interpretation of experiences and which enabled me to discover multiple views of the case.

Data analysis was an ongoing process throughout the project, following a circular model of gathering and analysing data, as “coding is analysis”. (Miles & Huberman 1994) The analytical approach for the study was
thematic analysis, which is was used to examine the “nature of eportfolio learning”- the affective, physical and cognitive, a data led approach following the Braun & Clarke six phases of thematic analysis. (Braun & Clarke, 1994)

Emergent Findings
The emergent findings of this study show that an assessment as learning approach using eportfolio had an impact on the learner's narrative in relation to their critical thinking, their experience of learning, and their identities as learners of sociology. Five key themes were identified in the learner narrative about their experiences of learning with an eportfolio: (a) being an online distance learner, (b) the experience of learning with an eportfolio (c) the application of sociological theory to everyday life, (d) thinking critically in my eportfolio, (e) my approach to learning.

Being an online distance learner
Participants described the challenges of being an online distance learner in terms of balancing competing demands of family, work and illness, this impacted on their ability to find sufficient time for studying.

“With all the extra pressures of Christmas from a work and family point of view the study can get squeezed. I may have to do less(no?) housework to facilitate my learning this month. This idea has not been negotiated with my partner and may have to be revised! Perhaps a self-imposed ban on TV for the month is a more acceptable strategy. However, all work and no play!” (Participant P)

The experience of being an online distance learner was described as being more isolated than a campus based context, however participants emphasized how the role of peer support, the tutor, tutorials, and online discussion fora enabled them to overcome this sense of isolation.

“Interviewer: and you talk a little bit about the isolation of self-directed study which definitely is a feature of it

Participant I: Absolutely

Interviewer: Do you mind the isolation? Do you try and work with other people or?

Participant I: Yes, I don’t really have the ability to do, I don’t make plans like that because you would have to do it in advance, and then if I’m having a bad pain day so I don’t want to let people down but we have a WhatsApp study group where we ask each other questions and things, and on Loop (DCU Virtual Learning Environment) we do but we can have a laugh on the WhatsApp group.” (Participant I)

The experience of learning with an eportfolio
Participants emphasized the positive impacts of using an eportfolio on their learning with regard to evaluating their progress, engagement with the module, reflecting on their process of learning and for developing self-awareness of their academic development.

“I feel as I am writing for the reflective eportfolio that I am becoming more acutely aware of how I am progressing as a student and how my learning styles and understanding of sociology in general has changed.” (Participant H)
The experience of learning with an eportfolio was perceived as very different from other modes of assessment in terms of being personal, informal and having more freedom to express themselves.

“In this way, the learning portfolio differs in comparison to other modes of learning; in other words, I am not simply learning and regurgitating information, I am also learning about myself.” (Participant L)

The application of sociological theory to everyday life

The eportfolio provided participants with a place to experiment with new ideas, to apply the sociological theory learned in the module to everyday life, to develop their sociological imagination.

“The reflective eportfolio has been a useful tool thus far in forcing myself to explore what I think about social power and order and, where I am as an individual in the schema of society.” (Participant I)

Thinking critically in my eportfolio

Participants described that the module content and learning with an eportfolio had an impact on their critical thinking skills with regard to self-regulation, developing a fuller understanding of the module content, open-mindedness and critical reflection.

“I have found the learning portfolio process, so far, beneficial as it is not only useful in revising what I have learned but it also has me thinking about what information really appeals to me personally and how the information coincides or does not coincide with my own opinions and beliefs” (Participant L)

My approach to learning

Personal approaches to planning, learning and study skills were detailed by participants, with regard to their development as learners. Reflecting on their learning prompted participants to try new study techniques and to grow in confidence about their personal approaches to learning.

“In closing, I began this term floundering as a learner. Taking a step back and reviewing my learning process helped uncover study tools that suit my needs. First, I use physical activity as a reward for reading. Second, I connect with other students for support. Finally, I need sensory stimulation to help me focus on my studies.” (Participant S)

Discussion

High impact practices, of which effective eportfolio have been shown to increase rates of student retention and student engagement, in this case study learning with an eportfolio was shown to have an impact on student engagement, however it had no impact on retention within the module Soc3a. However, retention was not an issue in the module, which retains on average over the last five years 89% of learners that take the module, this retention rate is above the Irish higher education average retention rate of 85%. (HEA, 2017)

The impact of the eportfolio project on staff was significant, the two tutors teaching the module found the platform easy to use and felt supported academically and technically while engaging in this new practice. They felt that the eportfolio assessment was challenging, interesting and a “huge success”. As a result of the positive feedback from staff and students, on a programme level we are scaling up eportfolio assessment.
For the academic year 2017/18, eportfolio based assignments will be introduced to a further seven Humanities programme modules.

On an institutional level, the 17 pilots had positive impacts in terms of staff and student engagement, retention and integrating the co-curriculum. The Loop Reflect platform was officially launched in May 2017 by the Minister of Education Richard Bruton and in the next academic year 2017/2018, every DCU student, approximately 16,000 students will have a Loop Reflect eportfolio for life.

Conclusions
The most significant lesson learned during this project was that eportfolio practice “when done well” can create a deeply meaningful, integrated, personal and transformative learning experience for learners. Reflecting back on the last year, there are some improvements that we will make for the next cycle of eportfolio practice in the Humanities programmes, firstly spend more time at the start orienting learners to the eportfolio platform. Secondly, give learners more support with reflective writing, learners were uncertain as to how to reflect. For next year, we will develop a resource on reflection for our learners. Thirdly, using the critical questions template with guiding questions really helped scaffold the process for the learners, we will replicate this when scaling up eportfolio practice into further Humanities modules. Fourthly, learners did not know what an eportfolio should or could look like, for the next iteration we will create several model eportfolios to address this. Finally, the eportfolio practice that we introduced into Soc3a, was an individual assessment, it did not have any peer element. One of my key learnings from the Catalyst for Learning Framework is the importance of social pedagogy which “deepens the impact of reflective learning”, in the design of our future eportfolio practice, the inclusion of peers and community will be an important evolution for the future.

References


Work in Progress: Microelectronics Courses: Needs and learning in the MicroElectronics Cloud Alliance

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Abstract
The MicroElectronics Cloud Alliance brings together eighteen partners from higher education institutions and enterprises to develop Cloud-based European infrastructure and a new educational system for micro and nanoelectronics, providing a range of open educational resources, remote access and sharing of educational and professional software as well as remote and practice-based learning facilities. The aim of the mClouds project is to define and develop this cloud-based European infrastructure. For this purpose, an analysis of the needs in shared IT infrastructure, teaching materials and learning resources of institutions, teachers and students was carried out thus meeting the requirements of companies in micro- nanoelectronics. This analysis was translated into functional specifications of mClouds, obtaining direct information from users of these courses that allows a feedback and an improvement of the courses. UNED - as a partner of the project - is developing two MSc courses in Microelectronics as OERs over mClouds architecture for the rest of partners to access and share them.
Keywords: cloud-based e-learning environment, microelectronics, open educational resources.

1. Introduction

As aforementioned, the MicroElectronics Cloud Alliance provides a range of open educational resources (OERs) and virtual or remote access to practice-based learning facilities. In general, no university is able to afford the necessary infrastructure, clean rooms, technology and experts in all fields of this multidisciplinary science. To share laboratory experiences, CAD tools, project ideas and a common infrastructure, a sort of “educational cloud” over the software/hardware infrastructure can be a solution. All the partners of MECA, Higher Education Institutions (HEIs) and Small and Medium Enterprises (SMEs), will develop e-learning materials for 22 courses in CAD systems, microelectronics technologies, test, characterization and application of integrated circuits and systems. These 22 new courses foster virtual mobility. Each university will allow partners of a cloud teaching system remote access to its facilities, laboratory experiments or software systems, giving them access to new resources.

The two courses that are being developed by UNED are: 1) Microelectronics Literacy and Technologies, and 2) Integrated Circuits and Design, explained in detail in Section 5.

2. Methodology

This is a three-year project, thus planned in order to include the pilot test and the implementation of system for virtual mobility, i.e. the full cycle of design, development, evaluation and implementation. The milestones are:

1. Report on the analysis of needs (5th month)
2. Specification of the three Clouds architectures for open learning resources sharing, IT infrastructure and CAD software common use (end of the 9th month),
3. Job-oriented courses and programs on entrepreneurship, project management (15th month),
4. Updated HE curricula in microelectronics in collaboration with the experts from the industry; mClouds system developed and implemented with a minimum of 16 courses delivered as OERs (20th month),
5. Training to all staff involved in the developed OERs
6. System officers and teachers and trainers from enterprises trained (24th month),
7. Pilot tests (27 month),
8. Exploitation/field trial (36th month).

For defining knowledge, skills and competences needed for the project, we have started with an extensive analysis in microelectronics and electronics packaging companies.

Specific needs and issues of HE in microelectronics that we intend to solve are:

- Little reference is made to the needs of the workplace; changes in it are not met with changes in education,
- Curricula has to be updated and universities have to collaborate for sharing course materials, intellectual property blocks and ideas.

Therefore, we need a new partnership between education and work to attain synergy between education and industry, to foster the development of competences, technological and entrepreneurial skills.
On the other hand, the emergence of cloud computing is transforming the way organizations and companies purchase and manage computing resources. According to Cruz [1] cloud computing is changing how people carry out personal learning, interactive learning and many-to-many learning, in primary, secondary and higher education. An advantage of cloud computing is ensuring longevity of information. Another important feature is that it allows students to interact and cooperate with an expanding circle of peers, regardless their location.

Following all the above, this proposal is based on the past experiences of almost all HEI partners in the development of e-learning courses and on the expertise of UNED in the development of training courses through remote laboratory access. The focus is on the implementation of an e-learning framework with open educational resources, rooted on the tools developed for cloud management, thus allowing cooperation and distribution of lab sessions, CAD tools and teaching experiences.

3. Analysis of Needs

As discussed in the previous section, we need a new partnership between education and the work field to fulfil the needs between education and industry. The advantages of cloud computing in terms of education effectiveness are course organization efficiency, instructors focusing on the area of expertise, common experiences of students of different countries based on similar infrastructures, tools, lab organization, learning improvement, all due to the optimization of laboratories and courses.

Furthermore, the needs of such a project correspond to the needs of the sector of microelectronics design and fabrication. Firstly, there are not many companies experts in assembling/packaging in microelectronics. And secondly, in the last 10 years there has been a shortage of engineers in microelectronics and a systematic decrease of students in electronics at the university that can pose a threat to the European economy competitiveness.

3.1 Results of the survey for students, teachers and business

For the design the different OERs in the project an online survey was developed, where teaching and learning needs were evaluated based on three points of view: students, teachers and professionals from the business. The survey can be summarized as follows:

- **Objective**
  - To analyse users’ needs in shared IT infrastructure, teaching materials, learning resources in micro-nanoelectronics relevant for the labour market.

- **Target Groups**
  - Students in micro-nanoelectronics engineering education;
  - University teachers and trainers in HR departments, universities and colleges;
  - Professionals from the business;
  - E-learning environment developers and administrators.

- **Sample**
  - Students at different the universities involved in the project;
  - Professionals and managers from enterprises in micro-nanoelectronics and Microsystems, electronics packaging and communication from all participating countries;
  - Teachers in micro-nanoelectronics from all participating countries;
  - System administrators at the universities and enterprises involved.

- **Instruments**
Review of literature;

- On-line survey:
  - 3 questionnaires for teaching/learning needs analysis for the three profiles (students, teachers and professionals).
  - Interviews.

- Implementation
  - On-line questionnaires with a link to the website of the project.
  - We have collected
    - 152 answers from the students,
    - 59 from teachers and
    - 23 from the representatives of the industry.

Summary of results of the students’ survey
- 13% of respondents study Micro-nanoelectronics. The highest percentage is in Electronics with 37%; follows Informatics/Information Technologies with 27%.
- The educational level of 62% of students is undergraduate, 29% have a Masters Degree and only 7% hold a Ph.D.
- 89% of students use open educational resources and those who do not use them are willing to learn with OERs.
- Few students are experienced with virtual laboratories and remote access to CAD systems but most of them would like to.
- It is very important and encouraging for the objectives of the project that students feel comfortable when using virtual laboratories and them being ready for these educational practices (Table 1)
- Most of the students do not think that the use of OERs will improve their learning, but 73% consider that the learning is more attractive with OERs.
- It is interesting that learners prefer passive teaching methods to interactive courses: electronic books and video recorded lectures.
- PowerPoint presentations are not liked at all by students and it might be because the content in the presentations is not sufficient for self-learning.
- All advantages of OERs are appreciated: flexibility, reusability, virtual mobility of students, cost efficiency, connectivity with teachers.
- 41% of students prefer to use OERs in an online course; 32% by blended/hybrid courses, and 27% by face-to-face courses.

Summary of results of the teachers’ survey
- 59 teachers from traditional and distance education universities and vocational education institutions answered the questionnaire, being the most common university teachers, 81%. Within the specialties of the university, the most common is Polytechnics, 54%. And the highest educational levels taught at our universities are: PhD with a 36%, Master with a 32% and Bachelor with a 30%.
- If 89% of students use open educational resources, teachers using OERs are only 69% and most of them use them occasionally.
- It is not surprising because probably most of the teachers are from traditional universities with face-to-face education.
- All advantages of OERs are appreciated: flexibility, reusability, virtual mobility of teachers and students, cost efficiency, connectivity with students.
• Logically, the teachers consider that it is less likely that OERs provide a high level of knowledge for the subjects in technology. The percentage of teaching activities for the use of OERs is shown in Figure 1.

• With regard to generic skills, it is considered that the abilities for independent learning and working, managing information, using ICT are favoured, and the capacity of criticism and self-criticism and adapting to new situations is not as much.

• Teachers consider that e-learning does not improve students’ performance but it makes learning more appealing - just as students think of.

• Most of educators believe that the use of OERs would improve their practice and reduce their efforts and time used for teaching.

Table 1: Results for the question: Do you want to be involved in the activities described below, in the near future?

<table>
<thead>
<tr>
<th>Activities</th>
<th>Frequently</th>
<th>Occasionally</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studying additional e-learning materials given by the teacher</td>
<td>43.71%</td>
<td>39.07%</td>
<td>13.91%</td>
<td>3.31%</td>
</tr>
<tr>
<td>Searching for educational materials in the internet</td>
<td>53.64%</td>
<td>34.44%</td>
<td>9.93%</td>
<td>1.99%</td>
</tr>
<tr>
<td>Following Open Courseware(s) provided by other universities</td>
<td>38.41%</td>
<td>32.45%</td>
<td>20.53%</td>
<td>8.61%</td>
</tr>
<tr>
<td>Watching recorded lectures or presentations given by experts outside your institution</td>
<td>38.41%</td>
<td>40.40%</td>
<td>17.22%</td>
<td>3.97%</td>
</tr>
<tr>
<td>Working virtually with students from other universities internationally</td>
<td>27.15%</td>
<td>37.09%</td>
<td>21.85%</td>
<td>13.91%</td>
</tr>
<tr>
<td>Carrying out experiments within remote laboratories</td>
<td>36.42%</td>
<td>31.79%</td>
<td>22.52%</td>
<td>9.27%</td>
</tr>
<tr>
<td>Designing electronic/ integrated circuits through remote access to the workstations</td>
<td>35.10%</td>
<td>33.77%</td>
<td>15.89%</td>
<td>15.23%</td>
</tr>
</tbody>
</table>
Summary of results of the professionals’ survey

- 23 representatives of the business (Figure 2) answered the questionnaire on the importance of different learning contents.
- All the proposed courses are considered to fulfil more than the average needs in the short term.
- In the long term the industry will need even more skills and competences in the proposed topics.
- We can conclude that the university is close to the needs of the industry.
- Effective communication with groups, presentation techniques, project management and survival on the labour market are considered highly important by almost all respondents.
- Additional topics are suggested in power electronics, grapheme technologies and system integration.

Figure 1: Results for the question: For what teaching activities do you consider necessary the use of OERs?

For what teaching activities do you consider necessary the use of OERs?

- Collaborative learning
- Autonomous learning
- E-learning
- Educational platforms
- Ubiquitous learning
- Communities for practical essays or exercises
- Remote laboratories
- Virtual laboratories

Figure 2: Profile of professionals from business

Profile of Professionals

- Design Engineer
- Industrial Property Consultant
- Manager
- Process Engineer
- Project Leader
- R&D Advisor
4. mCloud Architecture

The analysis of needs in students, teachers and employment reveals a good acceptance of the use of OERs and gives rise to the design and development of cloud architecture.

For projects similar to this one there are public clouds such as Amazon Web Services (AWS) and Microsoft Azure on the one hand. On the other hand, there are private clouds within institutions and also hybrid ones. For this project, we will focus on a private cloud, CloudStack, [2] due to the technical expertise of a HE partner involved. The model of software will be Software as a Service (SaaS), where the complete application is fully managed by the cloud suppliers, just as in a WordPress website or a Moodle e-learning site. In our case, Moodle will be the platform used to deliver the new OERs.

Some facts on CloudStack are:

- It is an open source cloud management software.
- It supports all important hypervisors like KVM, VMWare, Hyper-V and XenServer.
- It mainly is a Java web application (Tomcat) with an API and a web GUI that allows to overview, organize and manage virtual machines and to create virtual machine templates
- It controls the virtual machines with agents or APIs of the vendor specific hypervisors
- It is end-point agnostic: desktop, notebook, tablet
- A good network infrastructure is mandatory
- Configuration data is stored in a MySQL database, so it is really transparent

CloudStack can be used in different cases. Some of them are:

- **User self-service**: Setup virtual computers and applications CAD software on their own by an easy-to-use and comfortable web application (instead of command line tools or something comparable).

- **Sharing processing power, data and virtualized software**: It will be possible to share computers and processing power, sharing data and storage as well as virtualized software; but not sharing commercial software licenses due to legal restrictions.

- **Bring in own student’s computers**: Students with their own computers using remote desktops.
  - No university PC for each student required
  - Students know their own machines
  - They can work around the campus or at home (depends on security restrictions; might be solved by an encrypted virtual private network VPN)
  - Freezing sessions and continuing somewhere else

- **Remote access to laboratories**
  - Common experiences of students from different countries based on similar infrastructures, tools, lab organization, learning improvement, as a result of the optimization of laboratories and courses.
  - Sharing laboratory experiences

- **Delivery of an e-learning environment**: Moodle as an open source software might be an adequate solution (especially in the newest version with responsive design theme working on desktops, tablets and mobile phones)
  - Installed on several servers across Europe to be closer to the learners (could reduce the problem of network latency)
o Maybe distributed installations to have content synchronized between the universities and to be more stable in case of single machines’ unavailability
o Better preservation of intellectual property (not a single point of failure)
o Specification of self-provisioning logic to scale the web e-learning environment depending on the load, especially for usage peaks and for the mobility of e-learning resources.

- Some sort of cooperative work software: It would be useful to share project ideas, courses, files and teaching experiences between teachers and teachers or students and students. This should be supported by the educational cloud.

4.1 Overview of the infrastructure
Each university will install its own technical equipment, but the idea is to share it with each other, and to start with three servers on three partner’s sites and see how it will be accepted and what we can learn from this. The methodology that will be followed is:

- A map of the participating HEIs (logos) with their servers,
- Place the CloudStack controller
- Moodle web application installation
- CAD software installation
- Monitoring

4.2 Future outcomes
- Proof of concept for the feasibility with at least 3 participating universities
- Sharing of setup guidelines
- Virtual machine templates (VMs) for end-user self-service (e.g. for teachers or in companies)
- Pre-installed Moodle environment
- CAD software pre-installed (to find a solution for license keys)
- Other learning relevant software pre-installed
- Student learning desktop
- FAQ with the most frequently asked questions for the system administrators
- Training material for system administrators

5. MicroElectronics Courses in UNED
As aforementioned, UNED courses are part of the 22 courses that are being developed by all the partners of the project. Table 2 summarizes the learning outcomes expected from these two courses.

The first course (Microelectronics Literacy and Technologies) focuses on delivering basic knowledge in Microelectronics. The course is divided into two clearly differentiated blocks: 1) Fundamentals of Microelectronics; and 2) Main Technology Processes in Microelectronics.

The second course (Integrated Circuits and Design) deals with more advanced concepts in Microelectronics, and it course is designed for experimenting with remote laboratories. UNED has extensive knowledge in remote and virtual tools, given that a distance learning model is its main feature. This course is also divided into two blocks, these being: 1) Technologies of Integrated Circuits; and 2) Design of Digital Integrated Circuits.
<table>
<thead>
<tr>
<th>Course</th>
<th>Knowledge</th>
<th>Skills</th>
<th>Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microelectronics Literacy and Technologies</td>
<td>Overview of fundamentals of microelectronics. Basic knowledge in the main technology processes in microelectronics.</td>
<td>Skills in classification materials, definition of semiconductor substrates and crystals. Ability of understanding the crystal growth processes, all the main manufacturing processes and thin film processes and choosing which is the best process to use for a specific design</td>
<td>Ability to use different types of large scale integrated circuits Being able to design the oxidation and deposition layers and the diffusion and ion implantation in microelectronics</td>
</tr>
<tr>
<td>Integrated Circuits and Design</td>
<td>Advanced knowledge in Technologies of integrated circuits and methods for designing digital integrated circuits</td>
<td>Advanced skills in choosing which is the best technology to use for specific requirements in the production of an integrated circuit and advanced ability of choosing more suitable method for designing a specific integrated circuit</td>
<td>Being able to use Lithography technology in the design of integrated circuits. Ability to use CMOS technology sequence and BiCMOS integrated circuits. Being able to manage and design custom circuits and logical matrices.</td>
</tr>
</tbody>
</table>

Both courses consist of 5 ECTS credits (European Credit Transfer and Accumulation System) and are designed to be carried out on several phases. VISIR (Virtual Instruments System in Reality) is the tool deployed in these courses. It is a remote lab for electric and electronic circuits’ experiments, developed at the Blekinge Institute of Technology (BTH), Sweden, and used in several universities worldwide [3]. The main difference between remote laboratories and in-person laboratories is how the interaction between student and workbench is carried out. The main advantage of remote labs when compared with in-person laboratories lies in its availability, with no temporal or geographical restrictions. They also have a series of side improvements: low maintenance cost and requirements, no need of assistance during students’ experimentation, no associated risks for students and instruments, as well as equipment (if well designed), etc. However, remote labs have obvious limitations not given in in-person laboratories; for example, the degree of freedom in the design of experiments.

Figure 3 shows the website of these courses. Both of them are developed in Moodle and allow free access to all members of the MECA project. In addition to the VISIR, each of these courses integrates several learning materials, such as: documentation (see Figure 4), demonstration videos (see Figure 5), practical exercises, self-assessment exercises and access to virtual tools (see Figure 6).
Figure 3: Website of the Microelectronics courses.

Figure 4: Example of the documentation available in the courses.
6. Conclusions
First steps in the development of this model have already been taken. All HEIs have installed their own CloudStack software, virtual machines (VMs) for end-user self-service. The starting point is connecting the different institutions and placing a CloudStack controller in one of our partners. The next step is deploying a
Moodle web platform in each partner. Along with Moodle, all CAD software and remote laboratories will be implemented, being a challenge to find a solution to the issue of sharing software or hardware licenses between institutions.

The implementation of an educational cloud will allow virtual mobility of students and an easy update of contents. Moreover, involving employers and labor market institutions will help attune curricula to current and emerging labor market needs as well as fostering employability and entrepreneurship.

The mClouds architecture will enable the distribution of resources throughout Europe. Thus, instructors from different European countries can take advantage of using a running lab-experiment and delivering it in their native language.

The purpose of this Erasmus+ Knowledge Alliance project is to build a long-lasting partnership of SMEs with HEIs, which could evolve in joint research activities. Double-line feedback, knowledge and synergy will be gained because of the enterprise/HEI partnership, improving research and innovation on companies due to HEI academic competitive view, thus ameliorating HE as a result of applying companies’ industrial application experience and expertise.

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8. References