



The Envisioning Report for Empowering Universities

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The second Envisioning Report for Empowering Universities in the uptake of new modes of teaching and learning

This is a report by the expert pools of the EMPOWER programme established by EADTU to cover the latest trends and developments in new modes of teaching. New modes of teaching and learning create new opportunities for enhancing the quality of the learning experience in on campus programmes, reaching out to new target groups off campus and offering freely accessible courses nationally or worldwide through the internet. They enhance the quality, visibility and reputation of the institution.

The implementation of new modes of teaching and learning requires institutional strategies and frameworks. It cannot be successful without a strong motivation of a professional teaching staff and without a continuous commitment from the top management of a higher education institution.

The EMPOWER expert pools are working in all relevant areas for the development of new modes of teaching and learning. For this second edition the expert contributions mainly focus on:

Learning analytics; using data analytics to support students in improving their learning outcomes
University challenges; what are the key challenges universities are facing in transition to online and blended education?

Blended education; new approaches and experiments in the field of blended education and related pedagogies and assessment methods.

Student support; supporting prospective and new students through technologies in ODL, digital literacy and the changing role of libraries are addressed.

Continuous education/CPD; the entrepreneurial university is highlighted as well as enhancing career practitioners' competencies in the use of ICT.

The Envisioning report is a selection of good practices and studies done by the experts connected to EADTU's EMPOWER programme. EMPOWER is further supporting individual universities by on site expert seminars with free independent advice, onsite and online seminars, guidance for university leaders, expert panels for targeted reviews and, support for whole of institution initiatives. Further, EMPOWER hosts the Empower Online Learning Leadership Academy (EOLLA) on new and emerging models of teaching and learning.

We certainly believe also this second edition of the EMPOWER Envisioning Report is an inspiration for many to further innovate education and start cooperation and sharing of expertise with fellow innovators.

George Ubachs
Managing Director EADTU

Learning Analytics

Analytics for Action: using data analytics to support students in improving their learning outcomes

Innovative impact

Regularly accessing and discussing the data has enabled academic teams to introduce changes in presentation (and/or for following presentations) of modules across the University, aimed at improving student outcomes. It has also provided useful information on design issues appearing often in our modules. By sharing these findings widely, TEL Design is able to inform stakeholders of design good practices based on evidence, contributing to better design standards.

In the long term it is expected that the use of data analytics to continuously improve student outcomes will be the standard, as more complete data sets and better data visualising technologies become available and more affordable. All institutions will create and develop dedicated teams to work in this field. They will need to develop staff skills in working with data, within the context of data analytics.

Introduction

Data Analytics are now everywhere. Most industries are using the customer data they collect to gain intelligence and insight into the preferences and aspirations of those customers. Organisations in the public and private sector are using analytics to measure and improve their processes and outcomes. Professional sports are a good example. Almost all teams in top leagues are now using data analytics to inform their decisions, with recent examples of non-favourites teams winning top competitions when data analytics was used systematically. Higher Education is not an exception. The increased use of Virtual Learning Environments as the main vehicle to deliver content to students has provided an unprecedented access to large datasets (Arbaugh, 2014) on the interactions of students with the different pedagogic activities provided online. Understanding these interactions is perceived as a powerful tool to enhance the design of online modules and to provide targeted support to students, helping them to improve their learning outcomes. Greller and Drachler, (2012) have considered additional dimensions required for a holistic approach to the use of learning analytics, including users and processes. At the Open University the Technology Enhanced Learning Design team is working closely with academics to improve student outcomes by introducing data-informed, evidence based changes in presentation, using a specifically designed framework known as Analytics for Action (A4A)

Analytics for Action

Based on the Analytics for Action evaluation framework (Rienties et al., 2016), the Open University Learning and Teaching Centre ran a two-year Analytics for Action (A4A) pilot aimed at enabling evidence-based change during presentation. This was part of a wider project that included Real-time Student Feedback, Student progression reporting, Ethics and Predictive modelling (OU Analyse). At the end of the project, the University decided to implement A4A as part of the ongoing efforts to support students and help them improve their learning outcomes. TEL Design was selected to run the process as its staff are specialists on providing an evidence-based focus on student outcomes. The team are also familiar with the design so it provided a natural long-term home for Analytics for Action. Using data analytics became a mainstream activity.

Support and Training

Different levels of support are available to academic teams looking at a specific module, ranging from a dedicated team mailbox to a fullsupport scheme which includes data support meetings,

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comprehensive reports and recommendations on possible actions based on documented good practices.

TEL Design and the Faculties work together in the selection of the modules that will receive full support. The final decision, informed by TEL Design, resides with the Faculty. Based on previous experience, the current Selection criteria goes beyond modules perceived as underperforming in the Annual Quality Review and include new modules, modules with particular pedagogic challenges and/or innovative approaches, modules with high student population, and modules included in key qualifications.

Data support meetings are chaired by Senior TEL Designers (STELDs), who bring a wider view as they are exposed to data covering a range of modules and are aware of the design features. Academic staff attending provide a more in-depth knowledge of their modules. Both groups review the data and agree on the issues to be investigated. STELDs may suggest actions from the options available (Rienties et al. 2015) and follow up the implementation. STELDs also prepare comprehensive reports on discussions and agreed actions. These reports are stored in a shared area and are available to Faculty staff. Faculty stakeholders also receive a summary report with key indicators

Common themes investigated at the data support meetings are:

- a) Student profile: including demographic and qualification profiles
- b) Concurrency: number of modules and credits being studied concurrently, potential clashes at assessment points, alignment with qualifications design and Faculty advice
- c) Assessment submission rates: proportion of students submitting each assessment, unexpected rate drops between assessments, average scores, impact of extensions and correspondence with assessment strategy, comparisons with similar modules
- d) Withdrawer profiles: who are the students who withdraw, which qualifications are most affected, which groups are more affected
- e) On line engagement and tools and resources usage: overall access to the module website, use of specific VLE tools and resources featured in the website, frequency and timing of visits and alignment with design elements, specific tool reports on engagement and formative assessment via electronic quizzes
- f) Retention: formal rate of students still registered in the module, passive withdrawers, sudden or accelerated drop rates and correspondence with module design and/or contents
- g) Pass and completion rate: historical trends and comparison against similar modules, comparisons against predicted results

The data reviewed at the Data Support Meetings and the corresponding report often result in further and deeper conversations covering wider aspects of the data and in relation to Module Design,

leading to more in-depth questions beyond the specific module reviewed.

TEL Design also offers regular and ad hoc training sessions that enable staff to get started in using readily available data on their module(s). These training sessions cover the A4A evaluation framework, the Active Presentation Toolkit and the Data sources. The sessions are mostly a hands-on experience in which the users review data relevant to their module(s), helping them develop their data analysis skills with personalised support from instructors. While the contents of the training are in essence the same, ad hoc training sessions are often adapted to meet the specific requirements of the audience.

Active Presentation Toolkit

TEL Design maintain and update the Active Presentation Toolkit, a website available to OU staff containing step by step instructions for running an active presentation, using the data available. It includes the staged process suggested in the A4A evaluation framework a template to capture results, reference documentation, a description of tools available, links to the various data sources as well as to existing case studies and related papers at the Evidence Hub.

Actions and Feedback

A number of actions were taken after the discussions held at the Data Support Meetings with measurable positive impact in some modules across the University. (Evans, G., Calder, K, & Hidalgo, R., 2017). Additionally, discussions held at those meetings have led to the identification of common issues impacting student outcomes, including workload issues, knowledge or skills gaps, retention and community and collaboration difficulties. (Jones, E., 2017)

Feedback has been received from different stakeholders through formal (surveys) and informal channels (email) and has been overwhelmingly positive for both the Training and the Data Support Sessions. Trainees have found the trainers "*were able to support individual learners with their unique issues*" and the sessions were "*Hands-on appropriate support and guidance using real live data*". To the statement "Overall, I am satisfied about the training session", 56% - 25 out of 45- of the respondents replied "Totally agree", while a further 42% replied "Agree". Attendants to the Data Support meetings expressed they were "able to go "off grid" and actually - finally! - get some insights and answers into presentation questions we have had for ages". They also mentioned that the session gave them "something to think about for the future presentations"

Conclusion

Positive feedback and increased awareness about learning analytics have resulted in an increased demand for the support available via the A4A programme. Modules supported have grown from 29 in 2016/17 to 52 in the current year. Students reached have also increased from over 25,000 to over 38,000 in the same period and staff trained - mostly academic and academic related staff- will double from 75 to over 150. This increase in the level of engagement across Faculty staff is essential for the deployment and efficient use of data analytics as a tool to support and improve student outcomes. While the quality and reach of the data sets, as well as the technology used to visualise data are key elements to consider, the success of the initiatives using data analytics will depend largely on the staff involvement and ownership. No institution will be able to afford ignoring the evidence from the data, without losing competitiveness in the future. Data analytics will be business as usual for all stakeholders involved in module production.

Vassilios S. Verykios and
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Exploring the Power of Learning Analytics

Innovative impact

Overall it is obvious that Learning Analytics and its application to different contexts and environments has the power to transform the educational system as a whole, as well as to tailor the learning experience to the specific needs of individual students which will lead eventually to their success.

Using the resources available in our lab, we have been able to conduct research and experiment with the implementation of various Learning Analytics case studies with some promising outcomes.

Even though we are at the initial stages we hope to be able to discover ways to revolutionize our learning and teaching environments by offering our students the best possible services.

Introduction

In this paper we describe the initiatives taking place within the Big Data Analytics and Anonymization Lab at the Hellenic Open University. The object of this lab is to conduct research in the field of large scale data management and analysis in conjunction with privacy protection of this data with the view to understand student behavior and interaction both with their peers but also with the teaching staff. The desired outcome is to be able to make decisions that will benefit not only the students by improving the learning process but will also enable the faculty, administration and the institution to take steps that will elevate the services it provides.

In a few words, what we endeavor is to take advantage of sources of data within our student and teaching population which we believe are appropriate for the application of Learning Analytics techniques. We then apply these techniques in order to detect actionable and novel patterns, which will offer us a deeper understanding of the educational process and how it can be improved. This process requires specialist knowledge of the techniques and the tools involved, as well as being knowledgeable about the field in which the techniques will be applied and any special requirements that apply to this specific field.

Richard E. DeMillo, a distinguished professor of computing and an accomplished author, in his book, *Revolution in Higher Education* (DeMillo, 2015), perfectly outlines the problems higher education institutions in their majority are facing today. He argues that colleges and universities are becoming insufferably costly which at some point will render them incapable of sustaining their existence. He also talks about the fact that many graduates lack necessary skills for the modern job market, which means that not only do we have an unqualified workforce but also institutions are proving themselves to be irrelevant and outdated.

It appears that one of the answers to these problems is all around us. We live in an era of rapidly developing technology where information is being gathered at an ever increasing rate. The way we capture, store, and analyze this huge wealth of data will determine how successful we are in improving the future of academia as well. While it is true that big data is a field of immense interest, unfortunately the spotlight is on how to store, index, retrieve and interrogate the data rather than how to analyze and utilize it in an efficient and user friendly way which is a shame as the answers to most problems are hidden within this ocean of data.

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From Data Mining to Learning Analytics

The process used to achieve the discovery of knowledge from data is called data mining. Ronny Kohavi, general manager for Microsoft's Analysis and Experimentation team, in his visionary talk in ICML 1998 "Crossing the Chasm: From Academic Machine Learning to Commercial Data Mining" (Kohavi, 1998) very accurately pinpointed the necessary steps we need to take so as to fully benefit from big data. He emphasized that data mining is an iterative process, meaning that the more we learn the better questions we will ask, making the potential for learning and developing infinite. He also noted that it is vital that our findings are useful and relevant and perhaps even more importantly understandable and usable.

Learning Analytics (Siemens & Long, 2011) or Educational Data Mining, as it is often termed, refers to the application of data mining techniques to data from an educational environment. If we had to define Learning Analytics, we would say that it is the collection of data from different educational resources, ranging from the individual student to a broader institutional scale which could encompass the university as a whole that would greatly increase the possibilities of discovering patterns, developing predictive models and using these models to take corrective steps to alter the course of the students' progress. However, it is not only students that this process can be applied to, faculty, administration and institutions may also take stock and implementing changes that will lead to their developing and evolving in order to provide an improved educational environment.

There are two ways to apply learning analytics (Gontzis et al., 2017). The first one would be to migrate the data, which may involve transferring it to another machine, to another system or to another software program. The second option is to use tools to process the data in its native environment. Both approaches have their advantages although there are disadvantages in both cases. Some of the tasks one can accomplish by using one of the aforementioned LA approaches for solving a problem in a data analytic way include amongst others classification, clustering, association rule analysis, text mining, sentiment analysis etc. It is necessary for an analyst to know the specifics of these tasks so that he can apply learning analytics in a viable way.

An LA Methodology for HOU

The LA methodology we are demonstrating involves the observation of a student from application to graduation. Data is gathered and stored in our information systems where it can easily be retrieved and by using some of the LA techniques it can be analysed in order to discover patterns of student's behaviour in correlation with student learning outcomes. It is vital to be able to distinguish the patterns which are most pertinent and useful for the given student sample and to be able to assess how these can be best communicated and utilized in order to achieve maximum impact.

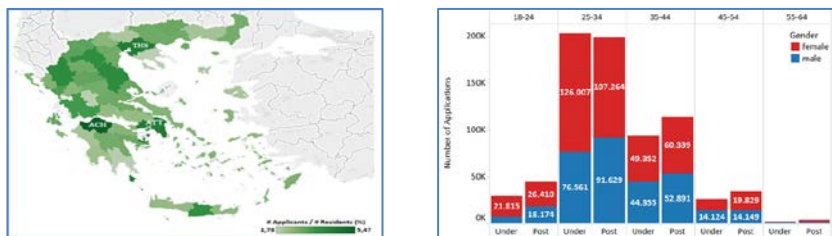
Below are some exemplary scenarios showcasing how the methodology is applied at various stages of the learning process

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Resources

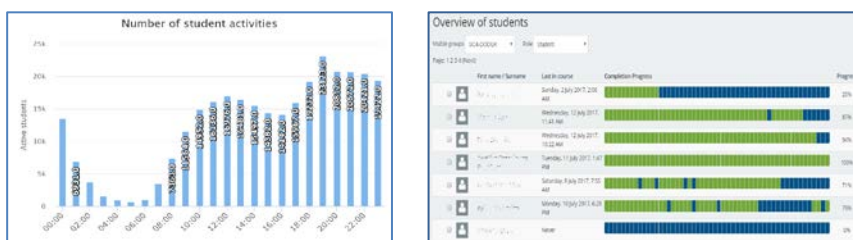
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ranging from admission and course participation, to final exam performance. A lot of information about the people who apply can be found in the admission data set, and a lot of knowledge can be produced with respect to the patterns followed by applicants, so that the university can in advance adjust its offering of new courses or decide the closure of others. A geographical distribution of the applicants can shed some light on the origin of the students so as to plan for the distribution of annexes in the future. For example, the graph in Figure 1a (Kagklis et al., 2017) below is the spatial distribution of the applicants' origin. The regions of ATTIKI, ACHAIA, and THESSALONIKI are where we find the highest percentage of applicants, although for the rest of the country, there is not a particular pattern that can be detected. The graph in Figure 1b (Kagklis et al., 2015) signifies that female applicants outnumber males and that the majority of the students applying to the university belong to the 25-34 age bracket followed by the 35-44 year olds.



(a) Distribution of student origin (b) Age and gender distribution
Figure 1. Results from processing student admission data

The largest part of the data that support our LA methodology are coming from the learning management system used for the offering of the courses. A great amount of data spanning from logging data, posts to forums, assignments, and grades, have a central role in the analysis techniques used (Lotsari et al., 2015). The graphs in Figures 2a and 2b below show the student engagement in relation to the time of the day which indicates that students are more active in the evenings which is logical especially in our institution which caters to mature students and the completion progress of students which exhibits how well and timely designated homework, quizzes and projects are completed by students.



(a) Student activity distribution in hours (b) Student activity completion monitoring
Figure 2. Results from processing data from the LMS

Future Plans

Our vision for the future (Verykios, 2017) is to create software and applications like the Forecast mobile application from Purdue University, which helps students to develop habits and behaviours that will lead to a successful academic life by monitoring their progress and detecting underlying signs of positive or negative activities.

Model-driven design for learning with learning analytics

Innovative impact

In shorter term the paper:

- Describes the relationships between design for learning and learning analytics.
- Identifies issues linking design for learning and learning analytics that needs to be addressed.
- Describes an integrative design for learning hypothetical model that provides context for learning analytics indicators.
- Provides an example for a learning analytics indicator embedded in the design for learning model.

In longer term the paper:

- Would help in constructing an evidence-based design for learning framework with content-based learning analytics indicators.
- Would guide university teachers in designing their courses.
- Might be translated into LMS LD specifications

Introduction

While recognizing the need for alignment of design for learning and learning analytics this brief position paper emphasizes the primary role of an integrated evidence-based instructional design model that frames where and how learning analytics indicators can be embedded in learning and instruction processes.

Setting the Scene

A preliminary targeted literature review identified a growing body of research linking design for learning and learning analytics (Brouns & Firssova, 2016; Emin-Martínez, Hansen, Jesús Rodríguez-Triana, Wasson, Mor, Dascalu & Ferguson, 2014; Gašević, Dawson, Rogers & Gasevic, 2016; Gašević, Dawson & Siemens, 2017; Persico & Pozzi, 2015; Hogaboam, Chen, Hmelo-Silver, Lajoie, Bodnar, Kazemitabar, Wiseman & Chan, 2016; Knight & Buckingham Shum, 2014; Lockyer, Heathcote, & Dawson 2013; Monroy, Snodgrass Rangel & Whitaker, 2014; Rienties, Nguyen, Holmes & Reedy, 2017; Rodríguez-Triana, Martínez-Monés, Asensio-Pérez & Dimitriadis, 2015; McKenney & Mor, 2015; Ruiz-Calleja, Prieto, Tobias, Rodriguez-Triana & Dennerlein, 2017; and Wise, 2014).

From the one side, design for learning (DL) describes the context for learning analytics (LA) and defines the conceptual frameworks for meaningful interpretation of learning analytics data. From the other, learning analytics provide empirical evidence for the impact of a particular design for learning by validating assumptions embedded in that design for learning, which eventually leads to changes in the design. The need for investigating the inherent relationship between design for learning and learning analytics, as identified in the literature, is also in line with the empirical findings from experts' online consultations on learning analytics applying Group Concept Mapping (Scheffel, Drachsler, Stoyanov & Specht, 2014; Drachsler, Stoyanov & Specht, 2014; see also Stoyanov, & de Vries, 2016).

Although an increased research interest in and progress made toward aligning the domains of design for learning and learning analytics there still remain some issues that need to be addressed.

1. Designs for learning that inform learning analytics are not build on evidence-based principles and empirically validated practices. In case when a reference is made to the learning sciences paradigm it is at a very general level. It points at either learning theories such as behaviorism, cognitivism and connectivism, or discussing instructional design models (e.g., ADDIE).

2. Learning analytics have been introduced as a completely new educational phenomenon, which borrows heavily from data science, business intelligence, marketing, and recommendation systems. This is important and useful consideration that will definitely contribute to the development of learning analytics field but it obscures the fact that this phenomenon has own scientific history.
3. The most obvious LA indicators have been so far summative based on some quantitative measures such as page access, time on task or a successful submission of an assignment. These LA "check-points" feedback are certainly helpful to register that someone did something, but they are not sufficiently informative to suggest concrete just-in-time "process" and "content" type LA feedback.

Constructing a hypothetical design for learning model is critical because it determines the type and place of learning analytics indicators.

Design for learning hypothetical framework

The design for learning hypothetical framework consists of a number of guidelines/heuristics that are based upon some evidence-based instructional design approaches, namely: Four Component Instructional Design Model - 4C/ID (Van Merriënboer, & Kirschner, 2007), Cognitive Apprenticeship Approach - CAA (Brown, Collins & Duguid, 1996), Cognitive-Flexibility Theory - CFT (Spiro & Jehng, 1990, Problem-Based Learning - PBL (Hmelo-Silver, 2004), Community of Practice - CoP (Wenger, McDermott, Snyder, 2002), Epistemic Frames - EF (Shaffer, 2006), Design-Inquiry of Learning - DIL (Mor, & Mogilevsky, 2013), Cognitive Load Theory - CLT (Sweller, Ayres & Kalyuga, 2011) and Personal Learning Environment - PLE (Fournier, Kop & Hanan, 2015). Such an effort is similar to the First Principles of Instructional Design (FPID) introduced by D. Merrill (Merrill, 2002). It is out of the scope of this paper to list all possible guidelines that constitute the model. What follows are some examples to illustrate the idea.

Confront students with a real-life problem that represents a particular professional practice, a whole-task practice, reference situation, or an epistemic frame. Almost all of the DL approaches recommend that (4C/ID, CAA, CFT, EF, PBL, and DIL)

Divide the problem into a set of classes of tasks. Order them from simple-to complex (4C/ID, CAA, CoP, CLT). Instead of classes of tasks, these could be stages of a systematic problem solving approach.

Vary the tasks as much as possible so they reflect complexity of the whole-task practice, reference situation, or practice of a community (4C/ID, CAA, CFT, CoP).

Give learners opportunities to reflect on and articulate the information found using specialized web services outside the learning environment (PLE, CFT).

Learning Analytics indicators could be attached to some of the guidelines. For example, if we ask the learners to reflect on what they have found during the search, content type of LA indicators, based on text mining could reveal what learners are talking about and why.

Conclusion

The paper emphasizes the need for building an evidence-based design for learning model that determines the type and place for learning analytics indicators and provides context for a meaningful interpretation of learning and instruction data.

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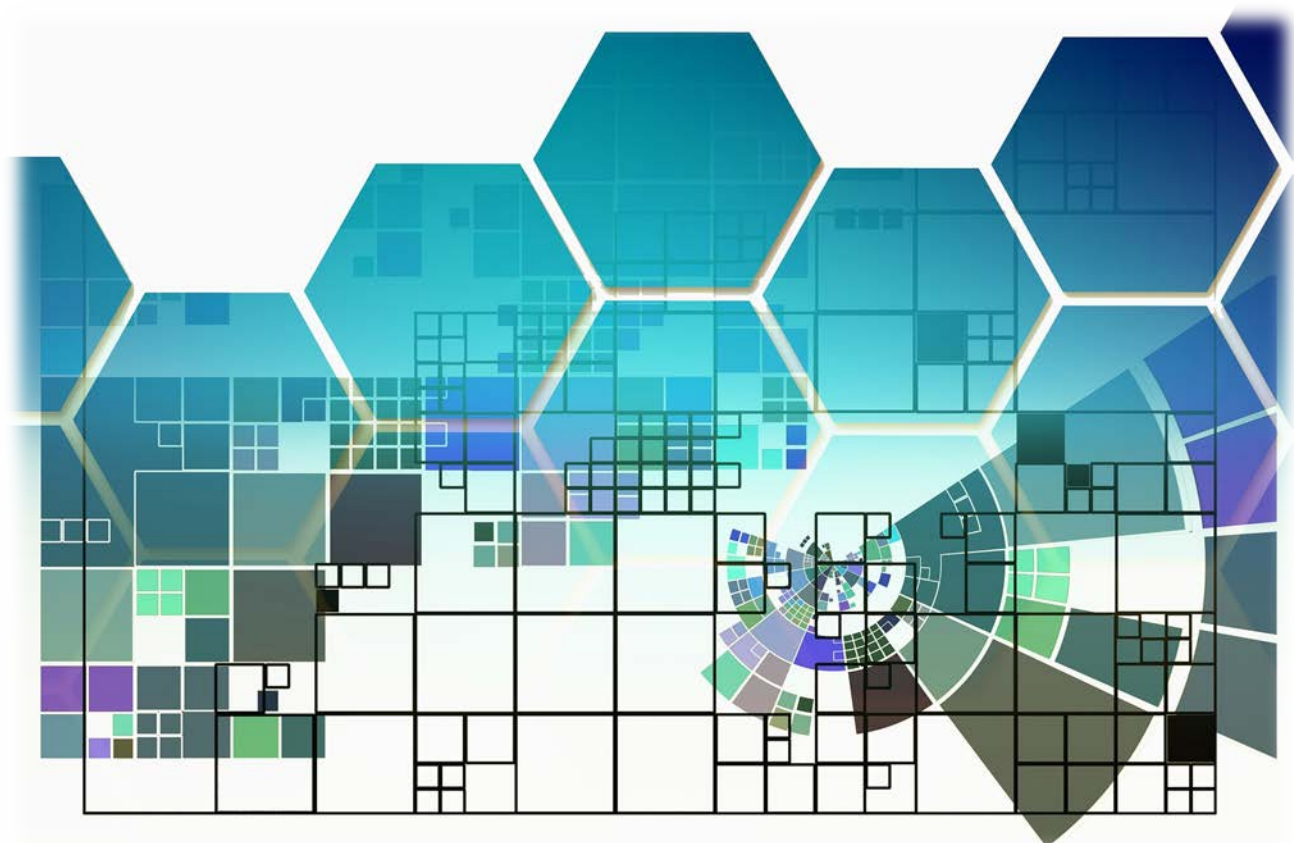
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University Challenges

Accessibility challenges in Higher and Professional Education

Innovative impact

Short term innovative impacts:

- Opening access to higher and professional education programs for students with different learning needs;
- Widening the potential audience of a training/education provider;
- Innovate organizational vision in course and curriculum design, delivery, assessment.

Long term innovative impacts:

- Social inclusion and integration of groups of potential students with minor opportunities (beyond cognitive/perception impairments, including immigrants and refugees);
- Innovation in programs, learning outcomes centered design affecting all the curriculum/course phases;
- Reducing skills shortage involving in the education/training programs a wider population.

Introduction

Inclusive education is a global goal, pursued by International Organization such as UNESCO, UN and, at European Institution level since years.

In 1994, the Salamanca Statement on Special Needs Education underlined how educational policies should take full account of individual differences and situations; focus was set not only on children, but also on youth and adult education, both at secondary and higher education level, as well as in training programmes. The key-phrase of the document was clearly **education for all**. A specific chapter is devoted to the **preparation for adult life**: "Young people with special educational needs should be helped to make an effective transition from school to adult working life". At strategy definition level, the 2030 Agenda for Sustainable Development: United Nations Sustainable Development 17 Goals defines in Goal 4 "**Ensure inclusive and quality education for all and promote lifelong learning**" a specific target: by 2030 [...] ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations.

Through the Incheon Declaration, UNESCO - as the UN specialized agency for education - was entrusted to lead and coordinate the Education 2030 Agenda. The Education 2030 Framework for Action sets as one of the objective equity, inclusion and gender equality in education, stressing the role of lifelong learning as one of the pillars of the abovementioned Sustainable Development - Strategic Goal 4.

Accessibility through ICT in Higher Education / Continuous Professional Development

Use of ICT in education is a priority on European policy agenda and there are numerous strategies adopted by European Commission promoting and encouraging the use of ICT to improve learning and teaching experience (EC 2009, 2010, 2012, 2013). ICTs enable addressing students' needs even at individual level, thus effectively answering to the specific needs of each student and particularly to those that were previously excluded from the system (either because they didn't simply reveal to possess the minimum requirements to frequent the course; or just because they have some kind of disability that may affect their normal attendance at the University). In this sense, technology clearly seems to promote inclusion.

Comparable examples

"Gaps and Needs Analysis: European Report and Roadmap" is a Needs analysis report focusing on visually and hearing impaired people access to Higher Education, developed through ISOLearn project, available at: <https://tinyurl.com/ISOLearn-Needs-Analysis>

"Innovation and Social Learning in Higher Education" is a handbook for implementing accessibility in HEIs, focused on visually and hearing impaired people, developed through ISOLearn project, available at: <https://tinyurl.com/ISOLearn-Handbook>

"Vocational Training for ADHD Learners - Compendium of Good Practices" is a cross-country research analyzing 21 good practices and national guidelines at EU level for training provision to ADHD learners, available at: <https://tinyurl.com/Q4ADHD-Compendium>

"Q4ADHD Online Assessment Tool", an orientation tool designed for institutions and institutions' leaders, providing inputs for improving their capabilities in reaching effectively ADHD learners, available at: <http://tools4adhd.eu/online-assessment-tool/>

Accessible education and training

While several guidelines and how-to are available as open/free resources in order to be "compliant to" some national or international accessibility specification or regulation, a systemic approach for accessibility should involve all the organizational levels in a HEI and CPD providers:

- **Accessibility policy**, stated at Institutional Level (management bodies) should provide accessibility policies defining standards, aims and services provided in order to grant access to students with different learning needs / minor opportunities;
- **Information accessibility**; within its accessibility policy statements, a HEI have to state fundamentally two things: the standard it aims to comply to, and the level of compliance it aims to meet;
- **Course contents**: online courses must comply with Web accessibility standards (WCAG 2.0); furthermore, accessibility in teaching and learning processes addresses also other pedagogical and technological aspects. At institutional level, guidelines and a reference framework to be the base of Curricula, course and didactic material design and provision. A complete framework for accessibility in Higher Education, providing theoretical foundation and practical guidelines and examples, is the UDL – Universal Design for Learning – framework , defined in the USA Higher Education Opportunity Act of 2008 (HEOA).
- **Support and training to faculty and teaching staff**: Continuous support to faculty and teaching staff is fundamental in order to comply with accessibility standards in day by day didactic activities.
- **Curriculum/Course design and delivery**: the abovementioned UDL – Universal Design for Learning - framework is a set of principles for curriculum development; three primary principles, which are based on neuroscience research, guide UDL and provide the underlying framework for the Guidelines: 1. Provide multiple means of representation; 2. Provide multiple means of action and expression; 3. Provide multiple means of engagement.
- **Assessment and evaluation**: specific settings, technology provisions and accommodations have to be provided for final assessments / exams. Furthermore, courses should be designed taking into consideration the "essential requirements" principle, stated by Stanford University Office of Accessible Education. Assessment should not be a final event, but should be a process taking place all over the course delivery phase.

Challenges

References to handbooks, guidelines, frameworks and practical example of implementation for each dimension listed above are available in the "Comparable examples" section. Nevertheless, implementing those frameworks in the day-by-day workflow of a HEI

Online Resources

W3C Accessibility Initiative (WAI) – Web Accessibility Law and Policies, <https://www.w3.org/WAI/Policy/>

World Wide Web Consortium (W3C), Web Content Accessibility Guidelines (WCAG) 2.0, <https://www.w3.org/TR/WCAG20/>

UDL – Universal Design for Learning – framework; <http://www.udlcenter.org/about/udl/whatisudl>

European Commission, European Disability Strategy 2010-2020: A Renewed Commitment to a Barrier-Free Europe", 2010, <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52010DC0636&from=en>

Quality Matters, Higher Education Rubric Standards, <https://www.qualitymatters.org/qa-resources/rubric-standards/higher-ed-rubric>

UN, Sustainable Development Goal 4, <http://www.un.org/sustainabledevelopment/education/>

UNESCO; Salamanca Statement, http://www.unesco.org/education/pdf/SALAMA_E.PDF

UNESCO, Incheon Declaration, <http://unesdoc.unesco.org/images/0023/002338/233813m.pdf>

or a professional training provider presents obstacles and challenges hard to face:

- Implementation costs: design for accessibility has a strong impact in the course design / production / delivery / assessment chain, impacting also on administrative processes and logistics / architecture (for blended models); improving, enhancing, changing has a cost, and in this case a cost to be covered for all the core component of a training/HE institution;
- Faculty awareness and availability to change: professors, tutors, trainers will be asked to change the way they teach, they assess, they create contents.
- Wide range of students' different learning needs: while we can adopt a "Universal" approach, different learning needs, cognitive or perceptive impairments, and in general needs from students with minor opportunities (immigrants, refugees) will require need-specific techniques and tools to be used;
- Leadership: management and leaders inside the organizations should act as driver of innovation and implementation of policies and strategies at operational level.

Conclusion

The need to be both "universal" and "need-specific" can be identified as the hardest challenge to address. The key success factor in developing an effective program, accessible for a specific audience, is the actual involvement of relevant stakeholders. Users from the group targeted by the training/HE program have to be involved since from the design phase, together with relevant stakeholders (associations and experts in the specific accessibility field the program want to address), providing inputs and feedbacks during the design and development of the program, its contents and its delivery and assessment methodology. From this point of view, strategic cooperation programs provide some good practice examples; ISOLearn project (<http://www.isolearn.net>) is a strategic partnership project in the field of HE, addressing accessibility for visually and hearing impaired people; while Q4ADHD (<http://tools4adhd.eu/>) is a strategic partnership project in the field of VET, addressing ADHD students access to vocational training programs. Working in both these projects for UNINETTUNO, the differences in methodologies and tools for adaptation of contents and course delivery and accommodation of assessments and exams emerged clearly.

Nevertheless, it was clear that the initial investment in accessibility for a specific target group could be useful for a more wide audience; implementing accessibility in content design and development, through the compliance to international guidelines, or adopting an assessment approach focused on verifying the achievement of the desired learning outcomes, support-independently, will affect the experience of all students. Despite of any kind of different learning need, these approaches improve the overall quality, relevance and effectiveness of the teaching and learning processes.

Excellence in e-learning: the key challenges for universities

Innovative impact

The E-xcellence methodology (e-xcellencelabel.eadtu.eu) facilitates higher education institutions in reviewing the quality of their e-learning offerings, supported by benchmarks, guiding resources and external assessors.

An analysis of E-xcellence reviews at nineteen higher education institutions was undertaken, in order to identify the most challenging aspects of e-learning provision for the institutions. The analysis revealed the E-xcellence benchmarks that were considered the most problematic in self-assessments, or which attracted the most planned actions for improvement.

This profiling exercise indicated that the main challenges were:

- developing e-learning strategy
 - building online academic communities for students
 - managing staff workload.
- There was also a strong focus on increasing the interactivity of learning materials. In contrast, the provision of reliable IT systems and hardware was unproblematic.

Introduction

E-learning is increasingly important in Higher Education, but concerns are often raised about its quality (Vlachopoulos, 2016). An effective quality enhancement approach for HE institutions is to review and self-assess their e-learning provision, taking into account all the relevant aspects. The E-xcellence methodology (Kear et al., 2016; Kear, Williams & Rosewell, 2014) is a proven way to carry out such a review, supported by resources and external assessors. As recommended by Jung & Latchem (2012, pp. 268-9), it takes a quality enhancement stance that aims for continuous improvement.

The E-xcellence resources (<http://e-xcellencelabel.eadtu.eu/>) include a quality manual, guidance for institutions and assessors, and an online self-evaluation tool. E-xcellence uses a benchmarking approach (Ossiannilsson & Landgren, 2012) with 35 benchmark statements grouped under six headings: *Strategic Management*, *Curriculum Design*, *Course Design*, *Course Delivery*, *Staff Support* and *Student Support*. Institutions self-assess their capabilities against the benchmarks, and prepare a plan ('roadmap') of future actions mapped against them. Face-to-face or online discussions with external assessors complement the self-assessment and can lead to the award of an 'E-xcellence Associates in Quality' label.

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, reveal aspects of e-learning that are particularly challenging for institutions. This article presents an analysis of the outputs from nineteen E-xcellence reviews carried out in the period 2009-2016 (Rosewell *et al* 2017). Identifying the benchmarks which institutions frequently self-assessed as problematic, and those which attracted the most planned actions, highlights the aspects of e-learning that institutions find most challenging.

Findings

The results from self-assessment data (see Figure 1) show that staff *Workload management* is the benchmark most commonly rated as problematic. The development of online *Academic communities* is the next most problematic benchmark (and this same concern may also be reflected in self-assessments for *Social media*). The issue of an *E-learning strategy* is also highlighted as problematic.

All institutions viewed some benchmarks as unproblematic (already largely or fully achieved). For example, *Reliability and security* was not rated as problematic by any institution. Notably, all benchmarks in the area of Student Support, with the exception of Social media, were judged unproblematic.

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Kear, K., Williams, K. and Rosewell, J. (2014). Excellence in e-learning: a quality enhancement approach. In: *Changing the Trajectory - Quality for Opening up Education*, pp. 25–32.

Ossiannilsson, E. & L. Landgren, L. (2012). Quality in e-learning – a conceptual framework based on experiences from three international benchmarking projects. *Journal of Computer Assisted Learning*, 28, 42–51.

Rosewell, J., Kear, K., Williams, K., Rodrigo, C. and Sánchez-Elvira, A. (2017). E-xcellence methodology: lessons learned over ten years of development and implementation. In: *The Online, Open and Flexible Higher Education Conference*, 25–27 October 2017, The Open University, Milton Keynes.

Vlachopoulos, D. (2016). Assuring Quality in E-Learning Course Design: The Roadmap. *The International Review of Research in Open and Distributed Learning*, 17(6).

Considering the data from the institutions' roadmaps for improvement reveals both similarities and differences to the pattern shown in the self-assessments. Some benchmarks feature similarly: *E-learning strategy*, *Workload management* and *Academic communities* are seen as problematic in self-assessments, and are also identified in many institutions' roadmaps for improvement. However, other benchmarks differ on the two measures. For example, the largest number of roadmap actions was for *Interactivity* although this benchmark was not commonly judged problematic in the self-assessments. Also there were relatively high numbers of planned actions for some of the *Student Support* benchmarks, even though most of these were judged unproblematic in the self-assessments.

Discussion

Based on data from the institutions' self-assessments and roadmaps, the analysis identified several key issues that institutions find challenging when implementing e-learning. These are: e-learning strategy; staff workload; academic community; and, to some extent, interactivity. 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.

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 in self-assessments would lead to planned actions listed in the roadmap. To a large extent this is the pattern seen. However, the two sets of data are not entirely consistent. Notably, there were a large number of roadmap actions for *Interactivity* even though this benchmark was not highlighted as problematic in self-assessments.

Perhaps institutions find it relatively straightforward to include actions in their roadmap that have already had some work done on them, and are thus not scored as particularly problematic in self-assessments. One example is *Interactivity*. Improvements here are core concerns for many e-learning practitioners, who wish to improve quality by moving away from e-learning as transmissive content delivery; however, current provision may not be seen as particularly problematic. There could also be issues highlighted as problematic in self-assessments where no plans have yet solidified that can be committed to a roadmap. *Social media* may be one example; institutions may have held back from planning major actions in this fast-moving area. 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.

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. Looking at evidence from past E-xcellence reviews suggests that HEIs introducing e-learning have faced particular challenges in:

- developing an institutional strategy for e-learning
- building online academic communities for students
- managing staff workload.

Many HEIs are also planning actions to improve the interactivity of their learning resources.

This picture of the issues that have proved to be challenging for HEIs moving into e-learning should be of value to other HEIs, and also to educational policy makers.

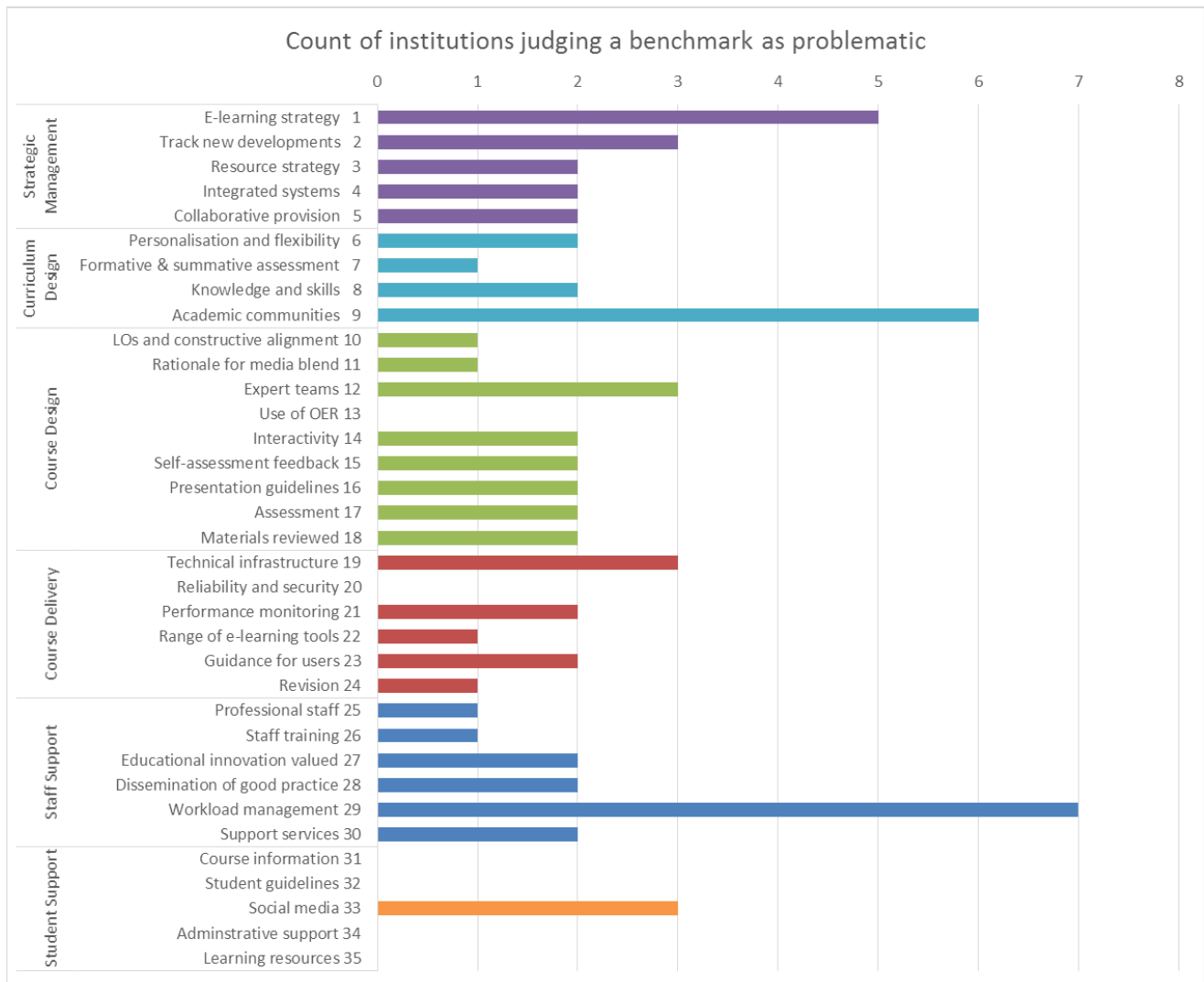


Figure 1: Count of institutions judging individual benchmarks as problematic in self-assessments

Open and Ethical?

Innovative impact

Implications of this paper

The implications of this paper are that the new methods of collecting and using data such as Learning Analytics (LA) mean that any ODL institution needs to have clear ethical guidelines which are agreed throughout the institution. How this is to be achieved depends on the institution's structures. But probably there needs to be an institutional Ethics Committee with student representatives which develops a set of principles like (but not necessarily identical to) those of Slade and Prinsloo covered in this paper. Then there must be regular reviews of how the current use of LA and other data-based systems adheres to those principles.

Perhaps the most difficult principle will be that of the access to the data. It is seems important that students have access to as much of their personal data as possible. But if that data includes predictions about a student's ultimate success, then there is the ethical conundrum of what effect knowing that prediction would have, as noted in this paper. That needs further research.

Introduction

The internet innovations of the late 20th century provide difficult ethical issues. Google's accumulation of data about us is problematic. Facebook and Twitter can be used to spread 'fake news' and facilitate the online sexual grooming of children and much other abuse.

As distance and online educators use more new technology it becomes vital that we also develop methods of testing our ethical use of those technologies. Now the new field of learning analytics has brought the need to examine the ethics of online and distance education into even more urgent focus.

Ethical models

There are many ethical models which could be used to explore the implications of educational ethics. Two of the simplest - taken as examples here - are the 'Hippocratic Oath' and the 'care vs justice' commitments.

1. The Hippocratic Oath. In its simplest form the Hippocratic Oath says 'First do no Harm' which means a doctor should not take actions which potentially leave a patient worse off than before.

'First do no harm' is an ethical dilemma for educationalists. They are required to assess and fail students who do not reach some standard. But there is evidence (Bynner, 2001) that students who fail or drop out of higher education suffer higher probabilities of unemployment, depression and for women, partner violence.

We cannot be sure that these effects are the consequence of dropping out - a spontaneous depression may be the cause of dropping out rather than a result. Neither do we know if dropping out of distance education has the same effects - apparently no-one has done the research.

But given that ODL has much higher levels of failure and dropout than conventional education this should be a particular issue for distance educators. An educational version of the Hippocratic Oath would suggest that it is an institution's duty to minimise the damage to its students due to their failure and dropout. However many distance students are not known personally to their teachers so that it is difficult to ameliorate failure though individual personal support. Perhaps every student who fails or drops out should get some kind of contact from the institution even if that is only in the form of a contact that seeks to identify their reasons for their failure or dropout, encourages them to try again or advises them on other routes to their

Comparable examples

Gearhart (2001) warned that the increasing use of IT in open and distance learning (ODL) might enhance unethical behaviours because of the phenomenon of 'psychological distance'.

Visser ((2001) noted that 'a search of the literature ... reveals little explicit concern with ethical questions among the community of professionals in the area of distance education and open learning'

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Prinsloo, P. and Slade, S. (2014) 'Educational Triage in Open Distance Learning: Walking a Moral Tightrope' *The International Review of Research in Open and Distributed Learning (IRRODL)* Vol 14 no. 4

Slade, S. and Prinsloo, P. (2013) 'Learning Analytics, Ethical Issues and Dilemmas' *American Behavioural Scientist* Volume: 57 issue: 10, page(s): 1510-1529

goal. An example of such a contact - '*Bailing Out*' - is described in Simpson (2013).

2. *Commitments to compassion and justice.* Pratt (1998) suggested a simple educational ethical model in which ethical decisions are guided by either a commitment to caring or a commitment to justice. Of course decisions often lie on a spectrum between them.

Commitment to caring



Commitment to justice

Ensuring that failed students are dealt with in a caring manner is one example of this dichotomy between caring and justice. There are other examples such as:

- *Disability.* In ODL up to 20% of students can declare some kind of disability. This might be dyslexia for example, where a student asks for extra time to complete an exam. An institution needs to care for that student while ensuring justice in terms of its academic standards.

- *Recruitment.* Serious questions of ethics arise in student recruitment. The internet has allowed many new private distance institutions to start up. In the UK such 'Alternative providers' make most of their profits from initial recruitment when new students take out state loans to pay their fees.

This means that alternative providers may focus on recruitment at the expense of retention. The results are that their dropout rates are higher - often by up to 5% - than the entry characteristics of their students would predict - their UK Higher Education Statistics Agency (HESA) benchmark.

Universities can also be ethically dubious when it comes to marketing their courses. For example the UK Advertising Standards Authority recently told six UK universities to take down marketing claims that could be misleading (UKASA, 2017).

- *Recruitment at Open Entry distance institutions.* Recruitment to institutions like the UK Open University which does not require any entry qualifications, is a particularly challenging ethical issue. With a UKOU 13% graduation rate currently there must be serious concerns as to whether new students are being recruited ethically, especially as dropout is highest amongst new students with low previous educational qualifications.

Learning Analytics and ethics

The new field of Learning Analytics (LA) poses these ethical questions exceptionally clearly.

Case study

In 2006 the UKOU developed a statistical method of predicting the success of new students entering the University based on student characteristics such as previous education, age, sex, and ethnicity (Simpson 2006) - an early example of LA.

Simpson, O. (2006). 'Predicting student progress' *Open Learning*, 21(2), 125-138

Simpson, O. (2013) '*Supporting students for success in online and distance education*'. Routledge, New York ISBN 978-0-415-50910-7

UKASA (UK Advertising Standards Authority) judgement November 2017
<https://www.asa.org.uk/search.html?q=universities>

Visser, J. (2001) 'Ethics in distance Education and Open learning'. In Proceedings of the Presidential session of the ICDE Conference Dusseldorf Retrieved April 22 2008 from <http://www.learndev.org/ppt/ICDE-2001/>

The results were presented as a 'predicted probability of success' (pps) attached to each student. The distribution of this pps for a group of around 30,000 students entering the University in the year 2004 ran from 9% to 83% with the largest number of students - around 7,800 - having a pps of 50% to 60%. Subsequent analysis showed that the predictions were surprisingly accurate.

This process raised two ethical issues:

Should students be told their pps? Would the effect of a student being told that they only have a 10% chance of success demoralise them completely? But if they are not told then they are being recruited with a 90% chance of failure which seems quite unethical. Simpson (2006) developed a self-assessment questionnaire which allowed students to calculate their own pps privately with suggestions for how they might improve their pps. But this was never tested for efficacy.

Focusing of resources - triage. It was known in the UKOU that a single phone call at the start of a course could increase a student's chances of success by more than 5%. Given limited resources for this call it was argued by some people that it should be focused on students with a higher pps to start with. Essentially this was an example of 'triage' - the way doctors on a battlefield decide who has a reasonable chance of survival and is therefore worth treating - Prinsloo and Slade (2014).

Ethical principles for Learning Analytics

Slade and Prinsloo (2017) suggest that there are six principles needed to deal with the ethical issues raised by the use of LA in online education:

Principle 1: LA as moral practice. LA should be employed in not only what is effective, but also in what is morally necessary.

Principle 2: Students as agents. LA must involve students as collaborators.

Principle 3: Student identity and performance are dynamic constructs. LA only provides a 'snapshot' of a student at one time. So 'data collected through learning analytics should have an agreed-upon lifespan and expiry date, as well as mechanisms for students to request data deletion'.

Principle 4: Student success is a complex phenomenon. It will be important to recognise that student success depends on many more things than institutional actions.

Principle 5: Transparency. Institutions need to be clear as what data is collected and used and who has access to it.

Principle 6: Higher education must use LA given that it can be so important in fulfilling in improving outcomes for students.

Conclusion

Clearly the conclusion must be that any ODL institution needs to have clear ethical guidelines which are agreed throughout the institution. How this is to be achieved depends on the institution's structures. But probably there needs to be an institutional 'Ethics Committee' with student representatives which develops a set of principles like (but not necessarily identical to) those of Slade and Prinsloo noted above. Then there must be regular reviews of how the current use of LA and other data-based systems adheres to those principles.

Perhaps the most difficult principle will be that of the access to the data. It seems important that students have access to as much of their personal data as possible. But if that data includes predictions about a student's ultimate success, then there is the ethical conundrum of the unknown effect that knowing that prediction would have on that student.



Blended Education

Innovative Impact

The answer to the question "What kind of education do we need?" lies in the answer to a different question: "What kind of society do we want?" (Tironi, 2005)

FUTURA project results can help to enhance the quality of learning and teaching in distance education, and that will act as a catalyst to harness the collective, creative energy of stakeholders within the sector to address society's 21st Century challenges through innovative thinking.

In more practical sense, the FUTURA results can be used as inspiration for course teams, departments or institutions to explore innovative practices.

Its innovative **IDEAS** framework can be used to guide institutional change at two levels:

- At a strategic level, it could be used as the basis of a template for representing organisational alignment of policies, strategies and practices.
- At an operational level, it could be selectively used as a checklist built into curriculum development procedures.

FUTURA - Next generation pedagogy. IDEAS for Online and Blended Higher Education

FUTURA (Future of University Teaching: Update and a Roadmap for Advancement)

Universities have the mission of promoting knowledge and educating the next generation of thoughtful and engaged citizens. They contribute to society through the modernization of education and pursuit of excellence in research. In this sense, they act as drivers for innovation and growth (Ernst & Young, 2012). The democratisation of knowledge and the expansion of access to higher education (HE) require universities to constantly review their pedagogical practices to ensure that they remain up to date with developments such as described by King & Sen (2013):

- The Internet, which has made knowledge previously attainable only on college campuses available to all.
- Distance learning initiatives, which began in the late 1990s and early 2000s, and are increasing.
- The emergence of a fast-growing group of large for-profit (or "career") universities.
- Online start-ups, such as Coursera, which have begun providing courses to massive online audiences.

FUTURA (Future of University Teaching: Update and a Roadmap for Advancement) project aimed to analyse those and other trends and provide a "roadmap" to inform strategic planning for the future.

This chapter is intended to present a summary of main findings of the FUTURA project.

Innovative practices and original approaches to teaching

Twelve overarching themes related to innovative practices and original approaches to teaching emerged in the project:

Active learning is the process whereby students engage in activities that promote analysis, synthesis and evaluation of class content, in a way they directly experience having a hand on creating knowledge (Center for Research on Learning and Teaching, 2016; King & Sen, 2013). It can be achieved through a variety of approaches, for example learner-generated content, gamification and problem-based learning.

Active learning inspiring example: Sustainability Connect by Arizona State University (USA)

SustainabilityConnect is an online platform that helps initialise, coordinate and document problem- and project-based learning (PPBL) projects on real-world sustainability challenges. The goal is to foster collaboration between academic and professional experts while providing students with an applied learning environment. Key benefits of this initiative for students include connecting to people, opportunities and projects, and obtaining support to build sustainability skills, or to frame and initiate a project. Projects begin with an idea or need for change. A project coordinator then works with the initiator to develop the proposal and structure it. The coordinator assists in building a team of students and experts in the field, being careful to match academic and professional experts who complement each other's knowledge and expertise. The coordinator then facilitates the progress of the project, where students conduct the majority of the work with academic and professional guidance. At the completion of each project, the students complete a report detailing the results. This document is uploaded to a database where other users can view it and find inspiration for future research. Any student, faculty, staff or community partner of the university can submit a project proposal or search the project database.

Further information:

<https://sustainabilityconnect.asu.edu/>

Go beyond the institutional Learning Management System can enhance the educational experience. Remote labs – real, physical laboratories where the equipment can be operated remotely – offer an interesting possibility there.

Collaboration between higher education institutions can also foster effective learning and teaching. The Erasmus programme is a good example of such partnerships, which are based on formal agreements between institutions. Benefits of interinstitutional collaboration include improving provision through the sharing and joint development of resources and courses, benchmarking practices, increasing the offer of staff development opportunities and enhancing student exchanges.

Digital literacy – also known as digital competences – refers to the skills required by both staff and students for academic and professional activities supported by diverse and changing technologies (Jisc, 2014). These skills can enable the appropriate use of learning technologies, leading to improvements in course effectiveness and the enhancement of the learning experience (High Level Group on the Modernisation of Higher Education, 2014).

For other eight topics: **Employability and collaboration between HE institutions and employers, Flexibility and personalisation, Innovation as a curriculum topic, Internationalisation, Learning analytics, Non-formal and open learning, Recognition of prior learning, Teaching enhancement programmes**, please consult FUTURA full report at:

(http://openaccess.uoc.edu/webapps/o2/bitstream/10609/51441/1/Next_Generation_Pedagogy.pdf)

IDEAS for next-generation pedagogy

The IDEAS framework presents five “signposts” on the roadmap of innovative approaches to teaching, which point to next-generation pedagogy (see fig. 1):

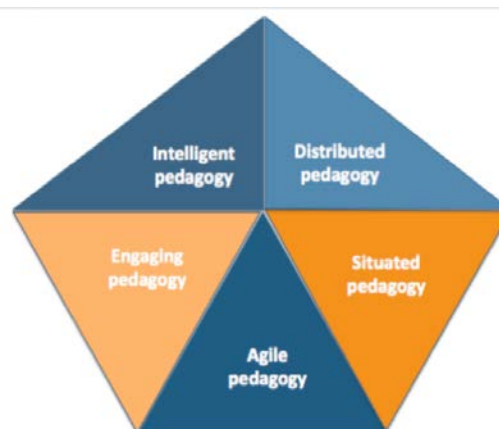


Figure 1 Next-generation pedagogy characteristics: Intelligent, Distributed, Engaging, Agile & Situated (IDEAS)

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King, G. & Sen, M. (2013). The troubled future of colleges and universities. *PS: Political Science and Politics*, 46(1), 81-113. Retrieved from <https://gking.harvard.edu/files/gking/files/troubledfuture.pdf>

Tironi, E. (2005). El sueño chileno: comunidad, familia y nación en el bicentenario. [The Chilean Dream: Community, Family and Nation at the Bicentennial.] Santiago de Chile: Taurus.

>**Intelligent pedagogy** is an approach to teaching in which technology is used to enhance the learning experience. Examples include using learning analytics to support course leaders in curriculum design decisions as well as to help students manage their learning, and the creative use of technologies such as virtual and augmented reality for learning and teaching.

>**Distributed pedagogy** refers to shared or distributed ownership of different elements of the learning journey by different stakeholders in the process. It includes, at the one end of the spectrum, collaborative partnerships between institutions, and at the other, a deliberate separation of services to allow learners to select different aspects of their learning experience from a marketplace of potentially competing providers.

>**Engaging pedagogy** is an approach to curriculum design and delivery in which learners are encouraged to actively participate in the learning process. Related practices include supporting students to develop portfolios that have relevance for them outside of the classroom, involving the learners in producing content both for peers and for the wider public.

>**Agile pedagogy** refers to flexibility and customisation of the curriculum and the student experience. It includes personalised learning pathways and individualised support for learners, recognition of prior, non-formal learning achievements in order to widen participation and fast track learners through programmes, responsiveness of institutions and systems to learners' needs, and support for virtual mobility of students and internationalisation of the curriculum.

>**Situated pedagogy** encompasses the idea of contextualisation of learning and emphasises the need for curricula with real-world relevance. It expands work-related learning opportunities for students, and supports students in identifying and addressing "big issues" in industry, government, and society through project- and problem-based learning. In situated pedagogy, learning and assessment are contextualised according to students' professional and personal goals.

Conclusion

The FUTURA project aimed to spark creative thinking around what our universities mean for society and what their role will be in the future. That is why the FUTURA project was carried out in the spirit of exploration, seeking inspiration as much as information, with the overarching goal of developing a "roadmap" to inform strategic planning for the future.

It was achieved through the exploratory search and identification of trends and innovations in online, blended and lifelong learning provision in higher education (HE) globally, with a focus on pedagogy.

Results of this work can be used as a launchpad for wide-ranging dialogue amongst stakeholders at distance teaching universities, contributing to the development of a bold vision of the impact that these institutions can have on global higher education and on society as a whole.

Transmedia Storytelling as a Framework for Effective Blended Learning Design

Innovative impact

This article discusses the use of *Transmedia Storytelling* in blended learning, based on recent research and the need for an effective learning design. The interest in digital storytelling for educational purposes has increased over the last few years, with researchers also identifying key pedagogical features of new media that make these inherently powerful learning tools.

Stories may have high impact in the development of resources for blended learning, and could well replace some forms of traditional teaching (such as expository lectures) but more likely they will remain just an alternative to other more conventional education methods.

The trend towards learner centred strategies and collaborative learning shows the way to learning 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 technologies that are able to engage “Millennial” students.

Introduction

Transmedia Storytelling is a process of “crafting stories that unfold across multiple media platforms, in which each piece interacts with others to deepen the whole - but is capable of standing on its own - giving the audience the choice as to how deep into the experience they go” (Weaver, 2013, p. 8). In a nutshell, Weaver compares the transmedia approach to storytelling to the creation of a handshake. The audience has the chance to return the handshake by consuming one piece and then deciding if they want to continue the conversation by seeing what else is in a given storyworld.

Transmedia Storytelling is also “a strategic process where the scale and scope are a whole lot more than the sum of all its parts” (Kalogeris, 2014, p. 177). At its core, a transmedia project relies on processes of leveraging media platforms to deliver a story and create an interactive experience. For Raybourn (2014, p. 475), transmedia storytelling design entails the development of character (interaction and personas), story (narrative and scenarios), worldbuilding (place), and audience (participation and emergent culture). In addition to these elements, in the case of a transmedia learning experience, it is also necessary to ground a learning framework. Taking into account the goals of a blended learning project, the framework of a specific storyworld must support the construction of knowledge via manipulation of the digital resources scattered through the platforms and integrate interaction triggers that can ultimately lead to an authentic learning experience.

Stories and learning

Stories are mystifying and forge emotional connections. Fiction, in particular, stimulates empathy with characters that seem real. As communication tools, they provide understanding and entertainment. Independent of the medium - books, web series, comic books, films or games, stories engage audience members in a narrative experience that becomes a unique enterprise that differs from individual to individual.

The internet has given rise to a new form of narrative “one that’s told through many media at once in a way that’s non-linear, that’s participatory and often game-like, and that’s designed above all to be immersive” (Rose, 2011, p. 3). Stories are universal nevertheless, the way they are told changes with the medium through which they emerge. As participatory media proliferate, storytelling does too. In this context, transmedia storytelling emerges as a mean of creation and expression of the “Millennial generation”, a definition introduced

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Rose, F. (2011). *The Art of Immersion: How the Digital Generation Is Remaking Hollywood, Madison Avenue, and*

by Howe and Strauss (2000, p. 4).

As passive viewers become active users and participants, transmedia provides a set of tools and techniques that can reach and engage young audiences, often through multiple interfaces, platforms and devices. Gomez (2014) refers to the "Millennials" as the most published and social generation in the history of humanity. He argues they are also the "Transmedia Generation" since they can take different parts of a story, delivered across different platforms and assemble a whole that suits the level with which they want to engage with the material.

The exploration of the educational uses of transmedia practices has become a prevalent topic of discussion in recent years. From an educational point of view, transmedia learning environments allow to shift the balance of agency as students "become hunters and gatherers pulling together information from multiple sources to form a new synthesis" to become "active publishers of knowledge" (Jenkins, 2009, p. 46). They also allow to "broaden the mix of representational modes in which students express their knowledge and to build collaborative knowledge cultures" (Kalantzis & Cope, 2012, p. 84).

Learning resources

The learning framework we propose takes into account the following set of questions to assess the appropriateness of a narrative work for an educational setting, in this case, in reference to an e-module (Kalogeras, 2014, p. 178):

1. Can the story be integrated into an existing curriculum?
2. Is the story engaging, and can it help make learning more effective?
3. Does the story contain subject matter that is relevant to the module?
4. Do the hyperlinks found in the story provide valuable information in keeping with learning objectives and outcomes?
5. Can additional learning extensions be created by subject-matter experts/producers?
6. Can the students create stories extensions via digital stories to provide educational value?

Drawing from the multi-literacy training approach proposed by Kurek and Hauck (2014, p. 119), the students' interactions may be scaffolded around the following parameters: reception, participation, and contribution. This method "attempts to address learner literacy needs on various levels. Similarly to what is happening in a language classroom, the learner is guided from observation of the desired acts, through their interpretation to the final performance, with the teacher gradually withdrawing support" (Kurek & Hauck, 2014, p. 126).

In a specific project the learning sequence: reception, participation,

the Way We Tell Stories. New York: W.W. Norton.

Weaver, T. (2013). *Comics for Film, Games, and Animation: Using Comics to Construct Your Transmedia Storyworld*. Burlington, MA: Focal Press.

and contribution, implies selecting platforms that would allow for the progression from reception to contribution. Platforms that would on one hand provide learning inputs (e.g. YouTube, iTunes U) and, on the other, trigger the creation of learning outputs and engage students into taking an active role (e.g. Facebook, Twitter). The different gateways to a storyworld are set forth via a common interface - a website, the hub of the storyworld. The navigation across different platforms allows for a cumulative or complementary exploration of the story elements, linear or non-linear. Participants can determine their level and form of immersion in the storyworld.

Conclusion

Looking forward, we argue that traditional pedagogy has to be reformulated, not just accommodating transmedia storytelling and the latest technology for blended learning but also enabling rich social interaction, enhancing group work and communication within educational settings. We would define learning today as a multidimensional construct of learning skills and cognitive learning results, for instance, including procedural, normative and strategic knowledge, and attitude. 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 may also speculate 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 in science, acquiring knowledge, skills, and beliefs congruent with those valued by various scientific communities, they will take on these practices outside of formal school contexts. Finally, we concede that a lot has still to be done, but we contend that social networking, digital storytelling, gamification, and other similar strategies, are all crucial to the future of open and distance learning.

A learning-centred blended model for professional doctorates

Innovative impact

A solid pedagogy can ensure the achievement of the learning outcomes set for any university qualification, whether at undergraduate or postgraduate level. Currently there is an urgent need for a wider consideration of appropriate pedagogies for doctoral programmes.

This paper looks in particular at the characteristics of professional doctorates, which are typically studied part-time and focus on researching a professional setting. Based on the needs of these programmes, it proposes a learning-centred blended mode of delivery that fosters students' engagement with activities anchored in the set learning outcomes. The range of activities aims at facilitating the multiple interactions necessary for competent researchers by making use of the resources, tools and spaces within two main learning environments: the virtual and the physical.

This model prompts universities to consider appropriate pedagogies for the delivery of professional doctorates and suggests the need to ensure the alignment of their approaches with available technologies, educational policies, and practices of teaching and learning in their institutions. In order to ensure a successful implementation, such a consideration must also include effective action for the development of the relevant academic staff.

Introduction

During the past decade, the fundamental value of doctorate programmes has shifted from getting an award to developing as a life-long researcher by means of research skills training, research management, team working and effective communication, among others. This movement has brought a focus on learning outcomes at doctoral level which in the UK are based on the expectations set up by the Quality Assurance Agency for Higher Education (2015).

Scott et al. (2004) highlighted the neglect of pedagogy in doctoral programmes; surprisingly, they found out that this issue also affected professional doctorates in Education. Since then, the UK has experienced an increase in the provision of professional doctorates (Mellors-Burne et al., 2016), putting pressure on the development of solid pedagogical approaches suitable for this level and mode of study.

This article aims at outlining the elements of a blended approach to the study of professional doctorate programmes. The proposed approach intends to be a contribution to the pedagogical principles that could guide effective teaching and learning at doctoral level.

Thinking of pedagogy at doctoral level

From the point of view of the students' learning experience, the elements of a blended model could be conceived as the building blocks that support the learning outcomes at level 8 (SEEC, 2016). These components are crucial for the systematic acquisition and development of knowledge, understanding, skills and attributes of students working and researching in a range of contexts and professional settings.

Pedagogy is a broad concept that is concerned with "interactions between teachers, students, and the learning environment and the learning tasks" (Murphy et al., 2008, p. 35). A learning-centred blended pedagogy not only motivates students by means of facilitating activities for the learning of knowledge content using digital technologies, but it also makes possible "knowledge use and the development of new literacy skills" (Churchill, 2017, p. 242).

When pedagogy is appropriate to the context and activities are clearly framed, the set learning outcomes are achieved.

Characteristics of professional doctorates

Professional doctorates are research degrees undertaken by individuals commonly investigating their own places of work. They are based on professional experiences and aim at producing a significant

The Doctorate in Education at the Open University in the UK

The blended approach described here has been applied to the design of the Professional Doctorate in Education (EdD) at the Open University in the United Kingdom.

This is a distance learning programme that focuses on four main specialist clusters which are not exclusive and normally overlap – Childhood and Youth, Educational Studies, Language and Literacy, and Technology Enhanced Learning. It has been offered for the last 20 years and during this period of time, it was transformed from a reliance on print to a wide use of appropriate technologies. The programme website offers students and supervisors a digital home.

Each doctoral researcher has typically the support of two supervisors and a Third Party Monitor who provides pastoral care. In addition, multiple types of interaction are encouraged throughout the programme giving students access to peers in different cohorts, other postgraduates doing a PhD and other supervisors in workshops, seminars, work in progress presentations, both in virtual and physical environments.

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original contribution to practice and practical knowledge in a specific professional field – for instance, Education, Medicine, Business, or Engineering. These programmes are, therefore, driven by practitioners and make an impact “both on the workplace environment and on the employer’s capacity to develop innovative strategies to resolve professional challenges as they may arise” (Fell et al. 2011, p. 15). The degree also aims at contributing directly to the holder’s professional career.

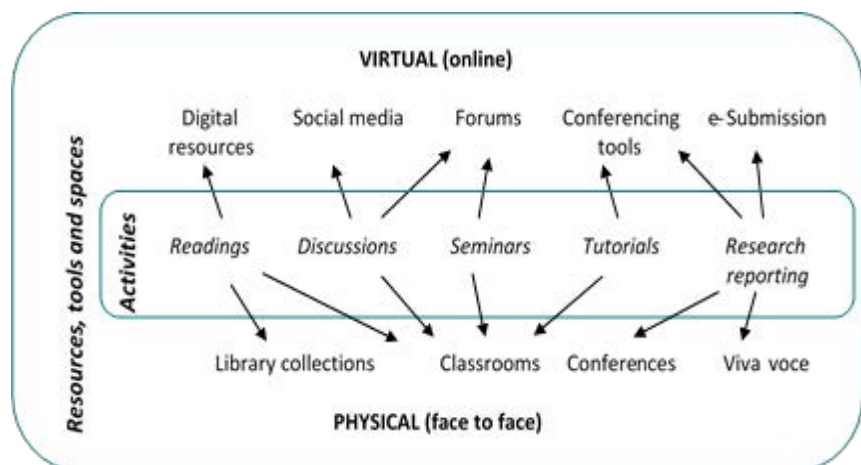
Professional doctorates are usually studied part-time (while working full-time), and are highly structured with a taught component that is sometimes delivered in modules, units or a set of resources. Lectures, coursework, and crucial final summative assessment with a written component (thesis) and an oral component (viva voce examination) are all part of the training process of these postgraduate degrees.

Given the nature of the professional doctorates, the offer to study them at a distance has grown in the UK, which seems to have made them more attractive to international students (Mellors-Burne et al., 2016).

A blended model for professional doctorates

A blended approach that integrates online, face-to-face and independent learning is the preferred study mode offered by institutions for professional doctoral researchers (Mellors-Burne et al., 2016). However, little is known and shared about what this means, in practical terms, for different universities.

A blended model for these programmes needs to facilitate doctoral researchers’ interactions among themselves, with supervisors and other academic and administrative staff, with resources as well as with relevant digital technologies. In the proposed model here, each learning activity involves one or more of those interactions and has two potential environments where it could be realised: a virtual one which happens online, and a physical one for face to face encounters.



of Professional Doctorates in English HE Institutions, Cambridge: Higher Education Funding Council for England, Careers Research and Advisory Centre.

Murphy, P. (2008). Defining pedagogy. In K. Hall, P. Murphy & J. Soler (Eds.), *Pedagogy and practice: culture and identities* (pp. 28-39). London: SAGE publications.

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Activities can also take place simultaneously in both of these environments, for instance, when digital resources are used in classrooms.

Higher education institutions can choose the degree to which they want to utilise these environments to maximise doctoral candidates' feel of the research community within and outside their More importantly, the design of the model on the one hand, should be sensitive to students' personal needs, for instance, in terms of their locations or disabilities. On the other hand, it requires a set of activities that contribute to the achievement of the learning outcomes and the fulfilment of formative and summative evaluation criteria. In the process of becoming researchers, students need to be able to develop a set of relevant skills and subject knowledge. A main quality indicator for universities is that students are able to do learn about research in a supportive environment.

Conclusion

In professional doctorates, the popular blended approach needs to ensure learning-centred principles, and solid guidance and training for supervisors. The most recent review of the provision of professional doctorates in English Higher Education institutions highlighted the importance of supervision teams and wondered about the extent to which these could be fully effective at a distance (Mellors-Burne et al., 2016). The blended learning teacher development framework organised into four domains — mindsets, qualities, adaptive skills, and technical skills — and 12 competencies (Powell et al., 2014) could be used as a tool for the development of members of staff guiding doctoral researchers.

If higher education institutions aspire to integrate quality pedagogical practice in postgraduate programmes, not only do they need clear pedagogical models, but they also have to ensure the alignment of their proposed guidelines with technical infrastructures, other educational policies, and practices of teaching and learning in their institutions.

Using Question Embedded Interactive Videos for Formative e-Assessment

Innovative impact

The opportunity that teachers provide for their students to conduct formative e-assessment in an interactive, attractive and active learning experience is the innovative impact of question-embedded interactive videos. The websites such as Zaption, Hapyak, RaptMedia, WireWax, H5P, Animoto, Adventr and SimpsCo, which are functioning as cloud systems, as well as the software such as Adobe Captivate, TechSmith Camtasia and Articulate Storyline can be used to create these interactive videos (Uğur & Okur, 2016).

Introduction

Formative assessment is an assessment type that aims to improve learning, develop students' skills and enable them to achieve and maintain high standards of achievement (Black & William, 1998; Nicol & Macfarlane-Dick, 2004). Feedback has a key role in formative assessment, so continuous feedback is provided for students in order to support learning (Wang, 2007; Weurlander, Söderberg, Scheja, Hult, & Wernerson, 2012). Formative assessment focuses on improving learning rather than evaluating it. Therefore, an effective formative assessment is required not only to provide feedback that is constructive and appropriate in terms of timing, but also to help students comprehend which of the outcomes they produce is adequate (Hounsell, Hounsell, Litjens, & McCune, 2005).

Formative e-assessment activities can be provided for students thanks to the technological developments. One of these activities is the question- and quiz-embedded educational videos (Dong & Goh, 2015). The questions embedded in the videos can be in various types such as open-ended, matching, true-false or multiple-choice (Wachtler, Hubmann, Zöhrer, & Ebner, 2016). Interactive feedback such as giving the correct answer or returning to the second in which the correct answer takes place can be included in these videos. The questions in the videos are important in terms of improving students' high-level cognitive thinking and determining both their level of comprehension regarding a topic and the difficulties they encounter while learning it (Wilson, 2016).

The questions, quizzes and feedback embedded in the videos help students to actively participate in learning in open and distance learning environments and to focus their attention on tasks (Dong & Goh, 2015; Koçdar, Karadeniz, Bozkurt, & Büyük, 2017). These videos improve learning and increase the amount of interaction and time allocated for using learning materials (Vural, 2013).

Question-embedded interactive videos provide instant feedback for teachers to evaluate the effectiveness of teaching-learning process. Whether students answer the questions and their correct or wrong answers to the questions in the video can be determined thanks to the tools provided by the interactive videos (Bakla, 2017). Therefore, the difficulties students encounter during learning can be detected, and instructional methods can be redesigned. Preferences such as taking notes, searching additional resources, self-assessment through the questions in the videos provide opportunities for students to manage their self-learning (Delen, Liew, & Willson, 2014; Wilson, 2016). In addition, these interactions help students to form their meta-cognitive

and self-regulation strategies (Delen et al., 2014).

According to the data collected from a total of 2,393 students at Anadolu University, more than 90% of the students indicated that they were satisfied with studying question-embedded interactive videos, that such videos are an important tool for their learning process, and that these videos should also be used in their other courses (Koçdar et al., 2017). The students found these videos user-friendly and quite beneficial and used them at a high rate. They also stated that the question-embedded interactive videos contributed to comprehending the topic better, permanent learning, saving time by reducing learning time, reflective thinking, doing self-assessment, focusing their attention and experiencing a more entertaining learning experience.

Conclusion

Assessment of student learning is an important element of instructional design. The aim of formative assessment is to detect the topics in which students encounter difficulties and to provide more effective learning. According to studies, formative assessment motivates students to study, help them to determine what they are learning and on which topics they need to study more and makes them more successful (Carrillo-de-la-Peña et al., 2009; Wang, 2007). Question-embedded interactive videos can be used as an effective tool in formative e-assessment. While enabling teachers to conduct formative e-assessment, these videos provide more attractive and interactive learning experiences for students. On the other hand, an excessive number of questions embedded in videos might distract students' attention. Therefore, there is a need for extensive studies to determine the optimum number of questions and amount of feedback to be included in videos. In addition, further studies can be conducted to diversify the types of questions and feedback, and new software can be developed to do so.

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Student Support

Innovative impact

Drop-out rates are especially high in distance learning (Simpson, 2012). However, a more detailed analysis of this problematic reveals that the abandonment occurs, fundamentally, during the first year; moreover, during the first semester, before the first exams or even before the delivery of the first learning activities. Around 30-40% of students drop-out in these early stages in traditional European distance education universities such as the OPEN UK (Simpson, 2003) or the UNED (Sánchez-Elvira, 2014). More than 50 years of research in the field let us conclude that motivation and engagement are crucial for students' retention (Tinto 2009, Anderson, 2006, cit. Simpson, 2012) and that this motivational factor is especially relevant during the first university year. The question is, what can undermine the motivation of freshmen in distance education environments, and how to promote their engagement?

Institutional induction programmes may be a good answer for improving retention and students' satisfaction, and digital technologies powerful tools to help to attain this main goal.

Online Induction Programmes.

Supporting prospective and new ODL students: The institutional approach

Introduction

The evidence of years of research concludes that first-year students face special difficulties in this period of integration in college. That might explain the high rates of abandonment in this specific time due to different reasons, basically a lack of academic and social integration in the institution (Tinto, 1993). This problem is even worse in Open and Distance Learning, ODL, (Simpson, 2012). ODL and, especially, virtual learning environments, can be considered as more demanding, in general, as they imply different ways of teaching and learning procedures, requiring higher levels of students autonomy and self-regulated learning, in parallel with new digital competences, as well. In addition, ODL students present greater heterogeneity and substantial differences from traditional on-campus ones, being usually older and part-time students with professional and personal responsibilities. Also, very frequently, students present lower levels of prior education and they have stopped studying many years ago... so... that makes a difference... but this is why ODL institutions share a common social mission.

The first thing to explore is about the difficulties that new ODL students face during their first year and its consequences. Research on the most frequent causes of students' drop-out and failure in ODL programmes can be grouped into two main areas, the institutional and the individual ones (Sánchez-Elvira, 2014; Simpson, 2013):

Institutional perspective: unclear and insufficient information and orientation; inefficient instructional design and poor quality materials for an autonomous learning; scarce and/or ineffective interaction and communication with the academic and administrative staff; lack of communication channels between peers. In sum, poor or ineffective institutional support services.

Individual perspective: insufficient prior education levels; low availability of time and overload perception due to professional and personal responsibilities, incompatible with study requirements; financial problems; low digital competences; difficulties to self-regulate learning such as low intrinsic motivation and engagement, perception of low self-efficacy and academic competencies and unrealistic expectations; poor learning strategies, such as inefficient time management, difficulties at planning and organization, procrastination and low persistence, avoidance of difficulties and lack of efficient study habits, in general, especially in online environments.

The good news is that all these difficulties can be overcome if institutions develop appropriated preventive and supportive actions.

Some examples

Some good examples of induction programmes and actions can be found in ODL European Universities. Information about them is available on scientific literature and institutions websites. Simpson (2013), presents an extended information about actions in the **OPEN UK**. The **Spanish Distance Education University (UNED)** offers a comprehensive **Institutional Induction Programme**

(Sánchez-Elvira Paniagua, 2014, 2016). With more than 50.000 new students every year, the Programme is based on three-stages thought to help students in the development of autonomy and self-regulated learning: Information/ orientation, Training opportunities for becoming a successful distance education student and Monitoring during the first year. Some successful actions have been developed such as the online induction communities for new students in each faculty; and online formal and open courses for the development of students' competences for distance education, under OCW and MOOC formats. The **OPEN NL** offers a very interesting online program named [StudyCoach](#), developed and directed by Marion Stevens. The program has an app version. Other sources of information about this topic can be found in a recent international book on the experiences in induction of ODL Universities in Europe and Latin-America ([Cruz Benzán and Sánchez-Elvira Paniagua, 2016](#)) and in some of the [EMPOWER webinars of the Student Support Group of Expertise](#): *Institutional support for prospective and new students in online and distance education* (A. Sánchez-Elvira Paniagua, coord.), *Student dropout in distance education* and *Theories of student support for retention* (O.Simpson).

How to support prospective and new students in online environments under an institutional perspective? : Online Induction Programmes

The above picture calls for a better design of student support services in ODL, paying special attention to the first year. Nevertheless, it seems that, although good induction actions seem to have positive effects on students' retention and progression, and student integration as well, a lack of institutional policies on induction in ODL can be appreciated, characterised by the general absence of institutional induction programmes (Harper, Kenning & Holwell 2015). In this sense, ODL Universities should develop specific support strategies for their prospective and new students, organized around **Institutional Induction programmes**, once students' needs and difficulties have been identified.

Induction programmes should be characterised by:

- An **institutional and holistic approach**; that is, being **comprehensive, systemic and coordinated**, based on the joint participation of every agent in the institution that could play a significant role in giving support to the new student.
- An ongoing **process-based approach**, not only focused on early stages but being developed along the first year. This continuous progression would be integrated by three main steps: 1) providing the **information and guidance** that prospective and new students might need about the institution, curricula, programs, methodology, technical and skills requirements, learning resources, contact procedures, and so on; 2) offering students **training opportunities** for becoming successful and self-regulated online learners; and 3) **monitoring and giving support** whenever might be needed along the first year, based on the proactive approach underlined by Anderson (2006) and Simpson (2013), and enabling early interventions.
- Finally, they should be focused on the development of online learning communities based on what Levy (2006) named as **networked learning**, seeking to enhance communication and socialization through effective communication and interaction channels, with the institution and between peers, promoting the dialogue, a group identity and a sense of belonging and safety feelings in what, for students, is a new environment.

Either in isolation or well integrated into broader and more ambitious programs, the following are good examples of the most common online actions that have been developed by ODL universities, to give support to their new students:

Information and Orientation to guide students through their first steps, helping them to organize and plan their studies

- Specific websites for the delivery of information and orientation to prospective and new students, including welcome pages and induction packages. These resources are supposed to be attractive and motivating for students,

including multimedia content and interactive resources.

- Automated online self-diagnosis procedures for prior self-assessment of required competencies for ODL.
- Guided online procedures such as guidance to enrolment.
- Face-to-face and/or online workshops and seminars before or after students' enrolment.
- New possibilities such as the use of chatbots on the websites.

Training programs

- Brief formal and/or informal online courses to prepare students for online learning and for the levelling of prior knowledge and competences, as well, before or after enrolment. Open Educational Resources and, more recently, MOOCs and its variants such as NOOCs, SPOCs, etc., can be useful induction tools in this context.
- Blended induction courses offered by Local Centres.
- Virtual modules to provide prior experiences of practice and management of the platform and its tools, in a safe environment that allows failures.

Monitoring

- Asynchronous communication channels and synchronous, as well, whenever possible.
- Synchronous "help-desk/live desk on the web for technical support.
- Induction online communities for new students aiming at orientating and guiding them, as well as creating group identity.
- Peer-mentoring programs using e-mentoring and social nets.
- Use of institutional social networks such as Facebook or Twitter.
- Specialised Units for orientation and counselling.
- Learning analytics to monitor students' performance, facilitating the development of early interventions.
- Online self-applied interventions to modify risk behaviours such as academic procrastination or anxiety.
- Use of apps for mobile self-monitoring.

Conclusion

ODL First-year-students require specialised support from their universities to succeed in the process of integration in their studies and institutions. In general, induction programmes are not delivered under wide-comprehensive frameworks and policies in ODL institutions. Nevertheless, broad and general standards procedures for evaluating the quality of Institutional Support in ODL include induction actions as quality indicators (e.g. the [E-xcellence Manual, EADTU, 3^a ed., 2016](#), or the [OLC / CALED Quality Scorecard for online programs](#)).

Until now, a wide range of different actions has been developed to give support to distance education students in their first year, and there is a substantial body of research on their effectiveness, although an evidence-based methodology would be necessary to obtain general conclusions. Undoubtedly, in increasingly technologically enriched learning environments, a long and exciting road opens before us to explore new ways of supporting our new students under more adaptive and personalised ways.

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Innovative impact

Student support has a crucial importance in all educational settings. This vital significance has a real meaning especially for ODL. ODL can only be achieved by independent learning and independent learning can only be achieved by the learner autonomy. Then, what kind of student support empower learner autonomy in ODL?

Use of Sensitive Search for Student Support in ODL

Introduction

Information economy, internationalization, emerging new jobs and advancing digital technologies necessitated the reshaping of the human profile needed for the 21st century. Unlike the human profile skills needed in the last century; skills of life-long learning, self-learning, information access and use, foreign language, digital citizenship, adapting to changing conditions and following the ever-updated information have become more important. These new skills have led to the rise of new learner groups. At global scale, these potential new learner groups differ by their age, gender, culture, language, level of education, occupation and need. All these factors are remarkably differentiating and diversifying the student profiles. These students' needs also vary considerably. These factors lead student support services, as an indispensable part of the open and distance education services, to become increasingly diversified, sophisticated and difficult.

Due to the nature of the learning process, student support has a crucial importance in all instruction settings. This vital significance has a real meaning for ODL settings compared to traditional educational institutions.

Student support services have been widely understood as institutional structures that interested in routine processes at traditional educational institutions. Teacher-centered education was one of the important reasons for this situation. In these systems, the problems of the students were not very important. However, today's educational institutions place great emphasis on student support services. Because the understanding of education has gained a student-centered approach.

Supporting self-learning in open and distance education is crucial both for lowering the dropout rates and the sustainability and improvement of the system. There are quite rich facilities and opportunities like forums, text-video chat, video conference and different kinds of social media for student support today. But in practice it is still a problem how to use current technologies for student support in open and distance education.

ODL can only be achieved by the individual's self-study and independent learning. And independent learning can only be achieved by the learner autonomy (Moore, 1972). Then, what kind of student support and student support services empower learner autonomy in media-rich electronic learning environments, blended educational systems and ODL?

Comparable examples

Rapidly advancing information technologies have created innovative student support tools that support learning autonomy and independent learning in online learning environments. The prominence of these technologies are semantic web, labeling technologies, sensitive search, meta-data supported frequently asked question systems and learning analytics.

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What Kind of Student Support Service Empower ODL

Use of traditional methods such as individual counselling and orientation have some important disadvantages for large scale institution. Information technology plays a critical role to cope with large numbers in ODL. This situation also applies to student support systems. But, moving traditional methods to digital may not yield successful results in student support systems. For example, use of social media in individual counselling can cause important communication problems between the student and the consultant. For this reason, it is necessary to find more effective ways in the digitalization of the student support services than the traditional understanding. In other words, we need new kind of student support services to empower ODL.

The importance of learning autonomy should be recognized first before setting innovative student support methods. Autonomy in education views the purpose of teaching as helping learners attain ideal individual learning behavior. This approach targets learner practice-focused, independence and responsibility as essential parts of learning processes (Boud, 2012; Xu, 2013). In this context, some innovative digital student methods that also support learning autonomy stands out. These technologies are semantic web, labeling technologies, sensitive search, meta-data supported frequently asked question systems and learning analytics.

Use of Sensitive Search for Student Support in ODL

Online learning environments have potential to provide unlimited information to learners with an extended flexibility. However, this flexibility provided by Web-based learning environments may cause navigation problems for learners because flexibility increases complexity. To help users, search engines that gather and present all the results obtained from various databases, search engines, and even from many search engines have been developed. In addition, different strategies and techniques such as sensitive search developed to find information via these search tools. However, the use of these technologies is very inadequate in online learning environments and student support platforms. Most of university Web sites and learning platforms including student support pages lacks sensitive search technologies and even search features.

Search engines uses ranking algorithms to rank the relevance of documents with respect to the query input by users (Guo, Gao, Wang, Deng & He, 2017). In different cases, these ranking algorithms provide results which strongly conform to previous search-related behaviour by users. Thus, sensitive search guide learner in complex learning environment, taking advantage of the learners' previous experiences.

Sensitive search feature can help the learner saving time to study more effective and targeted in online learning environments. These

factors are critical for ODL students with their own learning responsibilities.

Conclusion

Changing learning environments in digital age required changing student support methods and understanding. Learner autonomy and independent learning are key topics for innovative solutions for student support especially in ODL. One of the innovative solution in online learning environments is sensitive search technology.

Sensitive search technology has potential to support learning faster, more effective and more focused in complex online learning environment, taking advantage of the learners' previous experiences. In this context it is possible to improve suggestions for practical and future research.

In practice two suggestion have critical importance. First, Web site of ODL providing institutions can be supported by sensitive search. This will reduce disorientation of learners and support clear and effective learner navigation. Second, sensitive search components of learning management systems and content management systems can be used effectively in practice. Thus, use and improvement of such apps may be spread. For future research, effects of sensitive search on navigational performance, disorientation and cognitive overload can be investigated.



The Role of Academic Libraries in MOOCs

Innovative impact

MOOCs are an opportunity for libraries to provide leadership and guidance in advising faculty and students about open access, open educational resources (OER), copyright issues and other licensing models in higher education.

The experience of an open access micro-MOOC can be an example of an effective strategy for encouraging users to get involved in open access and MOOCs, as well as for showing how librarians and libraries can support the MOOC movement.

Libraries also can encourage the faculty members to get involved in MOOCs for their respective areas and also acted as advisers. In this advisory capacity, librarians can provide help and expertise in certain aspects of production of the MOOCs such as interpreting copyright laws, selecting and providing open source materials which can be used in MOOCs, and also creating open educational resources.

Introduction

Massive open online courses (MOOCs) have been one of the most widely debated topics in education circles in recent years. Opinion on them varies greatly and is roughly equally divided between their defenders and their detractors. However, experts agree that one of the most important contributions of the MOOC movement has been in driving change in higher education. Although online education has existed for years, MOOCs have led to it receiving renewed attention and to the development of innovative solutions for its improvement.

The first generation of MOOCs was developed by elite universities including Harvard and MIT, and they were believed to be comprehensive in nature with high-quality content and design. However, these MOOCs were criticized on a number of aspects including their design quality, learning methodology, the lack of mentoring and assessment, and dropout rates (Bates, 2014; Daniel, 2012)¹. This is what brought about the second generation of MOOCs, which are based on more advanced technologies and oriented towards ensuring results from the learning process. The MOOC marketplace is rapidly evolving as it grows and, ultimately, some studies (Muñoz, Punie, Inamorato dos Santos, Mitic, & Morais, 2016; Jansen & Goes-Daniels, 2016) indicate that a distinct European MOOC model is emerging.

According to a recent report about the MOOC strategies of Higher Education Institutions in Europe (Jansen & Konings, 2017), been a steady growth in the number of institutions offering MOOCs, and the level of uptake of MOOCs in Europe is at a much higher level than in the US. The report also identifies how factors such as cooperation with libraries can be essential for opening up education.

After some years of experimentation, the current MOOCs are reaching a level of maturity within the context of Higher Education and, in this new stage, academic libraries are trying to play an important role, getting involved in MOOCs that are related to their areas of expertise.

Libraries and MOOCs

The relationship between MOOCs and academic libraries has not been discussed at any great length in the library literature. However, there has been a recent and growing interest in the matter from the perspective of librarians. On the one hand, this is demonstrated by publications; 2013 was noted as the most productive year and with the majority of articles published by international journals (Kaushik & Kumar, 2016) and focused on licensing and intellectual property in MOOCs (Mune, 2015; Gore, 2014). And, on the other hand, it is apparent from the appearance of monographic events such as the

Footnotes

¹ As can be read in "Ten useful reports on MOOCs and online education", published by The International Council for Open and Distance Education (ICDE) and available at: https://www.icde.org/index.php?option=com_content&view=article&id=153:ten-useful-reports-on-moocs-and-online-education&catid=23:news&Itemid=169

² Webcast recordings and other information are available at <https://www.oclc.org/research/events/2013/03-18.html>

³ MOOC developed at San José State University: <https://ischool.sjsu.edu/programs/moocs/hyperlinked-library-mooc>

⁴ This is part of Kyle K. Courtney's (program manager and copyright advisor at Harvard University's Office for Scholarly Communication) contribution to "MOOCs and Libraries: Massive Opportunity or Overwhelming Challenge?", available at <https://www.oclc.org/research/events/2013/03-18.html>

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OCLC "MOOCs and Libraries" meeting² (Howard, 2013), the "The Hyperlinked Library MOOC"³ or the "Library Support for MOOCs" discussion group created by the Association of College and Research Libraries (ACRL).

MOOCs are an opportunity for libraries to provide leadership and guidance in advising faculty and students about open access, open educational resources (OER), copyright issues and other licensing models in higher education. MOOCs become a professional development tool for librarians, who have a chance to extend their influence in the educational context (Ecclestone, 2013; Massis, 2013).

Library participation in MOOCs can be based on the traditional roles of academic librarians: those of instruction, reference and collection development (Mune, 2015). At a more involved level, libraries should also provide support in the following three categories: copyright clearance and locating alternatives such as Creative Commons materials and other free sources; course production; and development of policies and best practices (WU, 2013). Other less well-defined areas include archiving class materials, curating user-generated content, providing leadership, and teaching information literacy to MOOC students (OCLC Research, 2013).

In addition to all the above, one important requirement that libraries should take into account in the age of MOOCs is that of ensuring adequate network access; they need to be equipped with the appropriate technology infrastructure to manage a MOOC (Kendrick & Gashurov, 2013). Finally, another area with great scope for libraries and librarians is the creation of their own MOOCs on topics that are in demand, and the organization of activities such as special lectures, conferences and workshops (Kaushik & Kumar, 2016).

Since libraries have been promoting open access for years, MOOCs can offer a potential opportunity to illustrate the value and benefits of open access. Furthermore, if we consider that MOOCs need to use open resources (those that have open licenses), it is clear that these could help to create an open access culture. This may be, for example, through convincing professors to publish in open access journals if they plan to use them as educational resources for their teaching in MOOCs. Following this line of reasoning a case study is presented below in the context of the Universitat Oberta de Catalunya (UOC).

Case Study: MOOCs developed at the UOC with the participation for the Library

UOC micro-MOOC about open access

A micro-MOOC about open access was organized by the Universitat Oberta de Catalunya (UOC), in partnership with universities of the Catalan University Service Consortium (CSUC). This micro-MOOC took place within the framework of the most recent International Open Access Week (from 23 to 29 October 2017). Other collaborators include the European University Association (EUA), the Association of European Research Libraries (LIBER) and SPARC Europe.

This open initiative consisted of a brief course run in a micro-MOOC format on Twitter, via the account [@moocmicro](https://twitter.com/moocmicro) and under the hashtag [#OAMOOC](https://twitter.com/OAMOOC).

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Figure 1. The UOC open access micro-MOOC on twitter

The aim of the micro-MOOC was to explain the main concepts relating to open access in easy-to-understand language, and to provide an overview of good practices, standards and tools for the disseminating and archiving of the data and the publications generated in research work. It was targeted at a diverse audience including researchers, doctoral students and anyone else with an interest in this area.

This micro-MOOC was coordinated by the UOC Library, which developed both the concept and the design, and also contributed content on the topic of open access. It was the librarians who encouraged the university authorities to support the creation of the MOOC, as part of a strategy to raise the University's visibility and to promote its involvement with MOOCs and open access.

Both offering micro-MOOCs and the development of discussion forums have been considered as possible areas in which libraries and librarians can engage with the development of MOOCs (Kaushik & Kumar, 2016). The case of the UOC's open access micro-MOOC has built on these two areas. It has done so with the creation of a MOOC environment to provide information and stimulate discussion about open access experiences, lessons learned and problems encountered. And, moreover, through promoting awareness and the motivation of library professionals, faculty and students regarding open access, as well as establishing the leadership of librarians as experts in the field.

Therefore, the experience of the open access micro-MOOC has been an effective strategy for encouraging users to get involved in open access and MOOCs, as well as for showing how librarians and libraries can support the MOOC movement.

MOOCs at the UOC: Higher education beyond the university

Apart from the aforementioned open access micro-MOOC, the UOC has created nine other MOOCs. These cover topics ranging from creativity, gamification, digital competences, scratch programming, business intelligence and ICT-based learning design, to one about the artist Joan Miró. All are available from the [UOC X website](#), with some of them also available on the Spanish-Portuguese MOOC platform [Miriadax](#), which provides MOOCs in Spanish and Portuguese from universities and educational institutions in Spain, South America and Portugal. UOC X is also aligned with [UCATx](#), the Catalan universities MOOC platform created by the Government of Catalonia's Secretariat for Universities and Research.

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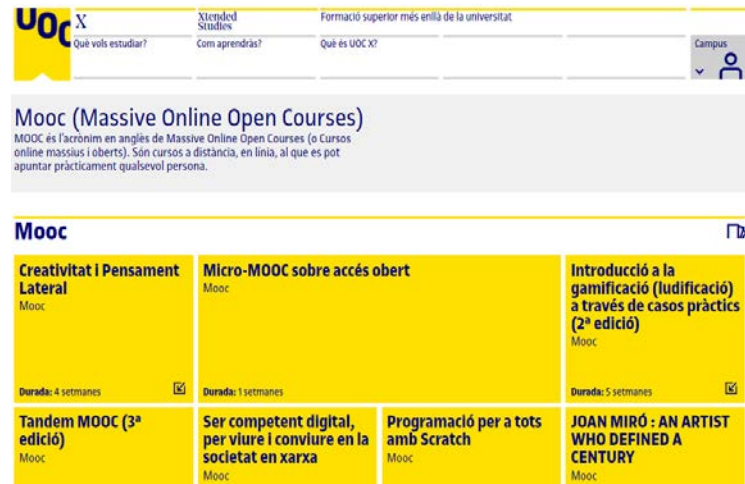


Figure 2. The UOC X website with the MOOCs offered

The UOC X project follows the objectives of the UOC's original mission, by accompanying people not just in their university studies, but throughout their lives, in an inclusive way. In line with this, the MOOCs offered are characterized by the diversity of training, the innovative methodologies, and the use of open educational resources (OER).

It is against this backdrop that the UOC Library took a direct responsibility, as a provider, manager and creator of OERs for these MOOCs. Librarians encouraged the faculty members to get involved in MOOCs and they also acted as advisers by providing their expertise in certain aspects of production of the MOOCs such as interpreting copyright laws, selecting and providing open source materials which can be used in MOOCs, and also creating open educational resources.

Discussion with faculty about the proper scope of copyrighted materials and open licenses gives librarians the opportunity to recommend alternatives to using third-party materials and to advocate the use of open-access materials. According to the copyright advisor at Harvard University's Office for Scholarly Communication "*Copyright talk can lead to alternative resources talk, and librarians are expert at that*"⁴.

Another area of great potential for the UOC Library was to preserve the educational contents beyond the MOOC platforms, by depositing them in the [institutional repository O2](#).

Conclusion

Despite the pros and cons of massive open online courses and the particular features which characterize them, MOOCs are gaining popularity in libraries due to the interesting opportunities that they present. As observed above, not only can libraries assist MOOC developers in many ways, they themselves can also create MOOCs.

The rise of online universities, such as the UOC, and an expansion of online education through MOOCs, has permitted the introduction of new approaches which involve library services, resources and professionals in online classes; for example, by creating and integrating OER into online courses and MOOCs. Hence, librarians can play pivotal roles and they should not miss out on a chance to get involved in the future of MOOCs.

Mind the Gap: A Critical Guide to Digital Literacies

Innovative Impact

Most governments and policy-makers around the world are concerned about the need to increase their citizens' level of digital literacy. While digital literacy is becoming increasingly essential in the 21st Century there is a risk of defining these skills as narrow competencies which do little to help reshape our societies for more equitable, socially just and sustainable futures for all.

A type of double vision is required in taking a longer-term view of digital literacies. On one hand we need to recognise the value of specific skills for living, learning and working in today's digital-era. On the other hand, however, we cannot afford to lose sight of the uncomfortable reality of the world in which we live and our longer-term moral responsibility of creating the good society. Therefore, our understanding of digital literacies needs to be defined beyond mastering narrow keystrokes as they are crucial to promoting critical mindsets and active citizenry in the service of bigger ideas and better futures—for all.

It follows that this transformative mission requires a deeper understanding of the problematic nature of digital literacies in the context of powerful macro-level forces currently at play in the drive to produce more digitally skilled workers for today's knowledge economy.

Introduction

The simple fact is that digital literacy is now essential for successfully living, learning and working in today's increasingly digitalized society. As a recent UNSECO report states:

Digital technologies now underpin effective participation across many aspects of everyday life and work. In addition to technology access, the skills and competencies needed to make use of digital technology and benefit from its growing power and functionality have never been more essential (Broadband Commission for Sustainable Development, 2017, p.4).

However, Mariya Gabriel, EU Commissioner for Digital Economy and Society, reports 'The digital skills gap is real. While already 90% of future jobs require some level of digital literacy, 44% of Europeans lack basic digital skills' (Velker, 2018, P.4). Set against this growing concern this critical guide highlights the risk of inadvertently promoting half-truths and even false knowledge when promoting current models and frameworks for digital literacies. In this respect it shows that what we define as digital literacy is far more problematic than illustrated in many of the popular matrixes, wheel charts or multi-dimensional diagrams.

A Messy Topography

Digital literacy is a messy topography (Brown, 2017). As Lankshear and Knobel (2008) point out in their seminal book on the topic, 'the most immediately obvious facts about accounts of digital literacy are that there are many of them and that there are significantly different kinds of concepts on offer' (p.2). For this reason it helps to talk of *digital literacies* rather than limit our thinking to a singular all-inclusive definition. It also needs to be noted the language of digital literacies in both the popular and more scholarly academic literature is often described using different terms—such as, digital skills, digital fluency, digital capabilities, digital competencies, digital intelligence, and so on. Therefore, the messy nomenclature makes the search for a commonly agreed definition or understanding of digital literacies even more elusive.

What are Digital Literacies?

The truth is that there is no one agreed definition of digital literacy. In a brief [review and comparison](#) of the literature, the [All Aboard](#) (2015) project, funded by the Irish National Forum for the Enhancement of Teaching and Learning in Higher Education, identified over 100 models

Comparable examples

In September 2017 the [Broadband Commission for Sustainable Development](#) (2017) took up the challenge of digital literacy for all in a report confronting growing inequalities and disparities in digital skills. Above all, the report emphasizes the need to develop critical digital literacies or 'mindsets' in the face of potentially on-going and far-reaching changes to the digitalization of societies—for better and worse.

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Broadband Commission for Sustainable Development.

and frameworks which to greater or lesser extent purport to encapsulate the various dimensions of digital skills, literacies or competencies.

Common Frameworks

In 2016, the New Media Consortium (NMC) sought to address the lack of a common definition and develop a shared vision of digital literacies. In broad terms digital literacy was taken to mean both critical and practical understandings of digital technologies in socio-cultural settings, where people are creators as well as observers (Alexander, Adams Becker & Cummins, 2016). More specifically, digital literacy was broken down in to three different models—Universal Literacy, Creative Literacy and Literacy Across Disciplines. The three different components of digital literacy involve not just understanding how new digital tools work but also why it is useful and when to use them. This conception is described as encompassing the wider notion of digital citizenship—that is, 'the responsible and appropriate use of technology, underscoring areas including digital communication, digital etiquette, digital health and wellness, and digital rights and responsibilities' (Alexander, Adams Becker & Cummins, 2016, p.1). A follow up report expands this definition by placing greater emphasis on the role of culture and politics (Alexander, Adams Becker, Cummins, & Hall Giesinger, 2017).

In the U.K. one of the most cited efforts to develop a comprehensive framework for digital literacy comes from the work of Jisc. While the language of digital literacy has evolved over the years from 'literacy' to a wider conception of 'literacies', and more recently to 'digital capabilities', the underlying definition remains the same—that is, 'Digital literacies are those capabilities which fit an individual for living, learning and working in a digital society' (Jisc, 2014, P.1). The latest *Digital Capability Framework* comprise six elements—ICT proficiency; information data and media literacies; digital creation, problem solving and innovation; digital communication, collaboration and participation; digital learning and development; and digital identity and wellbeing—with 15 sub-elements recognizing a combination of functional skills, critical use, creative production, participation, development, and self-actualizing (Beetham, 2017).

In Europe there have also been efforts to standardize or define a universal model of digital literacies through the European Digital Competence Framework for Citizens (Vuorikari, Punie, Carretero Gomez, & Van den Brande, 2016). In 2017, the updated version of this framework (DigComp 2.1) identifies five key components of digital competence—information and data literacy, communication and collaboration, digital content creation, safety, and problem solving—with 21 related competences and eight proficiency levels (Carretero, Vuorikari & Punie, 2017). The basic assumption underpinning this framework is that the 'Digital society needs digitally-competent citizens'. Being digitally competent is taken to mean using digital technologies in a confident and safe way for various purposes such as working, getting a job, learning, shopping online, obtaining health information, being included and participating in society, entertainment, etc.' (Joint Research Centre, 2016, P.2).

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In Ireland, the aforementioned All Aboard (2015) project borrows and extends the original Jisc definition of digital literacy in depicting a metro map comprising of six stations: tools and technologies; find and use; communicate and collaborate; teach and learn; create and innovate; and identity and wellbeing. While the imagery of a connected network of train lines attempts to help people make sense of an increasingly complex digital landscape a deeper understanding of digital literacies requires us to go off the tracks and out of the metaphorical stations. After all, education has little to do with helping people to merely fit society, as the uncomfortable reality is that we increasingly live in unequal communities where not everyone has the luxury of traveling by train.

Beyond Participation

The above frameworks share a common gap or flaw in limiting the conception of digital literacies to helping people more fully participate in society. Arguably, they do little to develop the type of critical mindsets and political agency to fundamentally address the really big issues facing humanity in the digital-era. Put bluntly we cannot ignore the stark reality that less than half the world's population still does not have access to the Internet. Moreover, according to a recent Oxfam (2017) report, eight men now own the same amount of wealth as the poorest part of the world.

This sobering point highlights a crucial tension between developing functional digital skills for life, work and wider societal participation, as opposed to the more transformative goal of promoting critical digital mindsets capable of reimagining and reshaping our inequitable, socially unjust and unsustainable societies. There is also an inherent tension in most definitions between fixed digital skills for today's needs and the fluid and rapidly changing nature of digital literacies in response to new societal and technological developments. Moreover, a tension exists between the conception of universal digital skills and the highly contextualised and situated nature of digital literacies within complex cultural and institutional contexts.

Conclusion

The question of what it means to be digitally literate in the 21st Century is inherently political. Accordingly, we need to ask who is defining literacy, in whatever form, and for what purpose? The digital literacies movement is complex and some of the popular frameworks may be guilty of promoting false clarity. Indeed, efforts to provide relatively simple and visually attractive models and frameworks, without explicit theoretical foundations, and divorced from social, cultural, political and institutional contexts, may inadvertently deskill educators from critically reading some of the deeper forces at work. The key point is that the emergence of the digital literacies movement is not neutral or on an independent trajectory. Thus, efforts to foster digital mindsets and promote critical conceptions of digital literacies need to strike a balance between a focus on the development of important skills for today anchored in the language of opportunity, and deeper levels of critique framed in the longer-term mission of promoting access, equity and education for all.

Continuous Education / CPD

The Entrepreneurial University

Innovative impact

There are several attempts to define the Entrepreneurial University in the literature, and they reach no consensus.

It is a fact that in the early 21st century higher education has become a competitive enterprise. However, it is also true that nowadays universities encompass the third mission of economic development in addition to their traditional purposes of research and teaching.

In any case, it is right to remember that the habit does not make the monk. Not all businessmen are considered to be entrepreneurs.

Joseph Schumpeter's view is that entrepreneurs are innovators: people who come up with ideas and embody those ideas in high-growth companies."

An entrepreneur idea could create new knowledge and patents, nevertheless an original idea is not the same as new knowledge or patents. An original idea could be based on an existing patent or knowledge. Google founders realized that the deficiency of search engines was their lack of classification. Borrowing an idea from scientific papers they develop their search engine.

1. The Third Mission of University

It is a fact that in the early 21st century higher education has become a competitive enterprise, in which students compete for scarce places in top universities and universities compete for status, ranking and funding from governmental and private sources.

Other authors state that "there is empirical evidence that identifying, creating and commercializing intellectual property have become institutional objectives in various academic systems. Coming from different academic and national traditions, the university appears to be arriving at a common entrepreneurial format in the late 20th century." "It appears that the 'entrepreneurial university' is a global phenomenon with an isomorphic developmental path, despite different starting points and modes of expression. (Etzkowitz 2000)"

They justify their assertion, the existence of an Entrepreneurial University because nowadays universities encompass the third mission of economic development in addition to their traditional purposes of research and teaching. The precise shape this takes might vary such that different scenarios of academic development can be projected (Readings, 1996).

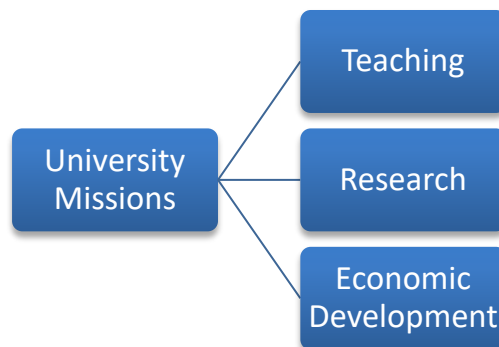


Figure 1. The Third Mission

2. The Tripel Helix Model

The triple-helix model (Etzkowitz and Leydesdorff, 1999) could help us to understand the change produced by the inclusion of economic development as a new mission of the university.

Governments encourage this academic transition as an economic development strategy.

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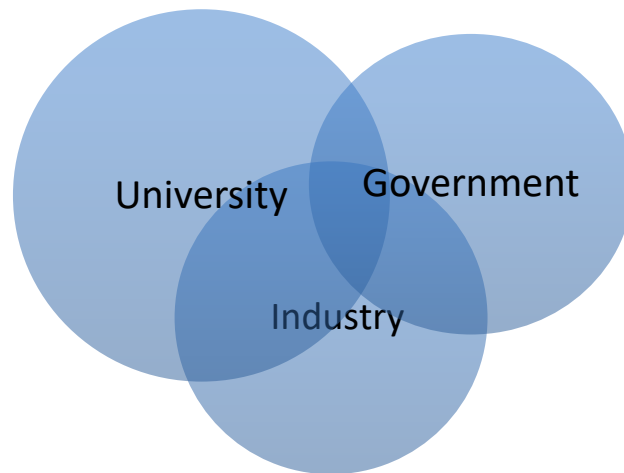


Figure 2 The Three Interacting Spheres

In the opinion of the supporters of the entrepreneurial university concept the tripe-helix model, university-government-industry relations transcends previous models of institutional relationship. In the past in laissez-faire or socialist economy, the industry or policy predominated. The role of the knowledge sector was subsidiary.

In this model, the university as a knowledge producing and disseminating institution plays a more significant role in economic innovation. It is a response to the increasing importance of the knowledge-based economy and the recognition that university is cost-effective, creative inventor and transfer agent of both knowledge and technology.

3. Are Universities Truly Entrepreneurial Institutions?

According to the OCDE (2012), there are several attempts to define the Entrepreneurial University in the literature, and they also reach no consensus. There is not an accepted definition of the concept of the entrepreneur, and there are more than a few meanings. This fact makes this debate somewhat more complicated

It is almost impossible to enumerate all the definitions of the entrepreneur in this paper. The unique practical way to define the concept is to state what distinguishes an entrepreneur from a businessman. It was common to regard the entrepreneur as a separate factor of production. He provided the capital necessary for his business, took all the decisions and risks, and then reaped all the profits at the end of the year. This description is coincident with the popular view of the entrepreneur.

Joseph Schumpeter's view is that entrepreneurs are innovators: people who come up with ideas and embody those ideas in high-growth companies." The idea of new business or product is fundamental. It is an error to consider that entrepreneur is someone

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https://www.researchgate.net/profile/Eugenio_Andrieu/publication/264878066_THE_ENTREPRENEUR_ACCORDING_TO_THE_AUSTRIAN_SCHOOL/links/56cd7f6408aeb52500c2b598/THE-ENTREPRENEUR-ACCORDING-TO-THE-AUSTRIAN-SCHOOL.pdf

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who became expert in the process of “entreprendre” undertaking projects. Managers are hired to do this job.

In contrast, a businessperson can make a business out of an unoriginal business or product idea. He enters into existing businesses, providing the capital necessary in a quantity that permits to have the control of the company.

An original idea is not the same as new knowledge or a patent. Someone trying to create the self-driving car or the flying car could be considered an entrepreneur. The process of developing a new product could produce new knowledge and patents, but they are just results of the entrepreneurial process, not the process itself. An original idea could be based on an existing patent or knowledge. Google founders realized that the deficiency of search engines was their lack of classification. Borrowing an idea from scientific papers they develop their search engine (Brind and page 1998) and (Andrieu 2010).

Universities may have added a new product, economic development, but that does not change their nature, they are competitors firms in the market, and some of them could be considered as entrepreneurial firms.

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Enhancing career practitioners' competence in the use of ICT

Innovative impact

This international summer school on the use of ICT in career services promotes the paradigm shift to more collaborative approaches in career services. In addition the participants had the opportunity to convert their own experiences in the use of technology to competencies in the use of the ICT in their own practice

From long-term perspective this module acts as a catalyst in developing the design and content of initial training of career practitioners.

FIER and JYUOpen have developed online course on the topic

Information and Communications Technology (ICT) in career guidance

Rapid development in information and communication technology (ICT) has changed society fundamentally over the past two decades. As technological advances change how individuals explore and acquire information about education, training and work opportunities, there is a pressing need to align new technologies more closely with career services and associated professional practices. ICT offers significant opportunities for career services, but they also create demand for new competency among career practitioners.

Recent research (Kettunen, Sampson & Vuorinen) indicates that today ICT is not only a tool or an alternative medium, but an interactive working space where a synchronous or multi-synchronous collaboration increasingly occurs with and without career practitioners. The technology facilitates communication and enables collaboration and development of career-related content among users. ICT can serve as a mechanism for the development of more integrated and user-centred lifelong guidance system that transcend separate, sector-based or provider-centred provision.

In this wider context, ICT relates to the products, infrastructure, and electronic content that enhance policy and systems development for career services, resources, and tools. It refers to how interactive services, resources, and tools are designed and developed for citizens, how citizens use these, and how such use in turn reshape their design. It also refers to the digital competency required to use ICT in a career development context (European Lifelong Guidance Policy Network 2015).

From information to co-careering

Recent phenomenographic studies (Kettunen 2017) have revealed how career practitioners conceive the role of ICT in their practice today and what are the current approaches within the field. Together, these results offer us an overarching picture of five general approaches to ICT and social media in career services. These encompass a passive approach, an information approach, a communication approach, a collaborative career exploration approach and a co-careering approach. Shifts in competency appeared as transitions from operational understanding of different technologies and tools and their use to meet the information needs of different audiences to ability to creating and maintaining reliable online presence.

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These findings show that competency for ICT and social media in career services is not only about a particular set of new skills, but about a dynamic combination of cognitive, social, emotional and ethical factors that are interwoven. These findings have been used to develop pre-service and in-service training of career practitioners and support for the deepening of their competency, using the critical aspects that were identified.

Nordic cooperation on Summer school

The impetus for development of International Summer school on the use of ICT in Guidance and Counselling emerged from VALA Nordplus network. VALA is a network of career counselling and guidance programmes at higher education institutions in the Nordic and Baltic countries. The designed course is organised by the Open University of University of Jyväskylä (JYUOpen), Finnish Institute for Educational Research (FIER) and the Faculty of Education and Psychology at the University of Jyväskylä in Finland.

The week long Summer School was based on the latest results concerning the requirements of the use of information and communication technology, and particularly the use of social media, in guidance and counselling (Kettunen et. al 2015).

The curriculum design and teaching of the course come from Finnish Institute for Educational Research (FI), Malmö University (SWE), eVejledning (DK) and Iceland University. Partners involved have extensive experience on training and research in the use of ICT in the field of guidance and counselling as well as supporting and working with practitioners in Nordic countries. They complement each other with their competence, experiences, knowledge and skills as they have experience from higher education (SWE/IS), practical field (DK), research (FI) and independent work (SWE).

Great importance during the course was attached to students' experiments and collaboration. Time was spent in interactive workshops in which the participants could deepen their know-how in a goal-oriented manner. As bilateral communication on the internet is mostly based on text, in the beginning of the week, text-based communication with email and chat services was trained. In the middle of the week, the participants went on to video transmitted communication, communal processing of directed questions, development of web discussion skills and also expression of active online presence. Attention was also paid to ethical perspectives connected with the use of information and communication technology in guidance and counselling.

Participants' feedback

During the second Summer school students (N=33) from nine countries were invited to provide feedback online. This feedback showed that they were pleased with the high level of teachers, the planning and organisation of the course and the group conversations during the Summer school days.

Students gave very positive feedback concerning teacher's way of

work on how they interacted with students and organized learning. The collaboration and mix with different teachers, themes, styles of working was well thought out and well-executed. There was good balance between theory and practice. The students were impressed by teachers' expertise on the topic.

In this Summer school, the participants had active role in their learning. Students expressed that they enjoyed the open atmosphere and the ongoing invitation to create this course together. They had a sufficient time for mutual reflections. Wide mixture of age, gender, and professional background provided rich base for collaborative learning and exchange of practices.

The students provided also proposals how to improve the pre-assignments and orientation tasks for the Summer school. As English was not the first language for most of the participants, sometimes long intensive days in a foreign language made it difficult to stay focused all the time.

Overall, the students were very satisfied with this summer school as you could notice in this feedback: "I have learned a lot this week - and I definitely will come back to Finland!"

Conclusion

Jointly developed, International Summer school used successfully researched-based model in developing competency for ICT including social media in career services. Nordic cooperation in the course development presents a concrete model on successful effort on bridging the gap in the initial and the continuing training of career practitioners. Summer school participants and trainers have established a sustainable community of practice where they can share experiences and further enhance their knowledge and competence in ICT in Guidance and Counselling.



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Open courses for facilitating professional practice and development between communities of practice

Innovative impact

If open educational resources and courses are to serve a defined purpose they must be curated and presented to meet the needs of defined communities of practitioners. Those practitioners will also prefer to use different styles or types of resources to suit their circumstances and so maintaining and refreshing a corpus of such resources and courses over time is essential.

Introduction

This short article discusses the design and construction of a learning system for systems thinking in practice that involves a range of old and new open educational resources and open courses. These resources and courses are used both (a) as scaffolding for different life learning journeys from professional practice to professional development through, ultimately, study of an MSc in Systems Thinking in Practice, and (b) as a focus for a group of employers to draw upon as they develop a postgraduate degree apprenticeship standard in the UK. The article concludes by suggesting that open educational resources and courses can act as mediating or boundary agents for stimulating learning between different communities of practice.

Background: teaching systems thinking at the Open University

The Open University UK (OUUK) has been teaching systems thinking since 1972. This centred on the then Technology Faculty and was seen as a critical part of the curriculum by the founding Dean, Geoff Hollister (Ison, 2001), acting as one of two integrative disciplines (the other being design thinking) to balance the more traditional analytical engineering disciplines. From 1972 until 1999 there were two or three undergraduate modules and a residential school on systems thinking for inclusion in the OUUK's renowned open degree (Cooke et al, 2017); but aspects of systems thinking were also included in other undergraduate and postgraduate modules and not just within the Technology Faculty.

In 2000 the OUUK began introducing named degrees alongside the open degree and two undergraduate modules and associated study packs on systems thinking and practice (Lane, 1999) were used as part of both the open degree and certain named degrees and between them these two modules provided an Undergraduate Diploma in Systems Practice (there were still other undergraduate and postgraduate modules incorporating systems thinking). These modules were phased out in 2012 as from 2010 onwards two system thinking postgraduate modules were launched as the core of a Masters programme in Systems Thinking in Practice (Ison and Blackmore, 2014).

Over 40 years around 30,000 students have taken one or more of our systems thinking undergraduate modules while in the last 7 years about 1,000 students have taken one or more of the systems thinking postgraduate modules, not counting other modules that incorporate systems thinking as part of another discipline.

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Being an applied discipline that can encompass other disciplines and also seen as an important 21st century skill, there has always been a strong practical and professional focus to the teaching of systems thinking at the OUUK. This has included offering additional support beyond the formal teaching, first for 20 years from 1992-2012 through the academic staff-led Open University Systems Society, and secondly since 2013 by a student/alumni-led LinkedIn discussion group.

Context: systems thinking resources and courses on OpenLearn

The previous section has briefly outlined the 'closed' systems thinking resources and courses in the sense that fees had to be paid to access the teaching materials and learning events involved even though most modules were open entry, that is, they do not require prior qualifications for people to register on them. Of course some of these physical resources would be shared with others by students or Associate Lecturers or broadcast on free to view TV networks but it was not until 2000 that some bespoke online resources were published through a website called Open2.net that supported the teaching broadcast work the OUUK did with the BBC. Then in 2006 the OUUK launched its main OER channel OpenLearn, which has, amongst other disciplines, increasingly housed a corpus of systems thinking material, some module derived and some bespoke interactive media on systems thinking (including some from Open2.net). A website listing of many of these resources and courses can be found under Resources.

For ten years this corpus has been used, downloaded and referred to by many types of user, including OUUK students and alumni. See Lane, (2012) for an example of the uses of one such resource. Indeed this same resource attracted over 12,000 unique browsers in the academic year 2015-16, although most other resources attracted far fewer browsers. This highlights how, once a resource gains popularity, this popularity can be maintained or increased because the number of browsers and referrals helps increase that resource's ranking in search engines. However it also means that, as does the internal structures of OpenLearn itself, many other resources can remain hidden from most learners who might be looking for something on systems thinking or who could benefit from these open resources. Further, as learners can view and/or download such resources without registering on OpenLearn there is little we can easily say about what they would like to have more of and/or whether they wish to be part of a community of practice or not, which we can do with our students.

Challenges: creating learning systems that blend open and closed resources

It had been obvious for some time that a more structured and focussed presentation of our open resources and courses that aligned with our formal teaching programme was desirable if we were to be able to provide better bridges between the community of practice represented by Professors, Lecturers and Associate Lecturers at the

Resources

A list of open resources on systems thinking from the OUUK can be found at <http://www9.open.ac.uk/mct-ei/research/applied-systems-thinking-practice/resources>

The Mastering Systems Thinking in Practice Badged Open Course can be found at <http://www.open.edu/openlearn/science-maths-technology/mastering-systems-thinking-practice/content-section-overview?active-tab=description-tab>

The Systems Thinking in Practice programme from the OUUK is described in more detail <http://www.open.ac.uk/choose/ou/systemsthinking>

OUUK, the community of practice represented by current and past students and staff, and a wider community of systems practice in the workplace and beyond. Two new developments, one internal, one external provided opportunities to do just that.

The first, internal, development was the use of open badges within OpenLearn to recognise informal learning and the consequent development of bespoke Badged Open Courses or BOC (Law, 2015) that could provide discrete and acknowledged bridges between informal learning and credit and formal learning and credit. One such example of this has been the creation of a 24 hour BOC called Mastering Systems Thinking in Practice. This BOC has both reused and refers to much of the existing systems thinking resources and courses on OpenLearn, thus (i) providing a guide to them; (ii) providing a direct introduction to the Masters programme for those wishing to go strategy on to formal studies; and (iii) providing badges that can be used as evidence within a Recognition of Prior Learning module that forms part of the Masters programme. Launched in September 2017, this BOC, by end of October 2017, had already had over 2000 unique browsers, over 300 enrolled learners, and 19 badges awarded.

The second, external development has been the introduction in the UK of degree level apprenticeships 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). A group of employers determine the standards expected of the degree apprentice through a competency framework and HEIs are expected to provide qualifications that meet those standards, qualifications that are a blend of taught modules and on the job training. A postgraduate Systems Engineer standard has already been approved but the OUUK has helped set up an employer's group to define a wider Systems Practitioner Postgraduate Degree apprenticeship standard for approval. As part of this support we are developing both a project website and a bespoke web page guide to systems thinking resources on OpenLearn.

Conclusions

A collection of open educational resources can attract attention and be used by others for various purposes. It can draw people into registering on taught programmes but what most of them do is not necessarily related or known about.

A BOC offers the opportunity to rework parts of a collection of OER for a more defined purpose (preparation and entry into a specific programme) and provides a guide to the collection. The BOC also provides a learning opportunity that can be used as evidence through recognition of prior learning and a clear learning opportunity that other organisations can use for professional development purposes.

Work based qualifications such as degree apprenticeships offer ways for blending the use of formal taught modules and non-formal, open resources that can support and enrich work based/related studies.

Open resources can be a bridge of mediating agent between different communities of practice. But it is early days in this journey and we need to see what happens in practice...



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