The Envisioning Report for Empowering Universities

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Authors

Anadolu University | Sedef Sezgin; Mehmet Firat
European Association of Distance Teaching Universities (EADTU) | Alessandra Antonaci
Hellenic Open University (HOU) | Rozita Tsoni; Evgenia Paxinou; Elias C. Stavropoulos; Vassilios S. Verykios
KU Leuven | Frederik Truyen
The Open University (OUUK)| Inma Álvarez; Zsuzsanna Bárkányi; Mara Fuertes Gutiérrez; Andy Lane; Ormond Simpson; Liz Marr; Karen Foley; Hazel Church; Helen Cooke
Universidade Aberta (UAb)| Glória Bastos; Madalena Carvalho; José Bidarra
Universidade de Lisboa | Sofia Balula
Universitat Oberta de Catalunya (UOC) | Lourdes Guàrdia; Marcelo Maina; Federica Mancini; Hind Naaman; Gema Santos-Hermosa
University of Patras | Christos T. Panagiotakopoulos

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Foreword

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

We herewith present to you the fourth edition of the EMPOWER Envisioning report on innovating higher education. The report is set up 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 EMPOWER expert pools are working in all relevant areas for the development of new modes of teaching and learning. The EMPOWER website, covering 12 expert pools, can be found here.

The actual implementation of innovative methods in teaching and learning requires institutional strategies and frameworks. A strong motivation of a professional teaching staff and continuous commitment from the top management of a higher education institution is needed to make this a success. With the EMPOWER Envisioning report we want to inspire fellow experts in innovating education by examples from practice. In this 4th issue of 2020 we cover new initiatives related to Open Educational Resources and Open Practices; Learning Analytics and Artificial Intelligence; Continuing Education and Curriculum and Course Design.

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 edition of the year 2020 is an inspiration for many to further innovate education and start cooperation and sharing of expertise with fellow innovators.

George Ubachs
Managing Director EADTU

Open Educational Resources and Open Educational Practices

Andy Lane

The Open University, The United Kingdom

Developing capacity for openness in a national Distance Education system

Innovative impact

Focussing on system wide change using open educational practices is first and foremost an approach to changing and challenging the thinking about how distance education is structured and run in Myanmar at all levels – national, regional, institutional and individual.

The TIDE project is having this impact in the short term, but it is too early to say whether this change of thinking will result in appropriate changes to policy and practices in the longer term that can then sustain a collective and collaborative approach to capacity development.

Introduction

This report explains how the Open University is working to help transform the distance education (DE) system in Myanmar through open educational practices. Around 60% of all higher education students are taught through the combined efforts of 36 higher education institutions, two of which develop the educational resources and the rest provide tutorial and pastoral support. These responsibilities are changing but collaboration and cooperation through open educational practices will probably be essential to a successful transformation.

Distance Education in Myanmar

Since the time of the military government in Myanmar, arts and science undergraduate courses had been offered through 34 'day campus' Universities distributed across the country, and whilst courses were offered on campus most students studied by DE. The 'day campus' Universities provide some pre-exam, on campus tuition to DE students, support registration and distribution of printed study materials. English is the expected language of instruction and all DE materials are in English. Although arrangements are now changing, up until 2019 degrees arising from DE study have been awarded by Yangon University of Distance Education (YUDE) and Mandalay University of Distance Education (MUDE), and these two institutions have provided the academic oversight of the degrees, as well as creating all the study materials for the courses. In August 2018 the Union Minister for Education announced the launch of what has become referred to as the 'One Campus Two Systems' model, whereby the 34 Day Campuses take on full responsibility for the award and delivery of undergraduate distance education degrees.

Following democratic elections in 2015, a reform process had been launched resulting in the 'National Education Strategic Plan (NESP) 2016-2021', covering all levels of education. The plan acknowledges the DE system has promoted widespread access to undergraduate degrees but has been criticized for low quality and lack of relevance to the job market. With the Ministry of Education in Myanmar committed to increasing investment in HE and the opening of the country to greater collaboration in the ASEAN region and internationally, the need for skilled and employable graduates has become ever more urgent. The importance of upgrading the DE system and taking advantage of the benefits of a rapidly growing digital infrastructure to support online learning has also become recognized, hence TIDE.

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Transformation through Innovation in Distance Education (TIDE)

The TIDE project is funded by the UK Department for International Development (DFID) through a programme called 'Strategic Partnerships for Higher Education Innovation and Reform (SPHEIR). Led by the Open University UK but involving the University of Manchester, Oxford University and Irrawaddy Policy Exchange from the UK and with Yangon University, YUDE and Yadanabon University as in country partners, it runs from March 2018 to September 2021 and is focused on three main streams of work in the DE sector:

- Enhancement of Staff Capacities for Academic, Teaching and Complementary staff

- Enhancement of Programmes

- Approaches to the strengthening of HE/DE systems

This paper focuses mostly on the first stream of work but touches on the third stream. The first stream will eventually involve over 35 Universities and over 300 staff from those universities. This is being done in three overlapping cohorts, each cohort following a two-year professional development programme. The first cohort of 60 academics and 40 ICT, Library and support staff from 10 universities started in May 2018 while the second cohort of 86 academics and 40 support staff from 11 further universities started their programme in May 2019. A third cohort were due to commence their programme in May 2020, but this has been impacted by coronavirus.

The two-year programme has parallel strands for academic staff and support staff. Academic staff undertake a mix of academic knowledge-led (environmental science) activities and teaching and pedagogy-led (open and distance educational practices) activities; while the support staff undertake educational technology-led activities (open licensing, online learning platforms, media production etc.). These activities are centred on four in country 5-day residential schools accompanied by a series of intervening training and development events between these schools (namely webinars, online courses and face to face seminars). Whereas all the events deal with developing knowledge and skills, these are put into practice through another strand of activity - the co-development of OER dealing with environmental subjects – where mixed teams of academic and support staff pool their expertise and skills to produce educational materials that they will be able to incorporate into their own teaching programmes.

Introducing Openness in a Closed System

The existing model for DE in Myanmar is predominantly a closed one. Study guides and materials used to support courses are not openly licensed, admission depends on matriculation scores. Whilst the system is not wholly merit based and does not give equal opportunities to women, it reflects an approach that allocates students

with better results to opportunities in the most in-demand courses and Universities.

By contrast the TIDE approach, as exemplified by the approach of the Open University UK is based around a design that advocates open access. Whilst the admissions system and many of the features of the design of DE in Myanmar remain closed, the TIDE focus on openness can bring positive changes within the current closed framework. Development and use of OER provides a focus for collaboration between departments within an institution and between Universities and encourages development of a team-based approach for learning design. The OER produced can be shared and adapted for courses in different parts of the country encouraging system wide sharing. OER can also be translated into local languages, encouraging inclusion and being adapted in ways that respond to the diverse cultural context in Myanmar where there are over 100 different ethnic groups. There is also a current issue around cost of licensed textbooks for University libraries and for students and this suggests that development of open textbooks can be an effective solution.

Introducing open approaches, goes beyond capacity development, and the TIDE project is now designing change management components that can promote adjustment of processes and policies within Universities supporting DE, so that open approaches can be institutionalised. This implies further internal capacity development within Universities, mentoring of change champions, and ensuring quality assurance and employer engagement processes also influence the way relevant OER are developed, adopted and valued

Conclusion

TIDE involves working with a large and growing number of beneficiaries all of whom see TIDE as an important project. Success depends in part on engaging effectively with at least 300 staff from at least 35 universities who will hopefully become the pioneers and advocates for wider professional development of university staff. The project is just over hallway through and this report can only provide preliminary findings.

A particularly promising development that was evident from the first residential school was a desire amongst both core partners and university leaders with knowledge of TIDE, to cascade TIDE training received to academic and support staff within their universities. Participants from seven of the ten first cohort universities have, on their own initiative, been conducting such cascading training, and through this creating the scope for wider impact.

Indeed, the staff and institutional capacity development model is dependent on training the trainers, and the main activities to support this are to happen in the second half of the project with a focus on the first two cohorts. Throughout, the TIDE project is trying to foster a sector-level community of practice within and between all the universities involved in DE and using openness to enable collaboration.

Glória Bastos and Madalena Carvalho

Universidade Aberta, Portugal

Building an OER - OEP ecosystem

Innovative impact

School Access to digital content like OER has expanded and open repositories play a significant role in this field, but to improve the use and reuse of these OER it is important to understand how they can be used. To link OER to practices, Universidade Aberta (UAb) is developing an OER-OEP ecosystem, which includes the creation, description, preservation, sharing and possibility of reuse of educational resources used in open educational practices, that is, the articulation between resources and their didactic-pedagogical contextualization, based on real pedagogical contexts of use.

Besides, important aspects like quality through external validation and sustainability of the project are guaranteed considering the procedures that have been implemented. The case of UAb Open Repository, giving this kind of information, is an important tool to improve the effective use of OER and can be considered an example of good practices, of transversal interest for administrators of institutional repositories, teachers and other educational agents with an interest in open education.

Introduction

Looking at the open movement, it is important to explore a broader notion of openness in education. Considering the definitions that have been proposed for OER, we find that the concept itself has been broadened, incorporating a greater variety of resources (OECD, 2007; UNESCO, COL, 2011, 2015). But although, in the theoretical domain, the benefits of Open Education - whether in terms of creation, availability and access to resources or in relation to educational practices - are widely documented, in reality, there are still many challenges in this field. In fact, the availability of tools and resources, by itself, does not guarantee the transfer of knowledge and a wider exploitation of the multiple possibilities of OER. In this context, it is important to consider that the focus on the content (OER) should be shifted to the practices (OEP) that are necessary for the use of this content (Deiman & Farrow, 2013).

There are already initiatives and experiences that have proven how this perspective can result in important and significant changes, in teaching and learning process, contributing, namely, to implement more active forms of learning, especially when working with adult populations (Bastos, 2018; Cronin, 2017; ELI, 2018; Paskevicius, 2017). But, in fact, the results seem to appear more slowly in this specific field of open movement. That is why it is also essential that, in other areas of action, tools are at everyone's disposition to enable organizing and making OER available in conjunction with OEP to facilitate access and also decision-making in relation to new open practices. One of the reasons cited for its still little comprehensive use lies precisely on the difficulties in researching OER: "materials are difficult to locate, retrieve and sometimes impossible to download to be adapted, translated or updated" (Atenas et al., 2014).

From OER to OEP

When talking about OEP, we have as a reference the way they are presented by the ICDE and OPAL project: "practices which support the production, use and reuse of high quality Open Educational Resources (OER) through institutional policies, which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path" (The OPAL Report, 2011). But how to accomplish this step? The OPAL project has identified five main barriers faced by individuals when wanting to participate in the use and development of OER: lack of institutional support; lack of technological tools to share and adapt resources; lack of skills and time; quality or adequacy of OER; and personal issues, such as lack of confidence. All of these concerns are significant threats to ensuring the sustainability of OEP initiatives in higher education.

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In the context of the UAb, an ecosystem of OER and OEP is being build and is based on a set of vectors developed in a transversal and articulated way through: (i) an Institutional Policy of Open Education and (ii) the Institutional Repository. The existence of a strategy combined with the definition and application of an institutional policy is a determining factor for the sustainable development of these kind of projects. At UAb, with a consolidated role in the context of online distance education, Open Education has been achieved through several initiatives (Mendes et al., 2018, 2019), highlighting, in the context under analysis, the articulation between the Open Repository and the open courses made available on the AULAbERTA (Open Class) platform.

The Open Repository

The UAb Open Repository (OR) is structured around the principles of Open Access. Supported by an "Institutional Policy of Open Access", the OR is organized in thematic communities, and makes available - in electronic format and full text - the scientific production of its academic community (teachers and students) and pedagogical resources, the latter grouped in the OER community (Carvalho, 2018). The OER collection consists of contents of the most varied types, published under an evaluation process, based on criteria of quality and relevance, objectives, properly described and indexed to facilitate the retrieval of information, interoperability and free use by an extended set of users.

The AULAbERTA Initiative

As an online distance learning institution, acting mainly in the field of formal education, UAb has been expanding its action in the field of open education by developing a platform (based on MOODLE) which was named AULAbERTA (Open Class). Through this platform, UAb offers diversified training paths, from MOOC to free exploration trails. At AULAbERTA, then, we find OER and pedagogical scenarios for its use, concretizing the perspective of its association with OEP. Within the scope of the present ecosystem and taking into account the UAb's vocation for the production of multimedia products, the focus in this phase of the work is centred on the availability of resources of this type and their integration in OEP.

The Ecosystem OER - OEP

In the context of the articulation between the OR and AULAbERTA, a set of specific procedures were developed so that the OER, produced and used within the scope of AULAbERTA, were made available in the Open Repository and originated an OER-OEP ecosystem. The first step was to identify responsibilities and define an information circuit. Three levels of competence were identified:

• Pedagogical competence: AULAbERTA's Coordinator ensures articulation with the technical-pedagogical team and the UAb faculty, regarding the creation, selection and description of the available resources.
• Technical – library competence: Library Services (LS) - Responsible

version:
https://repositorioaberto.uab.pt/handle/10400.2/8539

OECD (2007). Giving knowledge for free: the emergence of open educational resources. Organization for Economic and Co-Operation and Development.

Paskevicius, M. (2017). Conceptualizing Open Educational Practices through the Lens of Constructive Alignment. *Open Praxis*, 9(2), 125–140.

Santos-Hermosa, G., Ferran-Ferrer, N. & Abadal, E. (2017). Repositories of Open Educational Resources: An Assessment of Reuse and Educational Aspects. *International Review of Research in Open and Distributed Learning*, 18(5), 84-120.

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for the administration of the OR, LS deposits the digital file and defines the metadata structure to be applied to the description of the contents in order to guarantee the retrieval of information and access to the contents, in accordance with its multiple pedagogical contexts of use.

• Digital production competence: Digital Production Services (DPS) -Responsible for the production of digital resources at UAb, this Service guarantees the availability of digital files in technical formats compatible with the deposit in the OR containing the identification of the authors, content titles and the defined CC license.
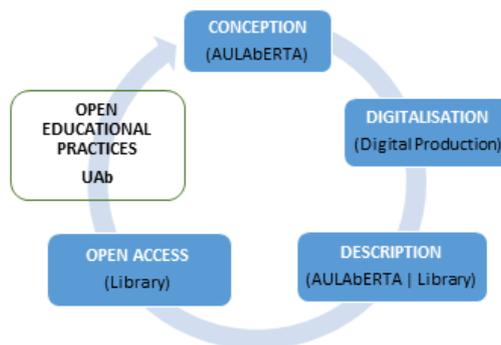
The definition of an internal information circuit gives agility to the process, namely in points that may be more critical or time consuming, such as the identification of the OEPs, which, in the case of UAb, were strategically associated with the AULAbERTA initiative.

Conclusions

In an institutional culture marked by the encouragement of open access and open education, this new step reinforces the path that has been taken in the field of pedagogical innovation. As highlighted by Conole and Ehlers (2010), "A core element of the concept of OEP is that it does not separate the resource from its usage, but takes into account the interplay between stakeholders, organizational elements and resources" and this is the pathway that we want to materialize. The dissemination and development of OEP are influenced by several factors. The existence of institutional strategies that sustainably and in the long term support the availability of OER-OEP is essential. This, in itself, will enable continued and quality work, given the many attempts that have proved to be poorly achieved (Atenas, 2014; Santos-Hermosa et al., 2017). The systematic availability of content through the UAb Open Repository, by allowing aggregation, research and access from a single point, to educational content, validated and subject to legal and reliable reuse, expands and enhances the dimension of the work that has been developed. At the same time, the content quality validation model applied to the systematic availability of OER in conjunction with the AULAbERTA context, enhances user confidence in the (re)use of resources and gives depth and consistency to the OEP ecosystem developed at UAb, helping to promote the project's sustainability.

Inma Álvarez, Zsuzsanna Bárkányi and Mara Fuertes Gutiérrez

The Open University, The United Kingdom

Innovative impact

At the School of Languages at the Open University (OU) in the United Kingdom we have developed a set of Open Educational Resources (OERs) for the teaching of pronunciation to English-speaking learners of Spanish. The main aim was to enhance Spanish language teachers' professional competences in phonetics and phonology. We followed an approach based on a contrastive linguistics model facilitating the comparison between English and Spanish sounds in different phonetic contexts as well as developing areas not usually covered in pronunciation courses. Another innovative aspect of the approach is that it encourages in-service teachers of any language to create, curate and share their professional knowledge online, as well as to establish a supportive dialogue around specific areas of expertise. Our materials are available at OpenLearnCreate: https://www.open.edu/openlearncreate/course/view.php?id=4109. Further materials can be designed using this platform.

Supporting the teaching of pronunciation in the language curriculum

Introduction

The teaching of pronunciation in the language classroom has traditionally been addressed in a superficial manner, as different methods and approaches have tended to emphasize aspects related to language learning and teaching such as grammar, vocabulary or communication, making them the focus of teachers' and learners' attention in lessons. Furthermore, the benefits of teaching pronunciation tend to be overlooked in the learning materials and teacher training programmes (Mellado, 2012). However, recent studies have demonstrated the benefits of explicit instruction when it comes to acquire the pronunciation at all levels (Rao, 2019). In addition, the scale of descriptors developed in the original version of the *Common European Framework of Reference for Languages: Learning, teaching, assessment* (Council of Europe, 2001) — one of the most influential documents in the area of language learning and teaching in recent years — implicitly put emphasis on achieving a native speaker norm. This vindicated an approach to teaching pronunciation based on correction rather than intelligibility, making its treatment in the classroom challenging for teachers and frustrating for learners. Admittedly, the companion volume to this publication (Council of Europe, 2018) acknowledges that the descriptor corresponding to Phonological Control was the least successful scale and a whole new set has been developed, which will hopefully have a positive impact on teaching pronunciation in the next few years.

Developing oral skills

Tackling sounds is key to easing the flow of learners' speech and to recognising sound patterns and word combinations when listening. The development of oral skills encourages learners to go beyond the familiar range of sounds with which they may feel comfortable. When learning a language, some sounds may be identical to the sounds of other languages that the learner can already speak, others are similar, yet other sounds may be completely new.

The acquisition of pronunciation is influenced by several factors, one of the most prominent being transfer, i.e. the influence of the languages already known by the learner into the perception and production of the language they are currently learning. This transfer can be positive, when a sound is familiar, or negative, if the given sound does not exist in one of the languages. In addition, some sounds can exist in both languages, but their distribution or possible combinations can be different in each of them.

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Teaching Spanish pronunciation

In the past few years, several proposals have been developed to support Spanish language teachers when undertaking this task (Gil Fernández, ed., 2012; Rao, ed., 2019), although there is little evidence of these proposals being implemented in the classroom. In the field of Spanish language teaching, the persistence of certain myths related to the teaching of pronunciation has contributed to this content being covered lightly and even incidentally. Traditionally, there is the idea of Spanish being a phonetic language whose pronunciation does not need to be taught (Jakson and Rubio, 1969 cited by Poch Olivé, 2004). Moreover, although language teachers are not expected to be phoneticians, their knowledge of stress, rhythm, articulation of sounds and intonation, and the role these elements play in speaking and listening seems to be very limited (Poch Olivé, 2004), which leads them to neglect crucial support of learning to articulate comprehensible speech patterns. As a consequence, at all levels of education, pronunciation tends not to receive much attention in post-beginners' courses, once the phonetics of sounds and basic intonation patterns at a descriptive level have been covered.

Teaching pronunciation at a distance

After more than 20 years of language teaching at a distance at the Open University (OU) in the United Kingdom, we conducted a thorough curriculum review that gave us the opportunity to rethink the teaching of oral skills with a focus on pronunciation. While some pronunciation activities had been previously introduced in our modules, this time we decided to desing an online graded pronunciation guide for the Spanish degree qualification. This guide was a unique and ambitious resource to be used from beginners to advanced modules. The idea of the guide was to produce a coherent interactive resource that included detailed explanations on sounds, stress and intonation, a glossary, interactive exercises, practical tips for English-speaking learners and an introduction to the varieties of Spanish.

After a detailed examination of the pedagogical literature on the topic (mentioned above) as well as the inventory produced by the Centro Virtual Cervantes (2005), and some resources from the Real Academia Española y Asociación de Reales Academias de la Lengua (2011), it became clear that the existing guidance was very comprehensive in some areas, even to an excessive level of detail, while others were thinly developed. For instance, there was very little on the richness of World Spanish, an approach that ensures an understanding of the multiple spoken varieties of this language around the world.

At beginners' level the general advice in language materials is to simply give information about the dialectal variations of the Spanish sounds. It is not until an intermediate level that it is suggested to include samples of different geographical accents from Spain and Spanish America. However, this contradicted the evidence we had acquired at the OU from testing exposure to sounds and linguistic varieties. Therefore, the guide we created for our programme combines the advice from the few available sources with our practice-

Rao, R. (Ed.). (2019). *Key Issues in the Teaching of Spanish Pronunciation*. London: Routledge, https://doi.org/10.4324/9781315666839

based knowledge on how language learners learn best listening and speaking in Spanish. The guide also incorporates much needed interactive activities where distance learners could listen to examples and compare them with their own spoken utterances.

Open Educational Resources as a source of professional development

Any curricular innovation needs to consider the development of teachers. Via the monitoring of the feedback provided in speaking assignments, we have evidence that language tutors lack confidence on how to advise on the aural aspects of the learning, particularly, on how to tackle systematic pronunciation errors. For this reason, and to complement the recently-created pronunciation guide, we have developed a course aimed at teachers of Spanish working in the United Kingdom who wish to extend their theoretical knowledge of teaching Spanish pronunciation, offering ideas and practical skills that can be used in the classroom.

Different theories and approaches on the role of the first language (L1) in the learning and acquisition of a second language (L2) coexist at present in the field of language learning. It seems clear, though, that the L1 and other languages already spoken by learners are frequently used as a starting point or as a compensation strategy, thus it seems appropriate to make use of it in the language classroom to support students in their learning process. Under this premise, we developed online resources for teachers using an English-Spanish contrastive approach. However, our approach does not follow the perspective adopted by the theoretical trend known as *contrastive analysis* (founded by Lado, 1957) that only focuses on those areas where English pronunciation differs from Spanish pronunciation. Our suggestion is to apply a comparison between the realization of the segmental and suprasegmental features of both pronunciation systems in order to invite teachers to reflect on how these features can be taught in Spanish to anglophones.

The course is divided into five sections to support teachers in understanding the importance of learning and teaching pronunciation, identifying the most relevant challenges students might face, formulating realistic goal settings about pronunciation and designing activities that enhance the acquisition of Spanish pronunciation. It also gives a gentle introduction to relevant phonetic and phonological concepts and shows in what ways these are significant for teaching pronunciation.

This initiative intends to encourage teachers of any language to share specialist knowledge with each other and testing educational resources by making use of available online platforms such as OpenLearnCreate: https://www.open.edu/openlearncreate/

Vanessa Proudman [1]; Dr. Gema Santos-Hermosa[2]; Dr. Jen Smith[3]

[1] SPARC Europe; [2]Universitat Oberta de Catalunya (UOC), Spain; [3] The University of Sheffield, The United Kingdom

Open Education in academic European Libraries

Innovative impact

This survey highlights how some libraries in Higher Education are starting to take a leadership role in Open Education to support teachers and learners by playing to their strengths. They are providing essential support for OE through discovery services, information literacy and copyright and licensing support but fewer are engaging in the co-creation of OER or other related OE activities. We believe that for libraries to provide services to support Open Education more consistently across Europe, an increase in the institutional commitment to the value of Open and Open Education, more advocacy, knowledge exchange and investment will be necessary for this to become a much more widespread phenomenon.

We envisage that sharing evidence of OE library commitment in practice and the opportunities in providing more support will stimulate more engagement within and across libraries in Europe as well as between libraries and other OE stakeholders. We anticipate that this will inform OE policy and strategic development in libraries as part of their Open agendas.

To measure how far such activities could positively impact on OER and OE policy over time, it would be important to survey libraries on OER access, OE capacity-building and policy development on a more regular basis.

Introduction

European academic libraries have taken a leadership role in advancing Open Scholarship and Open Science (OS) in the last two decades. Recent policy development around OS has prompted a surge in related implementation activities. Open Education policy has also been in the making for over a decade, with the UNESCO Recommendation on Open Educational Resources (OER) ratified in late 2019. Academic libraries are natural partners in the Open Education endeavour with their competences in Open information and knowledge management, facilitation and dissemination. In late 2019/early 2020, SPARC Europe, in consultation with the European Network of Open Education Librarians (ENOEL), launched a survey to investigate the current Open Education (OE) landscape in Higher Education libraries with the ultimate goal to increase OE support in HE institutions and their libraries in future. Results will help inform libraries on how they can work together to strengthen OE and increase OER across Europe.

The survey

This study consisted of an online survey looking at OE in European libraries of higher education, which was open for 8 weeks and closed on 24 January 2020. It was distributed to academic librarians across Europe utilising the SPARC Europe and ENOEL networks, e.g. the Information Literacy Group (INFOLIT), the Association des directeurs et personnels de direction des bibliothèques universitaires et de la documentation (ADBU) and the Spanish Network of Universities Libraries (REBIUN). It was also published on social media channels such as Twitter and LinkedIn. The survey addresses seven key areas, including contextual information on the organisation, the funding context, policies, library engagement with OE, OE advocacy, services, and related challenges and benefits. This publication shares some of the survey's preliminary results.

Results

The final survey sample is based on the analysis of 146 responses from 29 European countries. Considering the many hundreds of universities alone in Europe; this number is somewhat low, however, since this survey is the first of its kind, it is important to begin such investigations. The survey therefore starts to build a picture of initial OE activity in Europe. The four countries with the highest responses were Spain (23), UK (17), Poland (16), and Greece (11). Nine countries saw responses from a single institution. Most responses were provided by universities/comprehensive institutions (97), followed by technical

Open Education importance

Education is essential to advancing society. It's how we pass down the wealth of human knowledge and equip the next generation of leaders, innovators and productive members of society. Our educational systems have operated with a fundamental disconnect between practices left over from the analog world, and the vast potential of technology and the Internet to support more affordable, effective teaching and learning. The movement for Open Education and OER seeks to close this gap. (SPARC Europe: https://sparceurope.org/what-we-do/open-education/)

OER are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others. UNESCO OER Recommendation, 2019 (ref below).

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universities (19), specialised institutions (14), and universities of applied sciences (7). Four national libraries, one academic hospital, one teaching college and one distance learning university also provided responses.

Open Education Policies

Evidence shows that libraries are making formal commitments to OE through adopting policies, though this is currently limited: only 27 organisations out of 145 reported having policies, with 14 of these instruments being part of a larger or overarching policy. Eleven libraries report being involved in the conception of the OER policy. More specifically, libraries were involved in 3 of the 4 standalone OE/OER policies, which suggests that when the library is engaged in institutional policymaking, it may encourage the development of standalone OE/OER policies. This low number of institutional policies reflects a similar pattern found in the low prevalence of policies in Europe in the OER Policy registry which as of March 2020 recorded only 13 OE/OER institutional policies in Europe. A plausible cause for this is a lack of institutional commitment and leadership on OE, which is one of the challenges reported. The study shows a general trend: OE is often part of a larger overarching institutional policy, which reflects similar conclusions from qualitative research on European institutional policies (Santos-Hermosa, 2019) or national policies in Europe which embed OE in ICT or broader educational strategies (Inamorato dos Santos, Punie & Castaño, 2016; Atenas et al, 2019).

Library leadership and engagement in OE

Half of the libraries surveyed take the lead in OE or OER in their institutions. These libraries are also more likely to be involved in OE policy development, with seven of the nine libraries who are involved in conceiving the OE policy reporting also taking the lead in advancing OER in their institutions. Furthermore, libraries that take the lead here unsurprisingly engage in more activities than those who do not. On average, leaders engage in 5.3 activities, while those who do not take the lead average only 3.3 activities. Note that since respondents are self-selecting and are more likely to engage with such a survey if involved with OE, this positive activity might even be considered low. When we observe how OE is managed in the HE organisation, only 16% of respondents report having a formal task force, committee or other similar body with an Open Education focus in their institution. Of the 23 institutions that have a formal task force, 10 of them also have a policy on OER, and 18 report that the library leads the institution in OER efforts. Although this number is small, this shows some libraries as facilitators and connectors, involved in a broader institutional effort uniting a range of stakeholders to support and drive OE forward. Since a much higher proportion of institutions with task forces also have policies, one might suggest that institutions that convene task forces are likely to have policies to drive and back them up. However, further investigation is needed to support this conclusion. As far as how OE is organised in the library itself is concerned, teaching and learning support is the most common department to lead in OER efforts (40 out of 101), which is, by definition, an expected outcome. The second most prevalent department to manage OE was the scholarly communication section (10) suggesting strong connections between Open Science/Scholarship and Open Education.

Library services to support Open Education

The survey explored how libraries are delivering OE support on a

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range of levels. Ninety-three respondents (64% of all respondents) reported advocating for Open Education. Libraries report informing library staff (69) on OER above other groups, which still indicates the novelty of OE in the library offering. Teaching staff (62) come in a close second as the group to advocate, with faculty management (44) as the third most informed group. Faculty administration (15) and ICT staff (14) are the groups least often informed by respondents about OER. Libraries advocate for OE by using a range of different means, with presentations, websites, events and social media averaging between 60% and 40%. To lesser extents, they are using other channels such as library communities of practice, OER project collaboration, and organizing workshops with teachers. The four most common areas in which libraries provide OE/OER services include information literacy (95%), advice on copyright and licensing (91%), training (84%) and discovery services (80%). Respondents also report that libraries take a leading rather than a supportive role in both information literacy and discovery services. In addition to the traditional roles of libraries and their inherent ability to discover relevant resources, the prevalence of information literacy and licensing support for OE is to be expected. For well over a decade, libraries have been educating researchers, teachers, and students about the concept and practice of "open" (open access, open science and scholarship, and now open education) helping faculty understand copyright and open licensing. Interestingly, almost as many respondents report that the library has a leading role in advice on copyright and licensing as it does a supportive one: 35 and 43 respectively. This shows the variance in skills in this area across institutions. More recently, libraries are expanding their task portfolios as they become more involved in the creation and curation of OERs (Okamoto, 2013), such as the co-creation of open textbooks (Hilton, 2016); furthermore, they are strengthening collaborative relationships with teaching faculty (Adams et al., 2018; Braddlee & VanScoy, 2018). Survey data reflects this new panorama in terms of the supporting role that libraries play in OE with about half the sample reportedly having a supportive role in OER co-creation (41) and one quarter in participatory design (21). Though a promising development, more libraries could engage in such activities to increase OER. This evidence demonstrates that libraries are clearly – as claimed by other studies (West & Jensen, 2015; Braddlee & VanScoy, 2018) – exercising leadership and support in Open Education practice.

Conclusion

Academic libraries are taking an important role in advancing Open Education in Europe. Evidence shows that libraries are playing to their strengths as Open information and knowledge managers, facilitators and disseminators. Some libraries are taking the lead to drive OE forward in their institutions. They are working from the control rooms of teaching and learning or scholarly communication with a range of institutional departments to further OE and OER, although such work clearly needs to be increased. Some libraries are advocates for Open Research and Open Education, and they provide essential support in information literacy and discovery, along with copyright and licensing; more libraries could follow suit. Furthermore, they could do more to support co-creation and other knowledge activities scaffolding Open Education, with innovative work here the exception rather than the rule. Libraries also have the potential to take a leadership role in exploring how their institution might commit more to OE through institutional policymaking, particularly in the absence of a national OE policy: lessons can be learnt from a range of libraries who have led the way here. The next vital step is for libraries to collaborate to build a more open, creative, legally and technically sound, and informed education environment to facilitate access to education material for all.

Sedef Sezgin and Mehmet Fırat

Anadolu University, Turkey

Bridging the Digital Divide Through ODL

Innovative impact

As a phenomenon of the digital age, digital divide has begun to show its influence more clearly in societies. Especially in these Corona Days this division is expected to continue to increase with the proliferation of digital technologies.

ODL as an open community movement in education has an invisible effect to bridge the digital divide in society by integrating current technologies in learning. In this paper, the potential of ODL for bridging the digital divide investigated based on studies from different countries.

Introduction

In the majority of research on digital division, technological opportunities (physical access to computers, networks and other technologies) take the first place, followed by demographic characteristics (income, education, age, gender and ethnicity).

OECD has identified communication infrastructures, computer availability, internet access, accessibility via TV and mobile phones as indicators of the digital divide. OECD also reported that household income and education levels are important determinants. In this context, the size and type of the household, age, gender, race, language, and settlements are also among the indicators of the digital divide. In measuring digital division, the distribution of various indicators to the demographic structure of individuals forming the society is generally used with ICT.

Open and distance learning, by its nature, should utilize the current technology, follow changing sociological structures and offer appropriate opportunities accordingly. These missions of ODL empower to bridge the digital divide in society.

Various efforts have been developed to measure digital division, which is important for all countries and communities, especially during the Coronavirus outbreak. Covid-19 pandemic forced society to use digital technologies not only for learning but also for their works, shopping, social activities etc. In other words, digital technologies are the main communications way of our daily life today. This paper investigated the national efforts and studies from different countries.

ODL for Digital Divide

In the 21st century, when information technologies began to be used extensively, the digital divide started to show its effect more clearly in societies. Because in the 21st-century society of the individual, digital technologies have started to take an indispensable role in communication, transportation, business, education and even access to public services. Especially for demographic differences like disadvantaged groups, geographical difficulties, natural limitations such as pandemic outbreaks. The digital divide that occurs between different segments and groups of society can significantly affect the social life of these segments and groups. Similar situations are highlighted in countries with the digital divide.

It is thought that it can benefit from open and distance learning with its mass feature and technology intensive application tools in dealing with digital division, which is seen as one of the important problems of the digital period. Researches also show that ODL reduces digital division.

The spread of open and distance learning in the world is not limited to only

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higher education. Although higher education has a leading role in this area, open and distance learning services are actively used in elementary and secondary schools. Additionally, ODL has been used in the education given to handicapped individuals and in foreign language teaching.

Coronavirus COVID-19 pandemic was declared by World Health Organization on 11th March, 2020. Many countries in the world are trying to create curfews, social distances, and conditions for staying at home. Quarantine, which is applied all over the world, has also brought education to homes. Fortunately, we have strong ODL experiences and infrastructure supported by computer and internet technology. Anyone with computer and internet technology can have the opportunity to receive a world-class education. This situation shows that open and distance education is quite important for equal opportunity, democracy and citizenship in this information age.

Global Cases

Chen & Wellman (2004) states that the spread of the Internet and the accompanying digital division consist of national and international socioeconomic, technological and linguistic differences. With the spread of the Internet, the digital gap between North America and other developed countries is narrowing, but is still largely present.

Mariscal (2005) investigated the cause of digital division in a developing country such as Mexico and provided evidence that digital division did not decrease with the increase of telecommunication networks.

In the study conducted by Fuchs and Horak (2008), it was concluded that although the number of internet and mobile technology users increased in Ghana and South African countries, poverty, cultural and social polarization, income distribution inequalities and other ethnic problems could not prevent digital division. For Africa, digital division has been seen as a problem arising from the structural inequalities of the global network society, characterized by global, social and ethnic discrimination. Radojičić (2011) designed a model to measure 5 types of digital division (age, gender, region, educational level and income level) and digital division in the population area. This model was applied in Serbia by calculating five sub-indexes and compound digital polarization index for the years 2009-2010. According to the results of the research, the difference in the use of information technologies is increasing between the young and old population, and efforts to reduce digital division continue, although it is still very slow.

In their study, Cruz-Jesus, Oliveira and Bacao (2012) conducted to analyze the digital division within the European Union-27 between 2008 and 2010, five digital profiles were identified among the 27 member states. These digital differences have been associated with economic asymmetries between countries, and it has been suggested that the year of entry into the European Union also affected the divisions. On the other hand, contrary to the results of some previous studies, it has been concluded that the school attendance of the population does not have a significant importance in digital division.

Büchi, Just and Latzer (2015) conducted surveys on internet use and developed comparative research on second-level digital division by modeling Internet use inequalities for five countries (New Zealand, Sweden, the United States, Switzerland, the UK) that have reduced access difficulties. It was concluded that sociodemographic alone constitutes half of the variance in these five countries and that age is the strongest predictor.

Conclusion

The results of the studies carried out in different geographies, different continents and countries in different socio-economic levels are given in this study. The results show that digital division is related to socio-cultural characteristics as well as technology. As a socio-cultural activity, the technology intensive structure of distance education also encourages the individual to use technology more effectively.

During the Covid-19 pandemic, universities, high schools, primary schools, private schools and even kindergartens had to be closed. Millions of students had to study in their homes. In these processes, governments and related ministries rushed to discuss how to train so many students at home. It was noteworthy that governments, like most of the society, got to know the developed ODL area. When it was seen that a training that surpasses traditional education with computer and internet supported ODL is possible, this surprise has increased even more.

Children, young people and adults who continue their education at home now experience ODL. For this, they discover computers, smartphones, smart televisions, live lesson applications, LMS systems and educational content, especially internet technologies. This intense technology demand and need also contributes to the reduction of digital division in society through education.

Learning Analytics and Artificial Intelligence

Sofia Balula Dias and José Bidarra

CIPER, FMH, Universidade de Lisboa, Portugal and DceT, Universidade Aberta, Portugal

A/B/C-TEACH Framework: The application of AI in Blended Learning

Innovative impact

A/B/C/-TEACH uses a unique methodology, which incorporates hybrid and innovative processing techniques.

A/B/C TEACH's integration of a-/b-/c-learning and iLMS is realized in a personalized and inclusive way supporting educational principles; hence, it is able to adapt to the various different learning styles learners have and dynamically provide them with constructive feedback (e.g., QoI, QoC, AS); though originated within formal education, the A/B/C-TEACH is potentiated towards other forms of learning (e.g., in/non-formal).

A/B/C-TEACH analyzed data from 5200 students from 75 disciplines (80-teachers) coming from the Faculdade de Motricidade Humana (Portugal) and the Open University (Greece).

It is anticipated soon to be embraced by the educational system of Khalifa University of Science and Technology (UAE), which is designed around the everyday use of LMS Moodle.

Consequently, a significant increase in the A/B/C-TEACH students (~8000-10000) is expected in the next years.

Introduction

Learning Management Systems (LMSs) under a blended (b-) learning modality can efficiently support online learning environments at Higher Education Institutions (HEIs). Thus, mining of LMS users' data, involving Artificial Intelligence (AI) and incertitude modelling, e.g., via fuzzy logic, is a fundamental challenge (e.g., Dias et al., 2017). In addition, LMSs like Moodle, despite their proliferation, are commonly used as educational material repositories, solely providing some basic analytics that are not integrated as constructive feedback within the educational process. A/B/C-TEACH (http://abcteach.fmh.ulisboa.pt/) attempts to renovate this status by proposing a holistic educational approach, which integrates affective (a-), blended (b-), and collaborative (c-) learning within an intelligent LMS (iLMS) environment, by providing tangible, dynamic and personalized indices, i.e., quality of interaction (QoI), quality of collaboration (QoC) and affective state (AS) of the LMS users, as novel tools for rethinking the way knowledge is delivered.

AI in Education

The present research follows recent developments concerning the introduction of AI in Education. According to Holmes et al. (2020), "AI-powered learning systems are increasingly being deployed in schools, colleges and universities, as well as in corporate training around the world. While many people fear that AI in education means robot teachers, the reality is less dramatic but potentially still transformative. Student-facing applications of AI include intelligent tutoring systems, dialogue-based tutoring systems, exploratory learning environments, automatic writing evaluation, and conversational agents." (p.3). In addition, a systematic review conducted by Zawacki-Richter et al. (2019), shows that most of the areas involved in AI in Education current research come from Computer Science and Science, Technology, Engineering and Mathematics (STEM), and that quantitative methods were the most frequently used in empirical studies. A synthesis of results of the study indicates four areas of AI applications in academic support services, and institutional and administrative services, namely: 1) profiling and prediction, 2) assessment and evaluation, 3) adaptive systems and personalisation, and 4) intelligent tutoring systems. In this vein, the present work brings an added responsibility to decision makers, educators, learning scientists and other stakeholders to engage with the emergence of AI in Education, as in many other fields, to ensure the development of teaching and learning approaches

Transferability to EU contexts

The innovative character of A/B/C-TEACH has been integrated in the educational procedures within the area of active and healthy living, justifying its generalization power of advancing education at the level of a more integrated practice, seen via affective, blended and collaborative educational approaches.

This is achieved by the clustering with European projects, more specifically, the concepts of a-/b-/c-learning and the relevant methodologies have been adopted by the i-PROGNOSIS project (www.i-prognosis.eu) as educational means for older adults, in order to re-educate them towards healthy ageing and sustaining their quality of life.

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that make appropriate use of AI.

The A/B/C-TEACH Framework

Using LMS Moodle data logger, built on the pedagogical approaches of behaviourism, cognitivism, constructivism, connectivism, A/B/C-TEACH produces new metrics regarding the interaction and collaboration amongst users. A schematic representation of the A/B/C-TEACH architectural structure is depicted in Fig. 1. From the latter, the dynamic flow of information between the distinct structural modules and participants is evident; more specifically, the interconnected elements of Fig. 1 include the following:

- *Users*: M teachers and N learners are coexisting and interacting both through the F2F and online learning environments under the b/c-learning concepts.

- *Data Acquisition/Management Module:* in general, online learning environments easily allow the acquisition and management of user data; from this vein, a series of metrics regarding the interaction and collaboration amongst users are available. In particular, 110 LMS metrics were used (e.g., wiki, blog, forum, chat, quiz, edit), forming interaction qualities and contributed to the estimation of QoI. At the same time, collaborative interactions (e.g., proposals, contra-proposals, questions, turn-taking balance) were used for the estimation of the QoC.

- *Affective Module:* considering the data from the users' affective module, supporting a-learning, this module will avoid the typical path of evoking questionnaires to measure the learners' affective experience - such as how much pleasure, frustration, or interest they felt during the learning processes, and evaluating the motivational characteristics of an instructor's delivery. On the contrary, by using affective computing cutting-edge technology (e.g., EEG EMOTIV EPOC/INSIGHT, webcams/depth cameras, portable functional near-infrared (fNIR) spectroscopy) it would provide real-time data, related to the users' ASs.

- *Fuzziness/Hybrid Modeling:* considering the data from the previous modules, the hybrid modeling will use innovative techniques from the fields of fuzzy set theory, neuro-fuzzy modeling, fuzzy cognitive maps, dynamic nonlinear analysis, and affective computing. Moreover, by adopting Lang's emotion space combined with advanced signal processing techniques emotion recognition processes of the AS data will take place.

- *Features:* the main features that will be outputted from the constructed models include users' QoI, QoC and AS (learners only).

- *Feedback:* having the estimated features per user, the construction of personalized feedback will be fired. The latter will be focused upon initiating metacognitive processes, helping the users to become more aware of their interaction, collaboration and affect - building a kind of "interactive/collaborative/affective mirror" in which the learners are encouraged to reflect upon how their interaction/collaboration behavior and affective state are influencing their learning experience.

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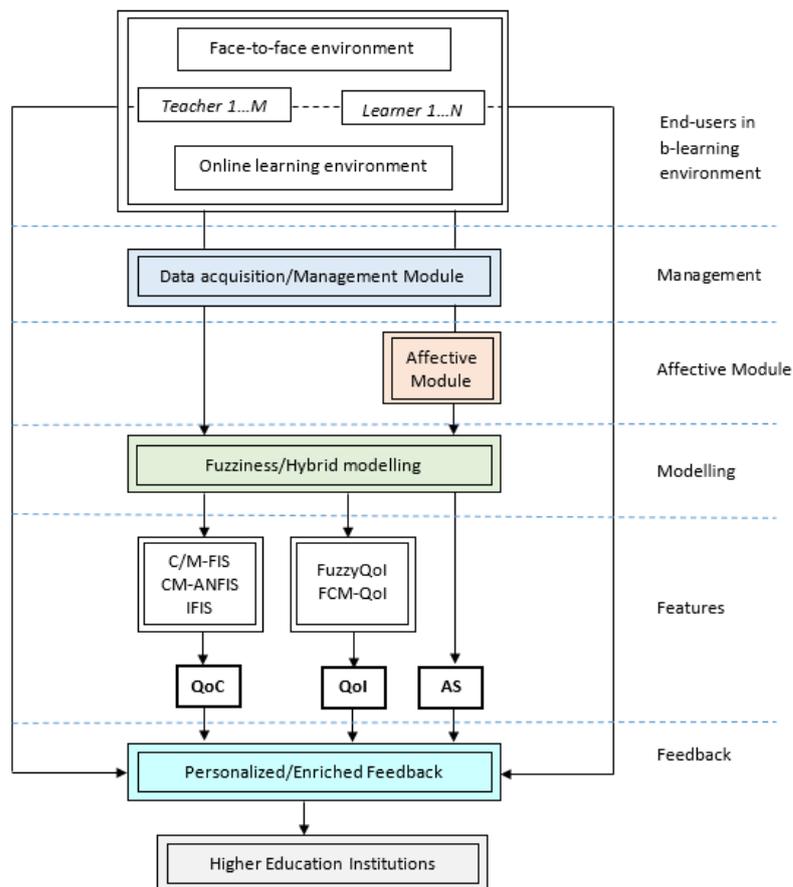
Fig. 1. Schematic flow-diagram of the A/B/C-TEACH framework towards effective teaching, by bridging affective-, blended- and collaborative-teaching and learning potentialities.

Moreover, innovative modelling/analysis techniques are used in the A/B/C-TEACH modelling module (see Fig. 1) by incorporating hybrid and innovative processing techniques from the fields of fuzzy set theory, neuro-fuzzy modelling, dynamic nonlinear analysis, and affective computing, namely: the Collaboration/Metacognition-Adaptive Fuzzy Model (C/M-AFM) (Hadjileontiadou, and Hadjileontiadis, 2005), the Collaboration/Metacognition-Adaptive Neuro-Fuzzy Inference System (C/M-ANFIS) model (Hadjileontiadou et al., 2015), the Fuzzy Logic-based modeling of the Quality of Interaction (FuzzyQoI) model (Dias and Diniz, 2013), the Fuzzy Cognitive Map-based modeling of the Quality of Interaction (FCM-QoI) model (Dias et al., 2015), and the emotion recognition process approach using EMOTIV EPOC Headset and EEG analysis (Petrantonakis, and Hadjileontiadis, 2015).

Next steps

Future always seems appealing and the briefly examined hybrid model could further be extended including, for instance, dynamic nonlinear analysis and affective computing, in order to contribute to the enrichment of the HEIs services and re-examination of educational policies/practices.

Continuing Education

Lourdes Guàrdia, Marcelo Maina, Federica Mancini & Hind Naaman

Open University of Catalonia, Spain

EPICA – Articulating skills for the workplace

Innovative impact

A new strategic partnership between Europe and Africa is bringing together universities, businesses, and organisations in pursuit of designing and implementing ePortfolios as reflective, professional, and transition tools which will enable students to showcase their graduate skills to a potential employer. Focus has been placed on students' ability to reflect on and articulate their skills acquisition, both in oral and written communication, as part of a micro-credentialisation and appraisal process. The outcome of this collaboration will help bridge the current gap between the fast-paced demands for new skills in the labour market, and the oftentimes slow pace of undergraduate programmes of study to meet these demands.

EPICA (Strategic Partnership for the Co-design of an Innovative and scalable ePortfolio ecosystem to improve the quality and visibility of skills)

Co-funded by the Horizon 2020 programme of the European Union

Introduction

Education needs to meet the demands of the workplace and provide the necessary skills and competences to foster local economies. However, an important mismatch exists between the skills of graduates and the ones that employers need for emerging economies. In this regard, the improvement of educational systems begins by questioning and updating the skills to be acquired throughout the learning path of the students. This article describes the contributions of the EPICA project to shorten employability skill-gap in Sub-Saharan Africa, and the implemented actions to improve the quality and relevance of skills development and visibility to prospective employers.

An overview of a specific eAssessment pedagogical framework and methodology supported by the EPICA e-Portfolio as a transition tool will be presented. This innovative e-Portfolio approach aims at supporting students in evaluating their knowledge, evolving their employability skills, and showcasing their work and accomplishments (Ornellas, Falkner, & Edman Stålbrandt, 2019).The EPICA competency-based ePortfolio ecosystem described in this article aims to have an impact in the EPICA stakeholder community and inspire the implementation of the proposed solution in other contexts, especially for those that ICT supports as blended and online learning models. In addition, the contribution of the EPICA project, led by ICDE, is to connect European and African universities, businesses and organizations, with the following main objectives:

-Supporting the educational institutions in transferring the needed knowledge and skills to students prior to entering the job market.
- Integrating an appraisal system based on digital credentials that supports transparency and recognition of students' employability skills, which will, therefore, facilitate their visibility for labour insertion and mobility.

Innovating ePortfolios

Focusing on the users' needs as the centre of all innovations, EPICA project aims at improving the existing ePortfolio, My Documenta ePortfolio, through involving end-users in the process of requirements elicitation, modification, implementation and validation. EPICA project intention is to concretize the educational outcomes by innovating the teaching and learning methods in educational institutions through providing the necessary guidelines and training to the teaching staff in

Comparable examples

EPICA methodology is a combination of successful initiatives for educational approaches to graduate skills.

Influenced by the University of Waterloo's UWaterloo curriculum vitae project- WatCV, EPICA urges students to prove their acquisition of employability skills through reflecting on different academic or non-academic work. Additionally, EPICA also implements the STAR interview technique that simulates structured replies to competency-focused questions. Following Deakin University's Professional Practice Credentials, EPICA has adapted the usage of professional evidence and video testimony for skilled workers to students' environment by promoting a variety of means including videos to showcase employability skills through learning experiences. Assessment authenticity, transferability, and reliability were ensured using the skills assessment rubrics of the Association of American Colleges and Universities (AACU) VALUE rubrics for most of the employability skills to be piloted.

order to implement the employability skills required in the labour market. The innovation process requires the collaboration of universities, students, and employers.

-Universities implement some good practices based on Competency-based approaches to allow the development and evaluation of Employability skills (Owens & Tibby, 2014). The role of educational institutions lies in integrating and committing to EPICA ePortfolio and assessment as part of the curriculum of any educational program.

-Students identify, compare and communicate their acquired skills throughout their formal, non-formal and informal learning in addition to their previous work experience. EPICA ePortfolio allows students to highlight their skills through including academic or non-academic evidence from different sources. Students will be able to show the comments and feedback from tutors and peers on their development along with their personal and professional capabilities.

-Employers provide feedback for skills' improvement, identify suitable profiles for hiring purposes, and ensure that the ePortfolio meets users' and market's needs. Students will be linked to employers to show their profiles and receive advice to improve their employability.

EPICA Competency-based ePortfolio combines Developmental and Showcase portfolios in one format that allows learning and assessment in addition to showcase and presentation. This combination is applied through integrating innovative technological features to EPICA ePortfolio to promote the recognition, validation and visibility of new skills. Such features include an interface through which the institutional staff could define, schedule and evaluate the competences to be acquired during studies thus facilitating the association between the students' work and these competences. There is a visual recognition system to grant students badges for their academic achievements, and a full mobile version to ensure portability.

EPortfolio requirements

In an attempt to achieve the targets of EPICA project and the quality and visibility of new skills, requirements elicitation procedure was planned to adapt EPICA ePortfolio to fit both project and users' necessities. The requirements obtained from the requirements elicitation process were categorized in different groups based on their degrees of priority and importance. Accompanied later by a 'Realism check' (Bilal et alt. 2016), a final list of requirements was created on the base of objectives and functionalities envisioned in EPICA competency-based ePortfolio for employability purposes.

The pedagogical requirements included necessities relevant to assessment and feedback, competence development, content organization, communication/collaboration and sharing, display progress, gathering and selecting information, reflection and self-regulation, in addition to reward. The employability requirements were put in different categories to provide accessibility for employers to check users' profiles, ensure communication and sharing between students and employers to gather recommendations, allow users to

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showcase particular skills and evidence for a specific job application, display progress visually to attract employers' attention, enable the personalization of candidate profile, present oneself through specific skills and information, autobiographies, and different formats of attachments, and allow the visibility of one's records and achievements. Regarding the functional requirements, they were either related to the general platform or specific features that would help in improving the manipulation of information and evidence.

EPICA ePortfolio Pilot

Having identified the end-users' requirements, a Pilot is currently conducted to test the EPICA ecosystem which implements a micro-credentialization and appraisal method to assist in the articulation and assessment of graduate employability skills. The effectiveness and validity of EPICA innovative model and methodological approach proposed will be assessed during and after the pilot in order to provide a future optimised version. The participants are local coordinators, faculty members, and students from different study programs at the Open University of Tanzania, Makerere University, Maseno University and the Open University of Catalonia with the support of AVU and ICWE. In addition, local employers with relevant experience in the different study areas are also involved as their feedback is necessary for students' appraisal. The pilot involves 14 teachers in general and around 100 to 150 students from each university. The programs delivery methods vary from face to face, to blended and online.

Conclusion

EPICA concept of employment-oriented ePortfolio is intended to decrease the skill gap between the educational system and labour market in Africa through allowing the incorporation of skills in the teaching and learning process and increasing the engagement of stakeholders in education. This project faces several implementation challenges that could hinder its successful application such as Africa's limited access to the internet, stable infrastructure, and the users' ICT skills and confidence. Nonetheless, the general evaluation of the end-users' usage and functionality of the platform was valued as positive, motivating the continuation of the project and the implementation of new requirements for improvement purposes. EPICA methodology and ePortfolio allow academic assessment by measuring whether a student has acquired the necessary competences to succeed in the credential process, and professional assessment by allowing employers to highlight the value of each acquired skill in the workplace.

Providing skill recognition evidence to promote visibility to qualifications and competences of African students, will positively affect their employability and mobility chances, the relation between educational institutions and alumni, and the socio-economic situation of Africa. In sum, developing relevant employability skills during higher education studies aims at decreasing the skill gap between educational institutions and the labour market.

Curriculum and Course Design

Hazel Church and Helen Cooke

The Open University, The United Kingdom

Innovative impact

The Open University's innovative module, *Making your learning count* (YXM130), adopts an 'Open Box' model. This allows students to supplement learning completed through Open Educational Resources (OER) with carefully designed module resources, leading to accreditation. The result is a personalised curriculum offer that allows the recognition of non-formal study for formal academic credit; provides an introduction for non-formal learners to higher education study; encourages ownership of learning; and allows personalised and flexible learning within, and across, different disciplines.

Not only is this particular module increasing in popularity with students, but the Open Box model has also been welcomed by institutional colleagues and external partners as a way of recognising prior online and experiential learning in order to meet the needs of specific cohorts of students, including those from widening participation backgrounds. The concept is also now being applied at different levels and has been developed further to introduce a postgraduate Open Box module.

'Open Box' modules: a personalised approach to curriculum design

Introduction

In October 2017, The Open University introduced a 30-credit introductory module to the multidisciplinary BA/BSc (Hons) Open degree, in response to student demand and an institutional quality assurance recommendation to introduce more interdisciplinary curriculum. This degree provides an opportunity for students to choose modules from a wide range of subject areas across the university's curriculum.

Bridging non-formal to formal learning

Through the format of an 'Open Box' model, Open Educational Resources (OERs) can provide an effective way of delivering the majority of module content by allowing students to gain credit for non-formal learning (Witthaus, 2016). Students can curate their own curriculum across a range of topics, which can be adapted to their own contexts. Students can also include short credit-bearing modules, non-accredited learning (NAL) modules and massive open online courses (MOOCs). This enables students to participate in higher education study in a low risk way, by moving from the completion of OERs to gaining credit, through following a programme of formal assessment.

Research undertaken at The Open University shows that this transition from non-formal to formal learning can have a positive impact on students as they progress through their studies (Law, 2019). OERs are particularly helpful to multidisciplinary Open degree students, as they provide direct experience of the subject matter (and of online learning) of modules they may wish to study at higher levels. This also provides them with an additional opportunity to demonstrate to employers the benefits of studying across different disciplines (Cooke et al., 2018).

Addressing the need for flexible pedagogies

In terms of adopting an Open Box model to structure module design, the approach taken should maximise the opportunities for flexibility, in terms of content choice, assessment, and ideally, when the student wishes to commence and complete their studies. Therefore, *Making your learning count* is structured around a series of topics that focus primarily on the development of key skills, irrespective of the subjects studied. As well as focusing on skills related to the development of students as an online distance learner, the module teaches students

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communication skills and the importance and process of assessment.

The concept of flexibility built into the Open Box model has informed pedagogic decisions during the curriculum design process for *Making your learning count*, especially around assessment, because the content of each student's learning is not defined by the university. For example, as the pace of each student's journey is unique, the aspiration in the assessment design for the module was to maximise flexibility around the timing and order of submission.

Using virtual learning environments (VLEs) to deliver an Open Box module also provides module teams with an opportunity to provide 'curated pathways' of digital content focussing on specific themes (e.g. climate change, nutrition and volunteering). In the case of *Making your learning count*, this meets The Open University's strategic objective to use non-formal learning within the formal curriculum, to identify ways in which curriculum can be developed to cater for different markets and to provide a potential solution for tailoring the module to meet the requirements of specific partnerships. Cannell (2016) supports this approach by stating that:

"Well-structured and supported materials can be designed to fill gaps in the complex pathways that learners experience before they enrol for a formal qualification. Open licensing allows tried and tested material to be contextualised for specific contexts and brought together to form supported pathways appropriate to particular groups of learners."

Another key area currently being explored further by the *Making your learning count* module team is the recognition of prior experiential learning that may provide opportunities for a wider range of flexible and personalised curriculum to be designed-in to the curriculum, in collaboration with internal and external partners. For example, a cohort of students currently studying the module as part of an employer-sponsored degree programme have been permitted to count an agreed amount of learning hours gained from their work-based management training programme towards the module.

Applying innovative approaches to assessment

The Open Box model encourages an innovative and well-planned patchwork approach to assessment (Jones-Devitt et al., 2016), which ensures that students on the module are not only assessed to enable accreditation of their learning, but that assessment itself is seen as a learning process. For example, in addition to two formal assessment tasks at the start and end of *Making your learning count*, there is an informal assessment task at the end of each topic to consolidate learning and allow tutor feedback and support. Technology, including the use of VLE tools, also offers new opportunities to enhance assessment practices, including the facilitation of feedback dialogue

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and improvements to the marking process. OU-designed assessment tools enable *Making your learning count* students to submit all assessment tasks online, allowing the tutor and module team to automatically track and record student engagement without the need for manual recording of this information. The *Making your learning count* module team were also keen to ensure that peer assessment was included in the assessment strategy for the module, so that students were given opportunities to engage in and develop their skills in peer review and self-assessment by commenting on, and evaluating, each other's work (Chetwynd et al, 2013; Langan and Wheater, 2003). As a result, students are asked to share their outputs for two of the seven assessment tasks on a collaborative, content-sharing VLE space, and are encouraged to provide feedback on other students' contributions.

Breaking down discipline boundaries

Although the Open Box model can be adapted to suit a variety of student cohorts, partnership opportunities and specific disciplines, *Making your learning count* was originally designed in response to the recognition that the provision of interdisciplinary learning and teaching is becoming increasingly relevant for institutions to prepare students for a changing world (Department for Education, 2017; Lyall et al, 2015; UKCES, 2014).   As stated by Hannon et al (2018): *"The move to break down traditional disciplinary boundaries reflects emerging forms of enquiry into knowledge that are less hegemonic and more distributed, and more tuned to its production, practices and the needs of its practitioners."* Again, due to the flexibility provided by the Open Box model, *Making your learning count* students are provided with an opportunity to draw on, and apply, knowledge and skills developed across multiple subjects and platforms. In addition, students are encouraged to explore and articulate how different areas of knowledge can be combined, whilst recognising the differences between disciplines in terms of style and language.

Conclusion

The introduction of *Making your learning count* has demonstrated that flexible pedagogies can be 'designed-in' to the learning experience, driven by a desire to empower learners who are choosing to study in an interdisciplinary way. This is achieved by allowing students to learn in way that they can connect their own and others' experiences of learning through guided activities and reflection (Butcher and Marr, 2018).

As a result, the module has also provided an effective solution to test the application of innovative technologies and provides an opportunity to expand the platforms from which students can choose to study their required hours of learning. This includes other types of 'flexible learning' such as classroom- and employer-based learning. The challenge is to ensure that institutions are enabled to create policies and practices to accelerate the transformations required to contribute to, and benefit from, the global movement of OER provision to make this possible (McGill et al., 2013).

Frederik Truyen

KU Leuven, Belgium

Co-designing educational content with the professional sector: developing a MOOC for Cultural Heritage in the Europeana Context

Innovative impact

The MOOC "Creating Digital Heritage Communities" has been launched on March, 25th 2020 and will be run yearly. It is a self-paced MOOC that addresses how Cultural Heritage Institutions and researchers can use the Digital to engage citizens and learners to collaboratively develop high quality collections. It is an innovative way to make distance education more collaborative.

MOOCs offer an interesting way to develop and share knowledge together with stakeholders in the field of research. The move to online education holds the promise to lead to a more participatory approach, where players in the fields as well as stakeholders and amateurs can contribute to scientific research and higher education. MOOCs are not only content, they are in reality creating people communities around subjects, in the end sharing knowledge creation and dissemination responsibilities among all those involved and affected.

Introduction

In this paper, we will discuss how we developed the MOOC: "Creating a Digital Heritage Community", hosted on KULeuvenX: https://www.edx.org/school/kuleuvenx with consortia including University researchers, Cultural Heritage Institutions, Tech companies and digitalisation experts.

Co-designing educational content has multiple advantages to be able to offer state-of-the-art knowledge that is adapted to specific professional and education needs. In the paper we present how such collaborations can be setup and what the best strategies are to build content with contributions from outside academia.

The need for collaboration

In an ever more connected world, it is no longer the case that scientific research takes place in one corner, then gets translated into education in another, and that libraries, archives and publishers do their work independent from the humanities scholar. In fact, digital collections, and specifically those in Open Access, allow researchers to scan much more easily through thousands of sources and research papers, making their research more efficient, but also taking into account more perspectives and viewpoints than what was possible before.

A typical example is research of Art or Cultural Heritage collections. The researcher is reliant on the work at the libraries, archives and museums holding the source data. In the past, often a scholar would work in residence at such an institution to study a collection, painstakingly sifting through the institutional catalogue. The digitisation changed all this: professionals digitise entire collections, which become available for study through large databases. In Europeana e.g., we aggregate content from over 3000 Culture Heritage institutions in Europe. These materials are digitised to the highest standards and foreseen of metadata by professional cataloguers. However, there is an issue: While many of the object descriptions are performed by (Art) Historians, depending on the object in question, whether it is a painting, book, manuscript, photograph or a legal document, it needs expert knowledge to correctly attribute terms that would allow swift retrieval. So sometimes the archivist doesn't have the right background to really capture the rich metadata that an object requires. Conversely, many archivists are better trained in the diversity of documents and their purpose than an average historian.

Comparable examples

The MOOC:
https://www.edx.org/course/creating-a-digital-cultural-heritage-community

CrowdHeritage:
https://crowdheritage.eu/en

CultureMoves:
https://culturemoves.eu/

Riches Project:
https://www.riches-project.eu/

Teaching with Europeana:
https://teachwitheuropeana.eun.org/

Blue Skies, Red Panic exhibition:
https://www.europeana.eu/en/exhibitions/blue-skies-red-panic

Europeana Education Community:
https://pro.europeana.eu/page/europeana-education

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So they know of collections and a typology of documents that might be relevant to the historical researcher, while the researcher would lack precisely this key knowledge. This is why collaboration, at this inter-professional level, is key in any digitisation strategy.

It becomes even more problematic, when we open those collections, as we should, to the general public. This public is certainly not acquainted with the right terminology and would be lost in finding the documents of interest. But it goes further than that. Research questions as well as public interest evolves over time, and new topics emerge, that would be helpful to classify the heritage objects. For example, we would like to have more pointers about gender in historical collections or use a different terminology today to describe issues of migration. In other cases, it are members of the general public who, given their unique history, hobby of career, have the required knowledge to exactly identify the source documents and/or objects. Think about old industrial machinery or specific sports gear.

So, the modern day academic work in Cultural heritage can only be performed in a new collaboration between all these players.

Open Content, Open Access

It is a circle that starts with Open Content and ends with Open Access. When Libraries, Archives and Museums start publishing their contents in digital form as Open Content, with as much as possible public licenses, like we do in Europeana, it entails a high demand in higher quality metadata – the descriptions of this content that allow for easy retrieval. It means good identification of place, date, involved persons, but it also means transcriptions of texts and translations of keywords in many languages. This is the field where researchers are essential. But then again, suppose that we correctly, as we did in Europeana Photography, label an encased glass negative as being an ambrotype produced by a wet collodion process. We have many thousands of these in Europeana. But how many users would be able to find these collections? Would they know that it is a vintage photographic process that was highly popular during the American civil war and could be a good source for historical evidence on that period? There is a layer of information that needs to be added, depending on the questions that people have. A history teacher might be looking for old photographs from then civil war period, without being aware of these key details.

Kaleidoscope

In kaleidoscope: the 1950's in Europe, a project funded under the CEF Generic services, we are exploring user engagement with photographic heritage of the Fifties, in collections from both East and West, but also North and South of Europe.

Mixing existing collections of Europeana with hitherto unpublished material, we are able to offer an alternative, more balanced picture of photography in the Fifties than the canonized tradition, which was highly influenced by Magnum Photo and World Press Photo in times when access to the countries in the Soviet sphere of influence was dire. It allows to build a more diverse, nuanced view of the Fifties that

Empowering Universities, (44-46). Maastricht: EADTU. ISBN: 978-90-79730-27-8.

Truyen, F. (2017). MOOCs, Open Access repositories: new ways to embed learning in professional networks. In: G. Ubachs (Eds.), *Higher Education for the Future; "Accelerating and Strengthening Innovation"*, (226-235). Presented at the OOFHEC2017 The Online, Open and Flexible Higher Education Conference., Milton Keynes, 25 Oct 2017-27 Oct 2017. ISBN: 978-90-79730-29-2.

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goes beyond iconic images of Marylin Monroe and the typical Vespa.

What we are looking at in this project is the "visual image of the 50ties". We try to find patterns in visual properties of fashion, lifestyle, colours, gender relations, social behaviour, architecture, industry, consumer goods, cars, etc.

We had a double approach: in a specific workshop format with experts, we tried to identify patterns based on human expertise. This allowed us to create test datasets, on which we applied deep learning algorithms to see whether we could learn the software to detect similarities between images. This has been used to suggest annotations to the images, that then can be verified through crowdsourcing, for which we used the WITHCrowd tool: https://withcrowd.eu/en, which is also used in the CrowdHeritage project: https://crowdheritage.eu/en. If you want to create your own datasets on Europeana collections, to share selections with students, you can use the WITH environment, e.g. on the Kaleidoscope project portal: http://fifties.withculture.eu/home.

Anyone can register, search Europeana and the collections, upload their own images and make small collections with annotations and stories. This way, you can, as a university teacher, work with your students on specific themes, while at the same time, through these activities, help the Heritage Institutions who provide the collections to improve their metadata.

The MOOC

The MOOC was made in a partnership between two projects, Kaleidoscope and CultureMoves. Content was provided by two universities, KU Leuven and Coventry University, and Several Cultural Heritage Institutions, such as KIK-IRPA in Belgium, CRDI in Girona, and the Photo Agency TopFoto in the UK. It has modules on User Engagement, Photography, Museums and Dance. Both academic as well as professional expertise is shared, and the user interactions involve tools such as WITHculture, where learners can search heritage collections to build their own stories and galleries, WITHCrowd, where learners can annotate collections, MovesCollect and MovesScrapbook, which allow people to annotate dance performances. The MOOC is hosted on the edX platform and allows for free registration, but also offers a (paid) certification track.

Conclusion

MOOCs allow universities to create content together with professional organisations from the field of interest, and engage students, stakeholders and the general public to contribute. In this example of the Kaleidoscope MOOC, universities worked together with professionals from Photography and Dance, and engaged the public through curation activities and crowdsourcing. It is a good example of how Open Content from heritage institutions goes hand in hand with Open Access Research and Open Education. The Europeana Education Community is open to further collaboration with EADTU and its members on this kind of MOOC developments.

Karen Foley and Liz Marr

The Open University, The United Kingdom

Innovative impact

The short-term impact of attending an online study skill workshop is that students develop their academic skills through application of the concept in large and small groups. The secondary, but more important impact in terms of retention, is that students feel connected to the institution and to each other. This sense of belonging is important to student success and satisfaction.

The study skills workshops in themselves are not a new idea but the way that they are facilitated online is innovative. Typically, many online learning opportunities that involve several hundred participants are didactic in nature, and while some interactivity can be present it is rare to see this integrated into a live session. However, this is an important way that a group can learn together: applying and individually consolidating each skill in a community of practice through a four-stage structure.

The long-term innovative impact of this project is that community is being developed and this is seen as supportive to those involved. Typically, 50% of participants have previously attended an event, and participants report a benefit in learning together.

Online, extracurricular skills workshops for distance learning students to develop skills and facilitate belonging to an academic community

Introduction

Belonging to an academic community is important in terms of student satisfaction and success (Trowler, 2010), however many of the behaviours associated with belonging to a community involve real time interaction, often in face to face contexts. In flexible distance learning contexts, where the student body is a diverse population and when study is often part-time and concurrent with many other commitments, opportunities for students to connect with each other and the institution can be challenging. It is therefore unsurprising that online learners consistently report a greater sense of isolation than on campus students (Bartlett, 2008). Student Hub Live (SHL) is the Open University UK's (OUUK's) live, online, interactive platform that offers Open University (OU) students a regular program of events to connect with members of staff and other students. There are a range of SHL formats, but this article will focus on study skills workshops which are one format that consolidate specific study skills or offer targeted interventions. This idea is relevant to institutions who want to develop online spaces to facilitate community and/or to supplement core academic skills in online environments.

SHL study skills workshops

SHL study skills workshops focus on developing one key skill per session and are an hour in length. They are held in an online room, Adobe Connect, the current platform for OU tutorial delivery. The workshops are extracurricular and are for any OU student, at any level. Since they are non-discipline specific, everyday scenarios are used to support teaching points which also ensures that no preparation from students is needed. The skills that are the focus of sessions include academic writing, essay planning, critical thinking, and time management. One student explains "Student Hub Live events help me, and everyone who attends them, become a better student. Every session I attend, I come away with another handy tip or useful idea." (AW, English Literature student). In addition to theoretical content, behavioural and emotional aspects are also included, and student contributions are an important part of the learning design. The workshop is divided into four main parts:

Comparable examples

The other format of SHL events, studio broadcasts, offer comparison in terms of live interactive online events. Theses 'show and tell' OU students about the university and also offer advice about study skills. These are available to watch on catch up and can be accessed from the SHL website

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Vygotsky, L. (1978). Interaction between learning and development. Readings on the development of children, 23(3), 34-41.

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1. Taught component, largely theoretical with examples

2. Anonymous and broad activities to apply the idea in a group context using polls and multi-choice questions

3. Small group discussions using microphones and also chat

4. The workshop ends with a combined large group plenary.

Students can participate as actively or passively as they choose to and there are no compulsory requirements.

These are relatively large group sessions with typically up to 200 students attending. Because of limitations with breakout rooms in which small group sessions are held, events are ticketed to manage capacity.

Using a range of interactive features such as multi-choice questions, short answer polls and general discussion in the chat, students can participate actively, and both contribute ideas which often validates their experiences, or can take ideas from others that may work for them.


Image: The study skills workshops online room (from left) anonymous polls, teaching slides and downloadable slides, main chat, participants list.

Community and communities of practice

Communities can be seen as more than a group of people, and time and space are not defining factors. Instead, values, tasks and practices are important, and the role that these aspects play in learning is important. In a review of socio-emotional connections in online learning, identity, belonging and community are established as three interconnected factors (Delahunty et.al 2013). Transferring pedagogic concepts from face-to-face to online environments requires consideration of how aspects such as participation are performed and measured. Sociocultural perspectives on learning are based on participatory dialogue to develop new understandings (Vygotsky, 1978), whereas communities of practice are based on a purpose for the community and shared practices (Wenger, 2000). The values and socially constructed sense of community is important, but the

leadership matters also in a learning context. The community of inquiry framework (Garrison and Arbaugh, 2007) places value on teaching presence, and Wenger also argues that leadership is important.

Facilitating belonging and community and the impact on retention

SHL study skills workshops take an approach that is framed as informal and accessible. While some material is presented, most of the session is based on collectively developing an understanding of ideas. Students do this through text-based participation in addition to the interactive aspects already outlined. This discussion and chat serves a purpose, as one student explains; "I love the live sessions. It makes me feel like I am in a student bar chatting with friends". (EB, Engineering student). At the end of each session, the impact of learning is evaluated through a range of polls. Students are asked about what they will take away from the session and they are also asked which components they found most useful. While the 'tutor led explanation' option commonly received the highest proportion of votes, 'discussion activity, chance to read others ideas' is commonly second, followed by 'discussion activity, chance to suggest own ideas'. This demonstrates how important feedback from others can be.

Key learnings: Facilitating community in large group, online spaces

Recommended time: 1 hour. Learning design could include a taught component, broad application, specific application and discussion and plenary. Controlling the start time and using welcome notices is a helpful way to manage the session and welcome participants. Using a minimum of two moderators/presenters allows one to focus on presenting the content and the other moderating the discussion and controlling the polls and interactive aspects. Controlling the environment and limiting functionality (such as private chat) limits interventions and manages expectations. Using anonymous polls enables people to contribute and receive validation for the points they raise. Multi-choice questions combined with short answers enable all willing participants to contribute. Frequent and regular opportunities for interaction enable participants to retain focus and engage throughout the session. Microphones are reserved for small group discussions which are limited to 10 minutes. When using breakout rooms (small group discussions) it is important to explain the task and re-present it in the new room. The transition between virtual spaces can lead to a disjuncture and it is important to manage this transition with clear instructions. In order to have a successful plenary, encourage groups to nominate one person to capture notes and feedback on group discussions.

Conclusion

Supplementing learning with extracurricular events such as these offers students an enjoyable informal environment to catch up on or refine skills which can enable them to improve their grades and to become more confident learners. They also help to establish a sense of community and connection to the institution, in a low resource and cost-effective way. Developing skills and involving students in a community have been identified as important elements in student satisfaction and success. While SHL sessions may be complex in terms of interactivity, the concept can be replicated in a range of synchronous online places.

Rozita Tsoni[1],
Evgenia Paxinou[1],
Elias C. Stavropoulos[1],
Christos T.
Panagiotakopoulos[2],
and Vassilios S. Verykios[1]

[1]
 Hellenic Open University,
GREECE, [2]University of
Patras, GREECE

Looking under the hood of students' collaboration networks in distance learning

Innovative impact

Students' communities in a distance learning course interact, communicate and collaborate mostly via discussion fora, or through other forms of computer supported collaborative instruments. Polarity and sentiment analysis can focus on a person and analyze his stand through the feeling underlying certain actions, while social network analysis can explain behaviors beyond individual actions. Forum posts for example, characterized by the sentiment they carry, can form positive, negative or neutral communication networks accordingly. The combination of sentiment and social network analysis could become a promising approach for revealing personal traits within the context of the social behavior that is demonstrated in peer interaction. This combination has already begun to be explored, however, there is a significant potential yet to be unleashed, concerning the dynamics of students' interaction. The creation of inner cliques, the leadership roles that some students take on, or local concentrations of peer interaction groups changing over time, are some of the characteristics that can emerge. This knowledge can enable tutors to motivate, reinforce, and support their students in a more targeted and effective way.

Introduction

It is highly recognised that the collaboration of Humanities, Social Sciences and Data Science in an interdisciplinary approach, can contribute significantly to the educational field. The results of educational data analysis could make an important impact only inside a domain-specific framework and only as long as they are embedded in an organized, holistic institutional approach (Tsoni, Stavropoulos & Verykios, 2019). Learning Analytics relies on different forms of data, automatically generated in these venues to gain insight to bridge the spatial and temporal gap between tutors and learners. Polarity and sentiment analysis on one hand, can focus on a person and analyze his/her stand through the feeling underlying certain actions, while social network analysis can explain behaviors beyond individual actions. The combination of sentiment and social network analysis could become a promising approach for revealing personal traits within the context of the social behavior that is demonstrated in peer interaction. This combination has already begun to be explored, and bears fruits in a variety of fields. However, there is a significant potential yet to be unleashed concerning the dynamic of students' interaction.

Metrics can be important for drawing conclusions. Traxler, Gavrin, & Lindell, (2018) mentioned that central network positions are positively linked with course success and highlighted that centrality is a more reliable indicator of grade than non-network measures, such as post counts. In addition, Crossley et al., (2017) proposed the use of Cohesion Network Analysis indices, to develop more actionable automated signals of student's success. Sentiment and network analysis, and its results, can transform the way leaders make decisions. While the influence of decisions flows from top to base, i.e. from a small number of tutors to a large number of learners, the influence of information flows from learners to tutors. Consequently, data collection and their transformation to information and eventually, to field knowledge, affects the efficiency of these decisions that go back to the learners in an ever-ending loop of actions and reactions. This indicates that a new leadership model is needed: *"A new way to think about leadership could be that leadership is a process of developing a knowledge network and making connections to create collective influence"* (Corbett & Spinello, 2020).

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Work in progress

Our work is focused on educational data collected from the virtual learning environments of the Hellenic Open University and aims to transform available information into actionable knowledge. Previous work (Gkontzis et al., 2017a; Gkontzis et al., 2017b; Verykios & Stavropoulos, 2018; Tsoni et al., 2019; Tsoni & Verykios, 2019) has moved focus from login counts to deeper understating of students' and tutors' behaviour. Our research questions mainly concern the following issues.

Positive and Negative contribution

The content of the messages influences the type and the effectiveness of the communication and interaction between students and tutors and among peers. Thus, sentiment analysis of the messages combined with network visualization is useful for providing a more thorough view to each participant's contribution. In neutral posts (Fig. 1), there are some clustering centres in which instructors lead. Interestingly, positive posts have a large inclusive centre where students are shown to play a central role creating a positive climate in conversations. Negative posts do not cluster around a topic, which indicates that students did not negatively deal with a major or unresolved issue.

Figure 1. Students' networks filtered by polarity (positive, negative and neutral accordingly)

Identifying roles to support interaction

Combining polarity with indices from graph theory, like centrality and degree, we can identify students with typical behaviour and act towards their support and encouragement. For example, students whose polarity changes easily depending on the situation, could be concidered as the "average voice" that reflects students' general feeling. Additionally, a highly active student with positive attitude can empower his peers and provide motivation and support. This information could help tutors to encourage helpful behavior and boost confidence amongst the group of peers. There are, also, some active students that express exclusively negative feelings. Then, tutors should seek personal communication with these students to discover the reasons for their general dissatisfaction or their negative attitude.

Networks over time

Students, in a setting where participation gains no grading reward, interact to express feelings, to ask questions or to state an opinion. Their posts over time, follow a descending pattern in "waves" (Fig. 2). Peaks are emerging around the written assignment deadlines. The same pattern appears in nodes' average centrality, indicating the significance of students' collaboration to complete a certain task.

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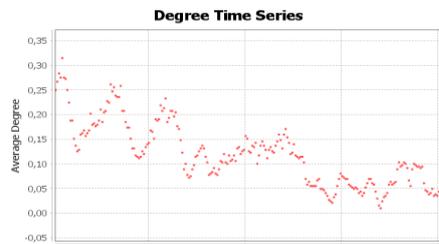
Figure 2. Temporal progression of the average degree

The visualization of forum activity reveals the temporal aspect of participants' interaction. Five different distinct networks represent the different courses of the curriculum. The color of each edge represents the polarity of the message (blue for positive, red for negative and green for neutral messages). Modularity class is represented by the color of the nodes and indicates the group that students belong to. Obvious structural differences are emerging between fora of different courses. First year courses present lower average degree and graph density than second year courses. Furthermore, students tend to be devoted to their own group and hardly interact with students from other groups while, in second year courses, the students' interaction goes beyond their group and includes almost all of their peers. This result is confirmed by relevant metrics. The modularity of the network created by the participants of the first-year course PLS50 (0.716), is significantly higher than the modularity of the second-year course PLS60 (0.489), indicating the lower tendency of the network to decompose into modular communities (Fig. 3 and Fig. 4, accordingly).
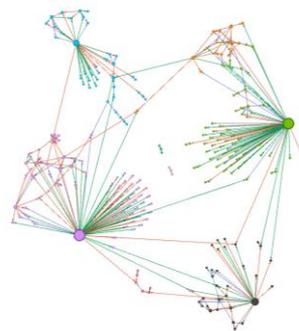

Figure 3. PLS50 Course   Figure 4. PLS60 Course
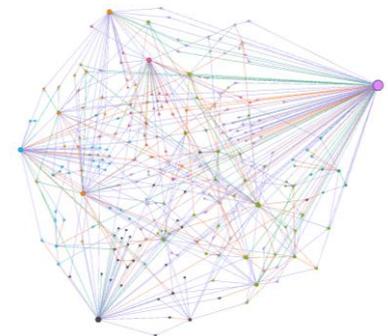
Where does it lead?

Advanced techniques and powerful tools are available while, a vast amount of data from online interaction is accumulated in databases. An integrated methodology is the missing link to bind these assets, in order to construct a realistic virtual presence in distance teaching and learning.

Alessandra Antonaci

EADTU, The Netherlands

The GaDeP for meaningful Gamification

Innovative impact

This contribution is directed to instructional designer, gamification designer, teachers, as well as researcher interested in making their learning materials and courses more engaging via the use of gamification.

It offers a framework, GaDeP, the gamification Design Process, that can be used to conceptualize, implement and evaluate meaningful gamification.

Introduction

"Gamification, the use of game design elements in non-game contexts", is an increasingly popular strategy for rising user engagement with interactive systems. "Despite its growth as a practice and research field, there is still relatively little reliable guidance on how to design gamified" interventions (Deterding, Sebastian, 2017). When searching for 'gamification' on Google Scholar, the number of records available are 97,300[1], as a matter of fact, gamification has gathered attention in several domains: marketing, trading, healthy apps and fitness, software engineering, education and many others.

Despite its recent application its origins date back quite a while. The first use of gamification happened in 1912 when the American Cracker Jack, a popcorn brand, included free surprise toys in its packets as a marketing idea (Nepal et al., 2015). The scout movement (1910) with their 'ranks' and 'badges' assigned to children for their achievements, has also been recognised as a form of gamification in education (Nepal et al., 2015; Pelling, Nick, 2011). In the academic field, the first publication on the topic of gamification can be attributed to Thomas Malone, dating back to the 1980s (Pelling, Nick, 2011). Nonetheless, the term gamification itself is quite recent. In 2002, Nick Pelling, a British game developer, coined and used it to describe his idea of enhancing the enjoyability and the speed of "electronic transactions" with "game-like accelerated user interface design" (Pelling, Nick, 2011). Although, an often cited definition of gamification has been elaborated by Deterding et al. (2011) who referred to it as "the use of game design elements in non-game contexts" (Deterding et al., 2011, p.10). Gamification is known for having motivational potential, offering engaging approaches and strategies to increase users' participation. However, there are still some confusions in relation to the short, medium and long term effects of gamification. In particular as far as the educational field is concerned, the benefits of gamification still need to be proven (Dicheva and Dichev, 2015). Besides this, generalisation is also an issue considering the fact that gamification "effects are greatly dependent on the context in which the gamification is being implemented, as well as on the users using it" (Hamari et al., 2014, p.3025). Likewise, taking into consideration the following definition of gamification, i.e. the application of design elements belonging to games to a non-game scenario (Deterding et al., 2011) with the aim of creating an effect, for instance solving the problem typical of the application scenario or generating a change in the users' behaviour. It becomes clear how much the design of gamification is relative: it depends on the context (of application and its characteristics); the problem that needs to be addressed with the gamified intervention; the target audience to be addressed and the

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desirable effects. Consequently, a single gamification design cannot be suitable for all situations.

The Gamification Design Process- GaDeP

Despite the fact that gamification design is relative, there are general rules applicable, independent of the context. These are represented in the GaDeP- the gamification design process, inspired by the engineering design cycle applied to STEM education (Advancement Courses, 2015). GaDeP, consists of six consecutive phases:

1. *Analysis of the application scenario*, that implies acquiring an overall understanding of the characteristics, potentials, drawbacks, and features relative to the context in which gamification needs to be applied.

2. *Problem definition*, consists in "specifying an issue to study, developing a justification for studying it [...]" (Creswell, 2002, p.621). This phase requires to focus on the issue identify to better understand its characteristics and how to address it.

3. *Theoretical framework*, its connected to the problem the gamification design aims to contain, and in general, the theories underpinning the study help to explain the problem (Lederman, 2015). A the same time, in a gamification design process the theories of reference are also the base and the starting point to select and design the game elements.

4. *Game elements selection*, as strategy for identifying the most suitable game elements, it is important to research best practices, as well as to refer to game elements collections. The authors adopted Björk and Holopainen (2005).

5. *Design and implementation*, the game elements chosen need to be conceptualised, designed and implemented in a way that suits the purpose of the interventions, the user experience, the application scenario and the logic specified in the theoretical framework.

6. *Evaluation*. The evaluation phase aims to measure the effect of the intervention. Therefore, it can be planned in different steps: pre-intervention, in itinere (during) and post-intervention. The results of the evaluation phase can be the start of a new cycle. For further details on the GaDeP check Antonaci, A. et al. (2018) and Antonaci, A. (2019).

Why GaDeP

Gamification, in many fields, has been identified as the strategy that could solve any problem. Others deemed it to be the method to be pursued in order to make activities fun by adding points, badges and leaderboards. Despite these predictions, gamification is neither of the two. In business, training as well as in education the interest for gamification is growing exponentially, however as Burke (2014) reports, up to now gamification from the 'peak of inflated expectations' is heading towards the 'trough of disillusionment'. This is most likely a consequence of what happened in the past years, when

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gamification was seen, presented, and sold as the solution to many corporate or educational pitfalls. "There are limits to what can be achieved with gamification" (Burke, 2014, p.8). As a consequence, from both the corporate-marketing and the research-academic fields comes the urge of more *meaningful* gamification.

GaDeP is a response to that request. Via GaDeP a simple method has been elaborated to design meaningful and thoughtful gamification. GaDeP highlights the importance of the analysis of the 'application scenario' and the understanding of its peculiarities, and also stresses the need of 'theories', a theoretical framework of reference that can enable both a better understanding of the 'problems' to be targeted and can inspire design choices. Furthermore, by introducing the Game Design Patterns (GDP) approach to gamification and in particular in the 'game elements design and selection', GaDeP launches a new strategy to make aware design choices.

"Gamification can play an important role in implementing change by defining a clear transformation path with simple steps and encouragement along the way" (Burke, 2014, p.58). These behaviour changes can be related and they impact the personal sphere of an individual, such as changing unhealthy habits (an example in this sense is Nike+ App[2]) or more global, by contributing to the awareness of the problem of climate changes (an example in this sense is the ClimateKids programme developed by NASA[3] or the gamified web platform SaveOhno.org[4]). As a consequence, the implications for gamification based on the research presented here are manifold and can be related not only to education, corporate training but also to the real-world setting, starting from our daily life.

Gamification is a suitable strategy for face-to-face, blended and online learning scenarios; however, the development of modern and more affordable technologies opens the doors to new development and application perspectives. Furthermore, the way in which we interact with technology is changing and will change with its development. Devices are more and more connected and enable us to connect to each other. As a consequence, the amount of data produced are also an important factor for gamification. Data can be used to create feedback loops directed to both the users and the designers as well. The connectivity however is not only related to the Internet: we are connected via technology and this generates interaction with others, e.g. social phenomena as Facebook. Thanks to online social connectors such as Facebook, gamification can augment its effects and potentials. In Antonaci, A. et al., (2019b) the importance of the 'social' factor for gamification was highlighted and it will most likely continue to play a role in its future. The simplicity of GaDeP is its strength, it can be applied in several fields and by people with very different backgrounds. To design gamification there is no need to be a programmer or a game designer. Gamification, as remarked in this research, is multidisciplinary and can be approached from different angles, such as education.

[1]The search was done on April, 6th, 2020, without any filter on title and excluding patents
[2] https://www.reallygoodux.io/blog/nike-run-club-gamification
[3] https://climatekids.nasa.gov
[4] https://www.kickstarter.com/projects/136597581/saveohnoorg

Ormond Simpson

Independent distance education consultant, The United Kingdom

Working out the Workload

Innovative impact

For individual students:
One spin-off of the tool may be to enable students to make better decisions about initial module choice which will enhance their retention chances. It may also enable them to compare workloads between individual blocks in a course module in order to plan ahead. One other thing my students told me was that it wasn't just the total workload of a module – it was the way it varied between parts of the course. As one of them said, "I was just about managing until I got to Block 3, but that was so much more work than the previous blocks that it just blew me away".

For distance and online institutions:
Just as importantly might be the Tool's relevance to the European Qualifications Framework (EQF). The EQF is a common European reference framework which links countries' qualifications systems together, acting as a translation device to make qualifications more readable and understandable across different countries and systems in Europe. It has two principal aims: to promote citizens' mobility between countries and to facilitate their lifelong learning. If the tool can be applied to blended modules from different providers from around Europe it might make qualifications from those different providers more easily comparable and interchangeable.

Introduction

It appears that the most common reasons that distance and online students give for failure or withdrawal are related to time (Simpson, 2013). This can be due to increased pressures at work or home or illness, but ultimately the main reason that distance and online students give for dropping out of the courses is that they found their study workload too great for their circumstances at some particular time. Assessing potential workload in any course can be very difficult. To take an example from my own experience, the last u/g course module that I taught at the UKOU was a 30 credit point module 'The Technology of Music'. It was full of fascinating material about how music was digitised, how opera singers sang and how MP3's worked. It was - initially at least - very popular with students.

But that was initially. It became apparent as the module went on that it was heavily overloaded. Students started dropping out at a very high rate. The main reason they gave was that they had run out of time to study. The workload in the module was just too great. So in the end someone took the painful decision to take it off and bring much the same course back as a 60 credit point module – all at a considerable cost, rumoured by some tutors to be anything up to a half a million pounds or so (no detail was ever released).

'Course Team Exuberance Syndrome'

What some course tutors thought had happened was that it had become a victim of 'Course Team Exuberance Syndrome'. This happens when a course team of authors, commendably enthusiastic about their new course, can't help throwing in everything that takes their fancy. In this case I imagine that at a course team meeting someone said something like "You know the history of how music manuscript is made is quite fascinating. We ought to have something about that." And in it went along with other equally fascinating stuff until the workload in the course became unfeasible.

The challenge of assessing student workload in online courses

But the problem of correctly assessing student workload is an understandable one which has been exacerbated by the advent of online material. In the days of printed courses it was possible to make a reasonable assumption about workload and word length – 30,000 words could be equivalent to 15 hours of study for example. But when an online course contains videos, audios, web links, forums and other internet content how do you assess just how much time it

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will take a student to study the course?

The 'Student Workload Tool'

Since 2016 the UKOU has been developing a 'Student Workload Tool' which estimates the student workload for any module by looking at the various components in a module and assessing how long they should take. For example the Tool suggests the following rage of study speeds according to the level of difficulty of the text:

- 20 words per minute (wpm) for extremely challenging - e.g. mathematical equation-rich text or for complex musical scores

- 35 wpm for challenging and concept-dense texts

- 70 wpm for medium texts

- 120 wpm for easy texts and

- 200 wpm for scanning texts - e.g. reading novels or skim reading other materials.

In addition to this, other material can also be assessed for study time as in this table:

Material type	Number of minutes allowed as a multiplier of occurrences
Visual images (illustrative)	2
Visual images (wall paper only)	0
Tables	5
Figures	5
Equations	5
Listening to Audio	2
Watching Video	2

Take as an example a 7000 word module with five tables, three images, four figures and three videos of ten minutes each, then the total study time is shown in the table below:

Material	Occurrences	Time	Study time total
Text	7000 words	7000/35	200 study minutes
Visual images	3	3x2	6 mins
Tables	5	5x5	25 mins
Figures	4	4x5	20 mins
Videos	3	3x2x10	60 mins
Total study time			**5 hrs 11 mins**

The tool is much more complex than this simple calculation suggests, with additional allowances for:

1. 'Student Directed workload' - work not specifically in the module but which a student might pursue such as reading around the subject, and

2. 'Studentship' – work around organising study such as learning to use the UKOU VLE.

The allowances are calculated as a proportion of the basic load to the (student directed + studentship hours). Assignment workload is assessed separately.

Conclusion

The workload tool is part of the OU's 'Online Learning Design Tools' which are currently being redeveloped and which will bring together all the workload and pedagogical design data for OU modules. The work is being led by Jitse van Ameijde of Learner and Discovery Services at the UKOU. The next aim is to develop an automated workload tool that can automatically analyse structured content documents and produce the relevant workload calculations, so making it possible to map a module in a matter of hours rather than days. This will make it very simple to modify materials as they are written rather than through later testing. Or, as in my experience with my Technology of Music' course, when negative student feedback and high dropout required extensive and expensive rewriting.
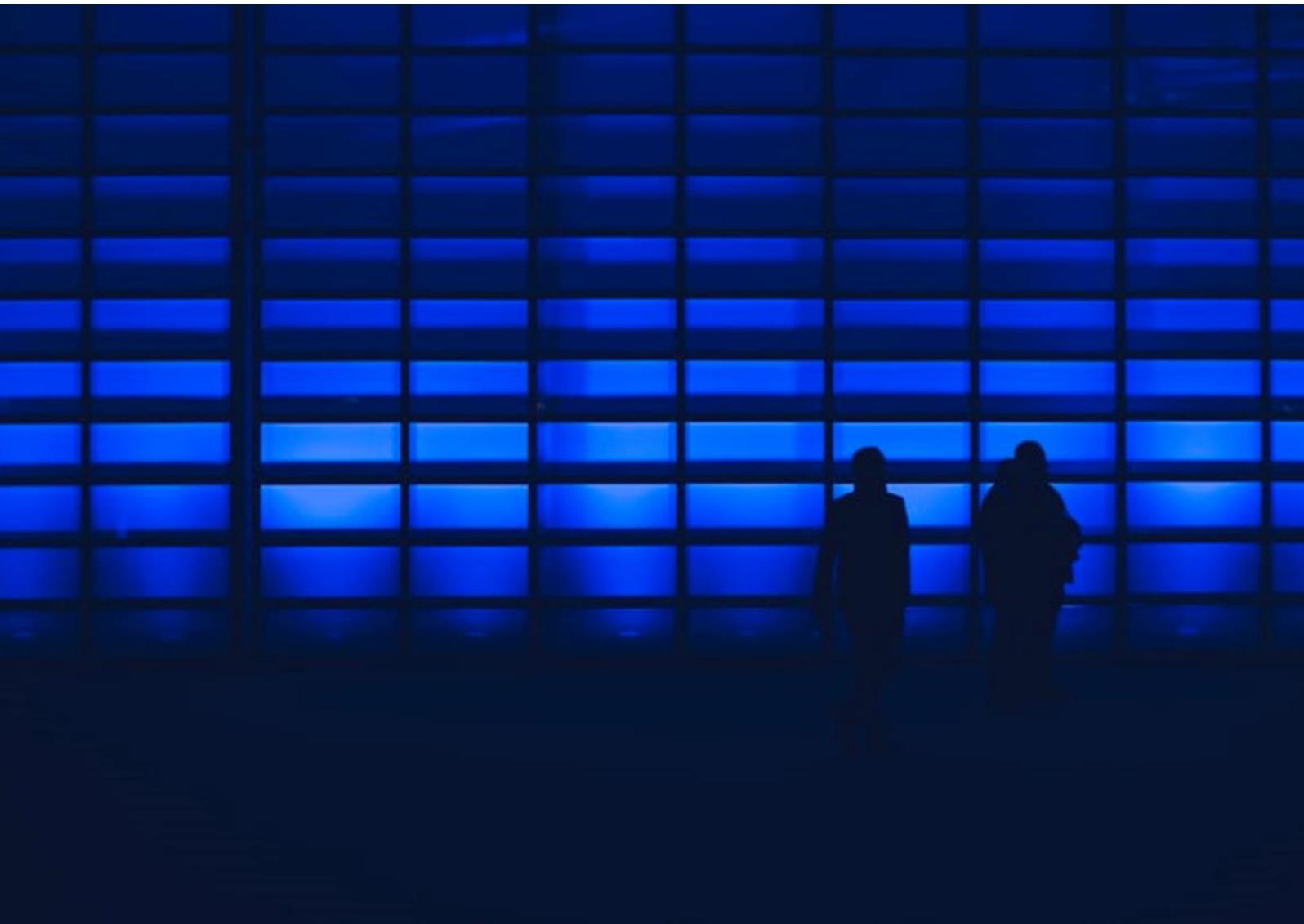
Contributing institutions

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