

Next Generation Pedagogy: IDEAS for Online and Blended Higher Education

Final report of the FUTURA (Future of University Teaching: Update and a Roadmap for Advancement) project

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Index

Executive summary	3
1. Introduction	6
Background	6
The FUTURA project	7
2. FUTURA process	8
3. Innovative practices and original approaches to teaching	10
Active learning	10
Beyond the institutional Learning Management System	11
Collaboration between higher education institutions	12
Digital literacy	13
Employability and collaboration between HE institutions and employers	14
Flexibility and personalisation	15
Innovation as a curriculum topic	16
Internationalisation	17
Learning analytics	18
Non-formal and open learning	19
Recognition of prior learning	20
Teaching enhancement programmes	21
4. IDEAS for next-generation pedagogy	23
Intelligent pedagogy	23
Distributed pedagogy	24
Engaging pedagogy	25
Agile pedagogy	26
Situated pedagogy	27
5. Possible uses for the FUTURA roadmap	29
Glossary	30
Acknowledgements	33
References	34

Executive summary

The Universitat Oberta de Catalunya (UOC) commissioned the FUTURA (Future of University Teaching: Update and a Roadmap for Advancement) project, in collaboration with its eLearn Center, with the overarching goal of providing a “roadmap” to inform strategic planning for the future of online and blended higher education. It achieved this through an exploratory search and identification of trends and innovations in online, blended and lifelong learning provision globally, with a focus on pedagogy and the analysis of related institutional examples in the higher education sector

This led to the development of a five-part framework for describing next-generation pedagogy, which can be summarised in the acronym **IDEAS: Intelligent, Distributed, Engaging, Agile and Situated**.

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

- > **Intelligent pedagogy** is an approach to teaching in which technology is used to enhance the learning experience. Examples include using learning analytics to support course leaders in curriculum design decisions as well as to help students manage their learning, ensuring that both learners and teachers learn digital competences, creating a learning environment that is not restricted to an institutional learning management system, and the creative use of technologies such as virtual and augmented reality for learning and teaching.
- > **Distributed pedagogy** refers to shared or distributed ownership of different elements of the learning journey by different stakeholders in the process. It includes, at the one end of the spectrum, collaborative partnerships between institutions, and at the other, a deliberate separation of services to allow learners to select different aspects of their learning experience from a marketplace of potentially competing providers. It is possible for a single institution to have offerings at both ends of this spectrum.
- > **Engaging pedagogy** is an approach to curriculum design and delivery in which learners are encouraged to actively participate in the learning process. Related practices include supporting students to develop portfolios that have relevance for them outside of the classroom, involving the learners in producing content both for peers and for the wider public, creating conditions in which learners can construct knowledge for themselves, and including an element of gamification in the learning process. There is a related increased emphasis on teaching enhancement programmes for teaching staff to support them in making the learning experience engaging for learners.
- > **Agile pedagogy** refers to flexibility and customisation of the curriculum and the student experience. It includes personalised learning pathways and individualised support for learners, recognition of prior, non-formal learning achievements in order to widen participation and fast-track learners through programmes, responsiveness of institutions and systems to learners’ needs, and support for virtual mobility of students and internationalisation of the curriculum. All these developments also support the widening of participation in higher education, facilitating access for learners who might previously have been excluded.
- > **Situated pedagogy** encompasses the idea of contextualisation of learning and emphasises the need for curricula with real-world relevance. It expands work-related learning opportunities for students, and supports students in identifying and addressing “big issues” in industry, government, and society through project- and problem-based learning. In situated pedagogy, learning and assessment are contextualised according to students’ professional and personal goals.

Each of the five signposts is associated with a number of “landmarks” – practices that were observed in institutional initiatives and that may be of interest to other institutions wishing to innovate in their teaching practices. The landmarks are indicative rather than comprehensive, and descriptive rather than prescriptive or predictive of any particular future. Possible ways of using them would be as the basis for generating a checklist for curriculum development or programme review, as a template for representing organisational alignment of policies, strategies and practices, or simply to spark discussion amongst colleagues in course teams, departments or institutions about their

daily teaching practice. On a deeper level, we hope that the roadmap and its associated signposts (IDEAS) and landmarks may inspire open-ended dialogue and contribute towards the development of a shared vision for the future of online, blended and lifelong learning provision within and between institutions in the higher education sector.

The following images provide a visual summary of the FUTURA outputs (Figure 1), some inspiring examples from FUTURA (Figure 2) and the IDEAS framework for describing next-generation pedagogy (Figure 3).

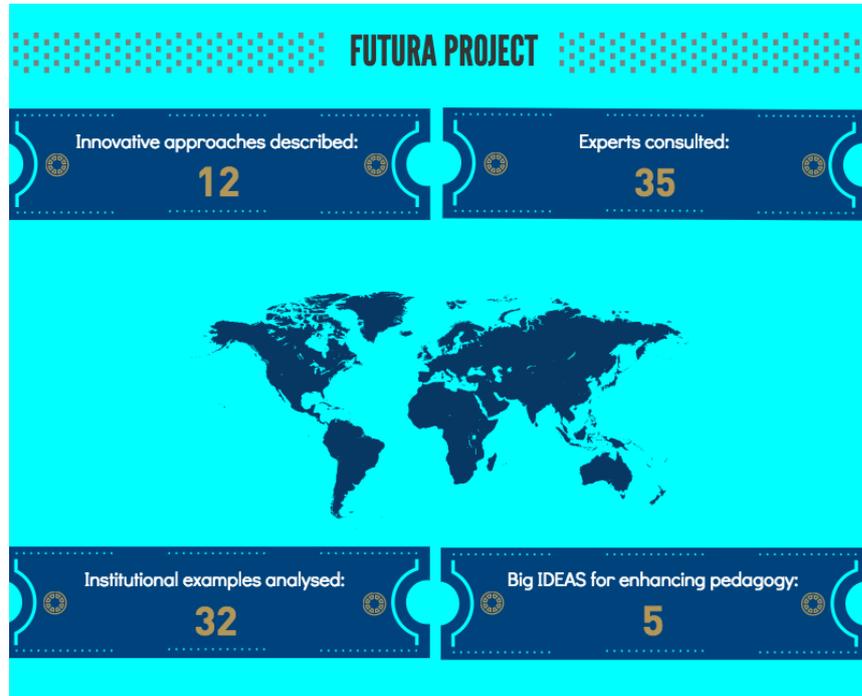


Figure 1. FUTURA Project Outputs

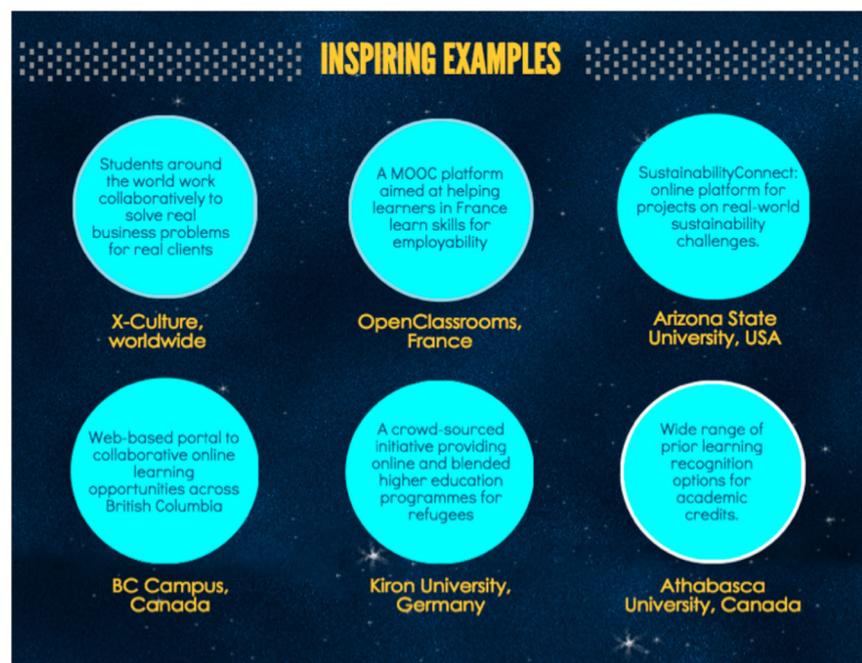


Figure 2. Selected inspiring examples from FUTURA



Figure 3. Next-generation pedagogy characteristics: Intelligent, Distributed, Engaging, Agile & Situated

1. Introduction

■ Background

Universities are responsible for preparing the next generation of leaders, scientists, and researchers. They act as drivers for innovation and growth (Ernst & Young, 2012). The democratisation of knowledge and the expansion of access to higher education (HE) require universities to constantly review their pedagogical practices to ensure that they remain up to date with developments in teaching practice and technology, and provide the best possible guidance and support to their learners. Inaction would be irresponsible to learners, faculty, staff, and society in general, as these stakeholders depend on the innovations originated at universities to create improved life conditions for everyone (King & Sen, 2013).

In particular, King & Sen (2013) mention “four interrelated waves of attack” on universities:

1. The Internet, which has made knowledge previously attainable only on college campuses available to all.
2. Distance learning initiatives, which began in the late 1990s and early 2000s, and are increasing.
3. The emergence of a fast growing group of large for-profit (or “career”) universities, which have the same accreditation as traditional universities but have the intention and potential to scale up to cater for enormous numbers of students.
4. Online start-ups, such as Coursera, which have begun providing courses to massive online audiences.

HE institutions also need to be ready to address the changes in the nature of work and associated competencies, and build deep relationships with industry (Ernst & Young, 2012). By 2020, 20% more jobs are foreseen to require high-level skills; particularly those related to science, technology, engineering and mathematics (STEM) subjects (Cedefop, 2012; European Commission, 2012). Distance teaching universities are key in this scenario, as they can offer flexible, innovative options for non-traditional students. However, many of these institutions have experienced a drop in student enrolments in the last few years (Garrett, 2016) and are now struggling to remain strong. Remaining relevant to the world of work, managing tight budgets, converting competition into potential partnerships, preventing dropout of distance learners who may feel isolated in their studies, providing appropriate support for teaching staff, and ensuring the suitability of tools and resources used for delivering education are some of the challenges.

Various recent reports describe the potential consequences of these challenges. For example, in Australia, a study by Ernst and Young (2012) hypothesised that the dominant Australian university model – a broad-based teaching and research institution with a large base of assets and a well-staffed back office – will become unviable in the near future (ten years). In Japan, Shimomura, the Minister of Education, Culture, Sports, Science and Technology, requested the 86 national universities and all HE institutions to abolish social sciences and humanities or to transform them so they can better meet the needs of society (Social Science Space, 2015). This scenario illustrates the emerging need for radical transformation of the university as we know it.

For some institutions, funding and student enrolments are the heart of their worries. At Athabasca University, a Canadian university specialising in distance education, funding has dropped from covering 80% of its operating expenses to closer to 30%; as it faces competition from more and more universities offering online learning, Athabasca is facing enormous challenges recruiting sufficient students to continue operating (MacKinnon, 2015). The University of California at Berkeley, the top public university in the United States, is also facing a substantial and growing budget deficit (Anderson, 2016).

Some commentators (e.g., Harden, 2012) foresee that a number of colleges and universities will disappear, while others will grow to have millions of students. Distance enrolments are rising, and most academic leaders agree that online education is critical to the long-term strategies of their

institutions (Allen, Seaman, Poulin, & Taylor Straut, 2016). How will this shape the future? How should institutions prepare for this future? The FUTURA project aims to spark creative thinking around what our universities mean for society and what their role will be in the future.

■ The FUTURA project

The Universitat Oberta de Catalunya (UOC) was founded in 1995 in Catalonia, Spain, in order to provide a unique offering of distance education in Catalan. It was the first online-only university in the world. It commissioned Art of E-learning in early 2015 to conduct the FUTURA (Future of University Teaching: Update and a Roadmap for Advancement) project, in collaboration with its eLearn Center. The project was completed in April 2016. The overarching goal of FUTURA was to provide a “roadmap” to inform strategic planning for the future. It achieved this through the exploratory search and identification of trends and innovations in online, blended and lifelong learning provision in higher education (HE) globally, with a focus on pedagogy.

The FUTURA project was carried out in the spirit of exploration, seeking inspiration as much as information. This report is intended to be used as a launchpad for wide-ranging dialogue amongst stakeholders at distance teaching universities, contributing to the development of a bold vision of the impact that these institutions can have on global higher education and on society as a whole.

2. FUTURA process

The FUTURA project was exploratory in nature. It started with a search for broad themes in innovative practices and original approaches to teaching in distance higher education (HE) institutions worldwide. A desk research investigation of trend reports, policy documents, international guidelines and journal articles published between 2012 and 2015 was conducted, and innovations described in two or more sources were considered relevant. While this review was not exhaustive (e.g., only papers in English and Spanish were considered), it did represent a broad span of the literature in the field.

Twenty-five experts in online education and learning technologies were consulted to identify additional areas of interest, via a focus group session based on the Future Scenarios workshop resources produced by Universities UK¹. This session was aimed at imagining future scenarios for online and blended learning in HE. Participants discussed positive, negative and interesting possibilities and brainstormed new and emerging practices in higher education.

Ten other experts were consulted separately. Questions were framed from the perspective of the “blue ocean” approach to strategic planning². In this context, an organisation aims to meet the needs of their audience in ways that do not imitate what other organisations are offering, hence making the competition irrelevant; for example, Apple creating the iPad when no-one was asking for a small, touch-screen tablet. The organisation is like a fish trying to avoid getting caught up in the bloodied red ocean waters where there are many other fish (and fish-eating sharks) – and to move into the blue ocean in which they can create unique offerings and meet their audience’s needs in innovative and sustainable ways. The focus group session and other consultations with experts aimed to envisage how an online institution could find its own blue ocean for its future pedagogy.

Altogether, 48 themes were identified, providing areas in which to search for specific institutional examples that illustrated concrete instances of innovative pedagogical practices. Over 100 initiatives in online, blended and lifelong learning provision were reviewed. Some of these were found through desk research; others, through the recommendations of the experts consulted.

A coding framework emerged from the 48 themes. The five areas of UOC’s strategic plan 2014-2020³ (cross-disciplines and flexibility; collaborative governance; internationalisation; competitiveness and employability; and research) and the elements of its educational model⁴ (teaching support; networked community; and tools and resources) were considered relevant for distance teaching institutions in general and were thus incorporated to the coding framework. Two researchers analysed the examples, with the first coder coding all of them and the second reviewing the 34 examples identified as most relevant by the first coder. One point was allocated whenever a particular initiative exemplified one of the 48 themes identified, or an area of interest for distance teaching universities.

This analysis was captured in a spreadsheet, which mapped the initiatives with their descriptions, country or region of impact, main source of information, notes and rating in relation to the coding criteria. The examples with the highest ratings were considered to be the most relevant and were selected for further exploration. In the spirit of “blue ocean” thinking, some additional examples were included because they seemed to provide interesting or inspiring pointers towards next-generation pedagogy.

The key lessons of each example formed the basis for the creation of a roadmap aimed at informing institutional strategic planning for the future. The general FUTURA process is outlined in Table 1.

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1. <http://www.universitiesuk.ac.uk/aboutus/whatwedo/PolicyAnalysis/UKHigherEducation/Futures/Pages/FutureThinking.aspx>
 2. <https://www.blueoceanstrategy.com>
 3. http://www.uoc.edu/portal/ca/estrategia/documentacio/20131010_Sessio_Informativa_UOC_Pla_estrategic.pdf
 4. <http://www.uoc.edu/portal/en/universitat/model-educatiu/index.html>

Table 1. FUTURA Process Overview

Stage	Objective	Process	Outputs
> 1	To identify broad themes in innovative practices and original approaches to teaching in higher education	<ul style="list-style-type: none"> - Desk research - Brainstorming session with 25 people experienced in online education and learning technologies - Consultation with 10 experts using the “blue ocean” perspective 	48 themes and areas of interest related to innovative practices and original approaches to teaching
> 2	To identify institutional initiatives that exemplify innovative pedagogical practices	<ul style="list-style-type: none"> - Desk research - Consultation with experts 	Identification of over 100 initiatives in online, blended and lifelong learning provision
> 3	To create a roadmap for next-generation pedagogy in distance education that can inform institutional strategic planning for the future	<ul style="list-style-type: none"> - Coding of institutional initiatives - Selection of 30 initiatives for further exploration - Thematic analysis of selected initiatives 	Roadmap based on a descriptive framework of next-generation pedagogy (intelligent, distributed, engaging, agile and situated, IDEAS) – presented in this report

3. Innovative practices and original approaches to teaching

Twelve overarching themes related to innovative practices and original approaches to teaching emerged from the selected institutional examples. These are described in this section, with particularly inspiring examples highlighted for each theme.

■ Active learning

Active learning is the process whereby students engage in activities that promote analysis, synthesis and evaluation of class content (Center for Research on Learning and Teaching, 2016). The term can be used “to embrace almost any learning activity which involves the active participation of the student” (UK Centre for Materials Education, HEA, n.d.). Active learning aligns with the idea that “we should change the university from a place where knowledge learned outside the classroom is reported to students, to one where students themselves directly experience having a hand in creating knowledge” (King & Sen, 2013, p.88). It can be achieved through a variety of approaches, for example learner-generated content, gamification and problem-based learning.

Facilitating the development of learner-generated content is one way in which learning can be made more active. At the University of Edinburgh (UK), students use PeerWise⁵, a freely available online tool, to create multiple-choice questions and associated explanations for their peers. They can answer each other’s questions, provide comments, rate contributions, seek help from authors, and follow their favourite contributors. A positive association has been found between students’ participation in PeerWise and their mark in the final course examination (Bates, Hardy, Kay, Galloway, McQueen, & Kirsop, 2012). In the University of Southampton’s (UK) Students as Creators project, students help academic staff to source suitable online platforms for specific purposes (e.g. blogging platforms). They evaluate free web-based apps that could be used by all students to manage their learning, and curate Web-based content relevant to the module. In another learner-generated content initiative, students in an ICT Competences course at the Universitat Oberta de Catalunya developed open educational resources (OERs), which were made available for public reuse (Pérez-Mateo, Maina, Guitert, & Romero, 2011).

Gamification, the implementation of game mechanics into a non-gaming task to encourage and motivate people to either carry out that task, execute it more quickly, or produce higher quality results (Jisc, 2016b), can also help to increase student engagement in courses. The Delft University of Technology in the Netherlands offers a successful example of this. They gamified two courses, which had a total enrolment of 450 students. Gamification was found to correlate with better grades and greater participation (Iosup & Epema, 2013).

Problem-based learning is a teaching approach that challenges students to learn through engaging with a real problem. It places students in the active role of problem-solvers confronted with an ill-structured situation that usually simulates the kind of problems they are likely to face as employees or future employees in complex organisations. Project- and problem-based learning (PPBL) takes this one step further: in this approach, students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem or challenge.

In the examples discussed here, active learning is closely tied to a constructivist approach to curriculum design, in which learners are expected to actively construct new ideas or concepts, to take responsibility for their own learning, and to learn through critical analysis and problem solving, often by collaborating with peers or professionals outside of the institution.

5. <https://peerwise.cs.auckland.ac.nz/>

Inspiring Example: Sustainability Connect by Arizona State University (USA)

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

Further information:

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

■ Beyond the institutional Learning Management System

Current practices at some institutions point towards the enhancement of the educational experience beyond the online learning management system (LMS). Remote labs – real, physical laboratories where the equipment can be operated remotely – offer an interesting possibility. For example, the Open Science Laboratory⁶ by the Open University in the UK brings interactive practical science to students anywhere and anytime. It features investigations based on on-screen instruments, remote access experiments and virtual scenarios using real data. Several activities are available to all, while others are available only to registered users.

Inspiring Example: Augmented Remote Lab by Universidad de Huelva (Spain)

The Universidad de Huelva's Augmented Remote Lab (ARL) aims to amalgamate the best features of remote labs (real, physical, laboratories where the equipment can be operated remotely) and virtual labs (entirely computer-generated laboratories, accessed via a PC), in a course aimed at industrial and computer engineering students. The project consists of two regular remote labs that the students view using cameras. Where an operation in the remote lab would require a human operator, the view from the camera is modified to make it look as though the operation has taken place, even though it has not. In addition, remote equipment in the lab is given input that matches the non-existent operation so that it functions appropriately. Thus, students experience the illusion of a fully functioning lab without the expense and logistical difficulties involved in accessing a physical one. While the ARL is a small-scale, simplified project, it demonstrates the principle of incorporating virtual elements into remote lab working. The principle may be applied to more complex laboratory situations, where some operations are not feasible, either due to cost or the requirement to have a human operator present (Mejías Borrero & Andújar Márquez, 2012).

Further information:

> <https://www.youtube.com/watch?v=4myvgl4Losc>

6. <https://learn5.open.ac.uk/course/view.php?id=2>

Further discussion about moving beyond the institutional LMS may be found in the study by Merriman, Coppeto, Santanach, Shaw and Aracil (2016) on next-generation learning architecture, which complements this report. They point out that an LMS is a basic, isolated system for supporting the rudimentary functions of online education, and warn against continuing to invest in developing educational delivery systems based upon such a rigid architecture. They argue that new kinds of software architecture are needed to support more sophisticated features of online education such as the development of personalised learning pathways, new forms of assessment and accreditation, and new business models. They envisage a new architecture for educational delivery – it should be seamlessly integrated into institutional systems for student data, human resources and financial management, enabling more effective collection and use of analytics in educational decision making. They also argue that the new software architecture should be able to incorporate and customise educational applications (tools, systems and content) from an ever-growing marketplace, based on openly published service specifications. The key concept in their proposed software architecture is integration: “Integration is an essential principle to allow these applications to work together effectively to meet the evolving needs of teachers, students and institutional leadership while offering more meaningful support for diverse and advanced teaching and learning methodologies” (Merriman et al, 2016, p.5).

■ Collaboration between higher education institutions

Europe’s strategy for international cooperation focuses on developing academic partnerships, and includes encouragement with national authorities to provide funding for collaboration to meet infrastructure needs, teacher training and programme delivery (High Level Group on the Modernisation of Higher Education, 2014). Many HE institutions are, thus, carrying out joint work to foster effective learning and teaching. The Erasmus programme⁷ is a good example of such partnerships, which are based on formal agreements between institutions. Benefits of inter-institutional collaboration include improving provision through the sharing and joint development of resources and courses, benchmarking practices, increasing the offer of staff development opportunities and enhancing student exchanges. Collaboration can enhance student exchanges and promote the emergence of joint postgraduate degree programmes. Universities can also find value in the creation of networks for developing open educational resources (OERs), massive open online courses (MOOCs), and regular credit-bearing online courses (Mapstone, Buitendijk, & Wiberg, 2014), as these networks can contribute to the institutional capacity to design, develop and deliver high quality courses and materials.

Effective collaboration between universities is exemplified by Open Universities Australia (OUA)⁸. OUA is a consortium of seven shareholder universities, and six other universities, which aims to identify, develop and deliver new and innovative learning and tertiary educational opportunities to Australian students. These partners offer a range of fee-based courses through OUA. Their offerings are structured as Pathways, in which students first select a study area (business, education, engineering, health, humanities, science or social science) and then receive a recommendation of four related units that can lead to one or more full degrees in one of the participating universities. Student assistance services include preparatory units, career advice, crisis support counselling and exam supervision.

7. <http://www.erasmusprogramme.com/>

8. <https://www.open.edu.au/about-us/>

Inspiring Example: BCcampus (Canada)

BCcampus was established in 2002 to provide a Web-based portal to collaborative online learning programmes and services across the British Columbia (BC) post-secondary system. It assists students, educators, and institutions, by identifying, obtaining, developing and implementing technologies and services that enhance online learning. Students can access a number of online services, such as a quick-response, online application service for all public post-secondary institutions, a directory of online programmes and courses, and online library services across multiple institutions. Staff can access online community forums, best practices research, and technological infrastructure and support for course development and delivery. Other services include a repository of reusable educational resources and courses, a funding programme for the development of educational resources and access to shared online delivery tools. BCcampus also administers an online programme development fund, explores and develops shared services, and provides professional development and training, including workshops on facilitating learning online.

Further information:

> <http://bccampus.ca/faq/#1>

■ Digital literacy

The concept of digital literacy – also known as digital competences – refers to the skills required by both staff and students for academic and professional activities supported by diverse and changing technologies (Jisc, 2014). These skills can enable the appropriate use of learning technologies, leading to improvements in course effectiveness and the enhancement of the learning experience (High Level Group on the Modernisation of Higher Education, 2014). In today's society, citizens require a set of competences related to the use of ICT, referred to as digital skills, e-skills, digital competence, digital literacy, or even life skills (Bawden, 2008). As social interaction – including interaction with services and institutions – is ever more dependent on technology, being digitally competent is a requirement and a right (OECD, 2001). Digital skills are needed by all citizens for full and meaningful participation in a modern society, and without these skills, individuals or groups are in danger of social exclusion. However, 60% of students never use digital technologies in their classroom (European Commission, 2016). Training of teachers and students is required to support digital literacy, incorporate learning technologies into their practices, improve course effectiveness and enhance the learning experience (Dahlstrom & Brooks, 2014; Johnson, Adams Becker, Estrada, & Freeman, 2015; High Level Group on the Modernisation of Higher Education, 2014). Currently the European Commission (2016) is promoting initiatives aimed at increasing training in digital skills, and harnessing technologies for the recognition and validation of skills, while also developing policy and supporting related research.

Inspiring Example: DIGCOMP

The DIGCOMP framework is a common European digital competence framework for citizens, which can help address the need for students and staff to develop digital competences (European Commission, Joint Research Centre, 2016). The DIGCOMP framework is comprised of the following five dimensions: information processing, communication, content creation, safety, and problem solving. It includes an assessment tool as part of the Europass CV that enables the validation of an individual's digital competences (European Union, 2002-2016). Various EU Member States are using the DIGCOMP Framework and related assessment tool in their educational reforms. For example in Estonia, Lithuania, Croatia and Spain it is being used to support teacher training, and in Andalusia (Spain) it is being used to support job seekers access suitable learning resources. DIGCOMP is also being used in two cross-European initiatives – Skillage, which assesses individuals' understanding of ICT in an employment context, and Carer+, which is aimed at supporting the professional development of care workers.

Further information:

> <https://ec.europa.eu/jrc/en/digcomp/implementation>

■ Employability and collaboration between HE institutions and employers

Most higher education institutions have some form of employability programme to prepare students for employment. Innovative initiatives include helping students seek employment, such as the Deakin University (Australia) Hallmarks⁹ programme, in which students can attain digital badges recognising outstanding achievement of specific graduate learning outcomes considered relevant to employability. The Hallmarks have been developed through consultation with employers and professional bodies in an effort to ensure that they signify outstanding achievement as valued and judged in professional life. Students are encouraged to share their Hallmarks through their digital résumés and social media channels, as evidence of their employability.

In face-to-face programmes, employability initiatives often include work-based learning opportunities in the form of placements or internships. These experiences can enable younger students to take informed career decisions, and can also help mature learners retrain, increase the value of their skills and reintegrate to the labour market (Borbély-Pecze & Hutchinson, 2014). In distance education, work-based learning may take virtual forms. In all cases, these opportunities are based on strong collaboration between HE institutions and employers, often involving strategic partnerships aimed at tackling specific problems not currently addressed through mainstream education provision (Universities UK & UKCES, 2014). Such collaboration can improve competitiveness and productivity and ensure that relevant pathways into industry are in place. Universities also work with employers to create more relevant curricula for the labour market (Sursock, 2015), to differentiate their offer from that of other institutions, to increase student employability, to raise their profile and to increase income diversity (Universities UK & UKCES, 2014).

Udacity¹⁰ is a MOOC platform offering “nanodegrees” (certificated short courses), built in partnership with tech companies such as Google, Amazon and Facebook. The courses are designed to foster skills that employers believe are key to careers in technology. The materials are freely available, but to earn the nanodegree, learners have to be enrolled in the paid programme. The nanodegree programmes follow a project-based approach, with each programme comprising 5-8 real-world projects and related courses. While the programmes are self-paced, learners need to meet the projects’ deadlines and specifications. The time commitment ranges from six to 12 months, with ten study hours per week. If students complete their programme in 12 months or less, Udacity refunds half the tuition fees. Partner companies have expressed their commitment to hiring graduates of nanodegree programmes when matching positions are available.

9. <https://www.deakin.edu.au/learning/designing-assessing-and-evaluating-learning/deakin-hallmarks>

10. <https://www.udacity.com/nanodegree>

Inspiring Example: X-Culture

Launched in 2010, X-Culture is a global experiential learning project that enables business students around the world to work collaboratively online on authentic business problems posed by real companies. Working in cross-cultural teams of five to seven people for several weeks, participants have to deal with cultural and time-zone differences, rely on online communication, and learn how to coordinate their efforts and successfully complete a project. Around 4,000 individuals from 100 universities in 40 countries on six continents participated in X-Culture in 2015. The programme attracts mostly undergraduate students, MBA students, EMBA students and professionals. To monitor individual performance, there are weekly peer evaluations, progress reports and performance surveys. Sometimes senior managers of partner companies share their business experience to participants via webinars. Members of all teams that complete the project receive X-Culture Global Collaboration Certificates, and the most successful teams are invited to present their work at an X-Culture Symposium. Most companies offer monetary incentives to the teams that prepare especially insightful business proposals, and some offer prospects of employment.

X-Culture is also used as a research platform to find out why some teams perform better than others and what can be done to improve performance when collaborating internationally.

Further information:

> <http://x-culture.org/>

■ Flexibility and personalisation

In flexible and personalised learning, individual students can choose how, when and where they learn, which can be empowering and motivating. This approach fosters equal opportunities for learners with wide-ranging goals. Flexible and personalised learning initiatives may include the use of learning analytics or the use of adaptive learning technologies to cater for the needs of individual students. Managing such course provision requires complex logistics, and there is currently an unsatisfied demand for this type of learning (Hermans, Janssen, Vogten, & Koper, 2015; Johnson et al., 2015).

The Open University (Netherlands) has created a flexible provisioning system that fosters online learning flexibility and personalisation (Hermans et al., 2015). The system supports a high level of granularity in enabling access to courses, depending on one's registration status, with the following options of roles available to users: students, self-directed learners, prospects and explorers. These different target groups have varying degrees of access to learning activities, resources and services. For example, self-directed learners can access all course resources relevant to their domain and are supplied with personal tools for managing their progress, while regular students can also obtain tutor guidance and take exams.

The Open University in the Netherlands is also trialling flexibly structured Bachelor and Master programmes, where students are given a certain number of "free" credits to use as they desire (A. Lansu, personal communication, October 30, 2015). Students can study modules of their choice from within the institution or at other universities in the Netherlands or elsewhere in the world – with permission – and have this learning credited towards their overall degree award. This approach also potentially allows learners to incorporate credits achieved from MOOCs taken at other institutions into their degree.

The University of Illinois' iMBA¹¹ degree is designed as a 'stackable degree' and delivered in a flexible online format. It is constructed as a set of stand-alone building blocks that can be combined to comprise a full MBA degree. To earn the degree, learners must complete six specialisations and a programme-wide experiential learning course. The basic content of courses from the iMBA curriculum is available on the Coursera MOOC platform for free (Koller, 2015). Students can try out a free MOOC, or enrol for low-cost specialisations. Course credits earned can be accumulated towards the iMBA if learners decide to apply later. Performance in the specialisations is considered

11. <https://onlinemba.illinois.edu/>

for student admittance, not just test scores and past transcripts, allowing a much larger pool of prospective students the chance to enrol. This fully online MBA costs less than a third of the cost of MBAs from institutions with similar stature.

Open Universities Australia offers students flexible, timely support through a partnership with an online tutoring service which provides advice to students from qualified tutors around the clock. Students can connect on demand with an expert tutor for a virtual drop-in session 24 hours a day, submit a piece of writing for detailed review or general feedback, or ask a question. A correlation has been found between students who use this service and those who achieve Distinction and High Distinction results (Ashford-Rowe & Howarth, 2011; Stone, Hewitt & Morelli, 2013).

Inspiring Example: FlexPath by Capella University (USA)

FlexPath is a self-paced, competency-based education format that enables students to earn their degree in a flexible and personalised way. Students can take a FlexPath self-assessment to decide if self-paced learning is right for them. They pay one flat tuition rate every 12 weeks, and can take up to two courses at a time. The faster their pace, the sooner they can complete their degree and the more money they save. Nevertheless, some students choose to complete only one course per quarter, suggesting that they value the flexibility of scheduling their own learning. Assessments simulate on-the-job work. FlexPath does not factor in grades, credits accumulated or time spent in a classroom. Instead, students receive feedback from faculty as to how well they demonstrated their skills in their assessment. Students have tutors who are subject matter experts. Coaches provide one-to-one support for students to stay on track and answer programme-related questions. Students can track their academic progress in real time through the use of a student dashboard called Competency Map. Between August 2013, when FlexPath was launched, and March 2015, 1,000 adult learners were enrolled and more than 50 had graduated. Most FlexPath students (90%) have indicated that they are satisfied with the overall programme (Grann, 2015).

Further information:

> <http://www.capella.edu/flexpath/what-is-flexpath/>

■ Innovation as a curriculum topic

Some HE institutions have innovation explicitly built into their curricula. For example, the Student Innovation Center at Lund University in Sweden¹² aims to “empower the next generation of innovators and entrepreneurs to make an impact”. This unit connects students, teachers and researchers across faculties and universities with external organisations. They initiate new projects to address concrete needs identified by students or by external stakeholders. Recent challenges have included making it easier for cities to implement new biking solutions by using IT services and products, and the development of other innovative solutions related to transportation.

Innovation is also a popular topic for MOOCs – a search for the term on Coursera, EdX and FutureLearn pointed to over 600 courses with “innovation” in the title or the course description.

12. http://luopen.lu.se/thematic_area/student-innovation-center

Inspiring Example: Innovation Initiative by MIT (USA)

The MIT Innovation Initiative at Massachusetts Institute of Technology aims to educate the next generation of global innovators, by combining hands-on “innovation practice” opportunities with evidence-based “innovation science”. This initiative organises its activities into four pillars executed with partners across MIT’s five schools: 1) Innovation practice programmes, which expand the curricular activities at MIT and beyond to include students, research staff, faculty, alumni and other like-minded innovators; 2) Innovation science and policy, focused on the advancement of the systematic analysis of the factors shaping innovation outcomes through research and policy advocacy; 3) Innovation communities, on campus and around the world; and 4) Innovation infrastructure, to equip the MIT community with the physical and digital infrastructure required to address 21st Century challenges.

Further information:

> <https://innovation.mit.edu/>

■ Internationalisation

Internationalisation manifests itself in different ways, including networking between institutions from different countries, enrolment of international learners, student and staff outbound and inbound mobility, foreign language learning, globally focused curricula, and transnational delivery of courses and degrees. HE institutions that emphasise a global perspective in all aspects of teaching and learning can attract students, staff and partners, create global visibility, produce graduates with higher engagement in global issues, enhance the quality of learning, teaching and research, and facilitate degree and credit mobility (High Level Group on the Modernisation of Higher Education, 2014). By 2020, it is likely that 20% of people with a degree obtained within the European Higher Education Area (EHEA) will have done some studies in a country different from their own (Ministerio de Educación, 2011). In distance education, this may be achieved virtually through online international, collaborative educational experiences. In this way students can experience virtual mobility. (Vriens, Achten, Op de Beeck, & Van Petegem, 2011). The Bologna Process and the associated development of the European Credit Transfer and Accumulation System (ECTS) are aimed at ensuring parity of degrees and credits for programmes taught within Europe, thereby facilitating student mobility (European Commission, 2015; European Commission/ EACEA/ Eurydice, 2015). Global mobility is likely to increase for students, academics, and university brands, intensifying competition, and at the same time creating opportunities for global partnerships (Ernst & Young, 2012).

Inspiring Example: Massey University Worldwide (New Zealand)

Massey University Worldwide is an umbrella brand used by Massey University in New Zealand for delivering educational programmes, projects and consultancy internationally. Activities are divided by subjects, and associated with undergraduate and postgraduate programmes within those subjects. Massey provides online, face-to-face and distance education to a number of international partners; for example, it has an MBA programme for Qatar Airways pilots which has been tailored to have an aviation focus. Real-world projects are addressed; for example, Massey University Worldwide is helping to improve disease detection in South Asia through the implementation of a four-year European Commission/ World Bank programme to build human and institutional capability in the health sector throughout the South Asia region.

Further information:

> <http://www.masseyworldwide.ac.nz/>

■ Learning analytics

Learning analytics is the educational use of Web analytics and other student activity data. The concept refers to “the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs” (Siemens, 2010). In a virtual learning environment, this data can include the learning resources accessed, the time and date of access, and the actions undertaken (e.g., viewing, adding, updating or deleting items), as well as grades and library use. Data from learning analytics offers insights into student progress, engagement and interaction with online course materials and learning environments. Sharing this information with learners can empower them to take a more active part in their learning (Dahlstrom & Brooks, 2014; High Level Group on the Modernisation of Higher Education, 2014; Johnson et al., 2015; Sharples, Adams, Ferguson, Gaved, McAndrew, Rienties, Weller & Whitelock, 2014).

Analytics can guide decisions on support and feedback for students; for example by:

- > Automatically sending emails to those who veer off track in their studies
- > Preventing off-track students from enrolling in a new course until they have contacted an institutional representative (tutor, coach or advisor) and discussed strategies for getting back on track
- > Showing students how they compare to others in their course
- > Providing live updates that students can use to check how well they are progressing.

Learning analytics can also enable the setting up of adaptive learning - software and online platforms that adjust to individual students' needs as they learn.

There are a number of institutional examples of successful use of learning analytics in practice. The student dashboard at Nottingham Trent University¹³ in the UK provides students and tutors with information on activities such as library use, class attendance, use of the institutional online workspace, and academic grades. It uses this data to calculate the mean engagement rating for everyone on a course and in a year, compares each student's engagement to the course mean and generates a rating, from low to high, for each student on each measure. The dashboard is intended to help students take responsibility for their own learning and develop skills such as time management and organisation. When surveyed, most tutors (80%) felt that the data provided by the dashboard changed how they worked with students and enabled them to offer better targeted teaching interventions. Over a quarter of students (27%) reported that they had changed their behaviour in response to the data provided by the dashboard (e.g., increased attendance at lectures or increased their use of the library) (Foster, 2015).

The University of Michigan's (USA) E²Coach¹⁴ is a Web application that provides each student with an individualised electronic “coach” that draws data from various sources, including student surveys at the beginning of the course, and exam grades. It is built on an open-source software system. Messages sent to students address course content, advise on study methods, offer reminders, present data graphics, and direct students to support services. Normative information is also presented to show students how the time they spend on exam study and the effort they put in on homework compares to the rest of the class and to students who perform at the level they aim to achieve. Feedback from active users has been positive; for example: “It makes things easier ... when you have people giving you pointers on how to study, how to succeed in the course, things to look out for, and such” (Next Gen Learning Blog, 2013).

13. http://www.ntu.ac.uk/current_students/studying/student_dashboard/index.html

14. http://sitemaker.umich.edu/ecoach/about_ecoach

Inspiring Example: Predictive analytics at Georgia State University (USA)

Georgia State University uses predictive analytics to determine how to distribute its financial aid for students, focusing on those who have the potential to achieve the most with extra economic help. Algorithms help identify the courses with the most failing grades and withdrawals, and enable the university to be proactive in its interventions for at-risk students. Students who are on financial aid and perform well in those classes are awarded mini-grants to be peer tutors for the semester after they complete the course. Average grades in courses with peer tutors has risen. This initiative has helped Georgia State University increase semester-to-semester retention rates by 5% with 1,200 more students than before continuing their studies every year, and reduce time-to-degree for graduating students by almost half a semester.

Further information:

> http://www.theuia.org/sites/default/files/UIA_predictive_onepaggers.pdf

■ Non-formal and open learning

Non-formal learning is learning acquired in addition or alternatively to formal learning; it usually takes place in community-based settings, the workplace or through the activities of civil society organisations (UNESCO Institute for Lifelong Learning, 2012). It is often carried out through the use of open educational resources (OERs) or massive open online courses (MOOCs). OERs are learning materials, such as presentations, lesson plans, activities and simulations, that are freely available for use, reuse, adaptation, and sharing (UNESCO, 2002), and are usually released under a Creative Commons (CC) licence that permits their free distribution and repurposing by others. OERs play an important role in the opening up of education (Johnson et al., 2015; Ossiannilsson et al., 2015), based on the ethical principle that publicly funded resources should be made openly available (Scanlon, 2013). They can save teachers time when creating course materials and help students access free education (Mapstone et al., 2014). OERs can help institutions widen participation in higher education, diversify their curricula and raise their profiles (Lane, 2012).

The Open Learning Initiative (OLI)¹⁵ at Carnegie Mellon University in the USA is a grant-funded group which has been offering online courses to anyone who wants to learn or teach since 2002. Courses are freely available to individual learners and at low cost to colleges and universities that want to use them for degree credits. According to their website, three elements make OLI distinctive and powerful: 1) interdisciplinarity of the course design team, 2) learning analytics to identify what works, and 3) feedback for students, teachers, course designers and learning scientists. There is evidence that students in OLI courses master complex subjects just as thoroughly as students in regular lecture classes. In two evaluation studies, it was found that students who used the OLI statistics course in combination with in-class instruction had comparable learning outcomes with fewer study hours as compared to students in traditional in-class instruction without OLI (Meyer and Patel, 2014).

Kiron University¹⁶ in Germany was set up in 2015 with the aim of providing refugees worldwide with the opportunity to graduate with an accredited university degree, free of charge. Kiron, a crowd-funded initiative, uses a combination of online and offline learning to provide accessible, sustainable, and cost-effective education. According to their website, to date Kiron has over 1,000 students, 23 partner universities, and four degree programmes (study tracks). Refugees whose financial status requires them to be in a full time job, or those with families, can study in their free time from home. Because most of the content is online, the cost per student is around 5% of the normal government spending. By significantly lowering delivery costs, speeding up the integration process, and aiding refugees in finding employment, Kiron aims to help host-country governments and infrastructures cope with the global refugee crisis. Canadian e-learning expert Tony Bates (2015) has challenged open universities “to partner with Kiron or establish their own programs to extend both the range of courses and support the learning of refugees, given the millions still in refugee camps”.

15. <http://oli.cmu.edu/get-to-know-oli/learn-more-about-oli/>

16. <https://kiron.ngo/>

Since the New York Times branded 2012 the “Year of the MOOC” (Pappano, 2012), MOOCs have continued to feature strongly within the higher education sector (Johnson et al., 2015; Ossiannilsson, Williams, Camilleri, & Brown, 2015). In a survey with 17,451 respondents from 13 countries around the world, 76% of faculty members reported being familiar with MOOCs (Dahlstrom & Brooks, 2014). Over half of the members of the League of European Research Universities (LERU) have some form of engagement with MOOCs (Mapstone et al., 2014). MOOCs can provide a space to test new methods of teaching, learning and assessment, and can attract paying students to mainstream courses.

On some MOOCs, successful learners can get recognition for their learning achievements. Whereas traditional credentials are usually awarded at the level of an entire learning programme (for example a degree or a diploma), microcredentials are awarded for more granular achievements, such as the successful completion of a short course, or the attainment of a specific learning outcome. Microcredentials may take the form of a digital badge or a certificate which can be uploaded to the learner’s online profile or to social networking sites. Udacity’s nanodegrees (described under employability and collaboration with employers above) are microcredentials. Many European-based MOOCs offer ECTS (European Credit Transfer and Accumulation System) credits upon successful completion of the courses. (See for example the MOOCs offered on the OpenUpEd¹⁷ portal.) The Open Educational Resources universitas (OERu), a consortium of higher education institutions across the world, has the more ambitious aim of enabling MOOC learners to obtain entire degree qualifications.

Inspiring Example: OpenClassrooms (France)

OpenClassrooms is a MOOC platform that hosts about 1,000 courses. It enables learners in France to gain degrees recognised by the French State. Partners include tertiary level business schools and design schools, and the Conférence des Présidents d’Université, which brings together university presidents in France. OpenClassrooms offers free courses on a range of topics, primarily in the areas of design and IT skills. Premium services, offered for a small fee, allow learners to access additional resources, including the support of a private mentor and of a community of members. Participants can study and obtain professional titles recognised by the State and registered with the National Directory of Professional Certifications, such as multimedia project manager title (equivalent to Bachelor’s degree). These titles are the same as the ones provided by traditional institutions. A range of funding schemes is available to enable learners to access the premium services, such as employer’s training programmes for those who are employed, or local Employment Centres (“Pôle Emploi”) for those who are unemployed.

Further information:

> <https://openclassrooms.com/>

■ Recognition of prior learning

Recognition of prior learning (RPL), also called prior learning accreditation and recognition (PLAR) refers to the evaluation and acknowledgment of learning that occurs outside of formal credit awarding training and educational programs (Spencer, n.d.). Students who want to be given recognition for their prior learning are required to provide evidence of that learning to the institution – and this usually comes from a much wider range of sources than participation in formal courses, although it may include that. For example, at Otago Polytechnic in New Zealand, evidence may include one or more of:

- > testimonials and references from appropriately experienced referees, covering specific areas of inquiry for which further documentation may be required
- > listing of past achievements and the learning sequences that were essential to their successful completion
- > production of monographs, journal articles, speech notes and so on that you have authored.¹⁸

17. <http://www.openuped.eu/mooc-features/47-recognition-options>

18. <http://www.openpolytechnic.ac.nz/enrol-with-us/recognising-previous-learning/>

Strayer University¹⁹ in the USA offers a wide range of assessment options for college-level credit. It seeks to recognise the value of previous experiences by not only transferring credits from allied, accredited universities and colleges, but also by recognising certain professional certifications and licenses, transcripts or other documentation of corporate training. Other assessment possibilities include low-cost exams, such as the College Level Examination Programme (CLEP) for liberal arts and business, DSST for on-the-job training, professional development and other life experiences, and Strayer Challenge Exams, which are similar to final exams but available to students who have not taken the course.

RPL/PLAR facilitates a widening of participation in higher education as it enables non-traditional students to enter the system – these students may be mature adults with family and job commitments, who have obtained skills and competences through life experiences or part-time study. RPL/PLAR programmes are often accompanied by flexible, customised learning pathways for subsequent study.

Inspiring Example: PLAR at Athabasca University (Canada)

At Athabasca University in Canada, the prior learning and assessment recognition (PLAR) process rests on the underlying principles that learners possess knowledge related to the program, that they know and are able to apply theories and concepts used in that program, that they can carry out analysis using data, theories and concepts, and that they can present knowledge clearly at a university level. PLAR applicants at Athabasca are supported by university staff in preparing their portfolio submissions.

Further information:

> <http://priorlearning.athabascau.ca/what-is-plar.php>

■ Teaching enhancement programmes

Rapidly changing demands in higher education require faculty to constantly keep up to date with new technologies, trends and competences. Continuous teacher development opportunities are thus crucial (European Commission, 2012), and can lead to improved quality of teaching practice (Dahlstrom & Brooks, 2014; High Level Group on the Modernisation of Higher Education, 2013).

Fitting teacher development programmes into academics' schedules and ensuring that the programmes are relevant to staff with wide-ranging expertise and skill sets can be a challenge. At Manchester Metropolitan University, the project #1minuteCPD²⁰ was set up to provide resources for continuous professional development of academic staff in a highly time-efficient, flexible way. A series of resources were produced that can be watched, tried or read in a minute. The resources are hosted on a blog which is shared openly through social media and within the university. According to their website, the aim is to improve academic's digital skills, "one minute at a time, one day at a time". The project is promoted internally through a weekly newsletter with information on technology-enhanced learning. The access numbers of the blog are much higher than attendance at face-to-face staff development sessions.²¹

19. <http://www.strayer.edu/admissions/credit-by-exam>

20. <https://1minutecpd.wordpress.com/>

21. <https://altc.alt.ac.uk/blog/2016/02/5459/>

Inspiring Example: Teacher Learning Journeys by Penn State University (USA)

Teacher Learning Journeys (TLJ) was created as a partnership project between Penn State University, National Aeronautics & Space Administration (NASA) and the National Science Teachers Association in the USA. It is a badging system aimed at supporting personalised professional development for science, technology, engineering and mathematics (STEM) teachers. This approach allows teachers to customise their professional development to their workplace, expertise and interests. A travel metaphor is used to help teachers find, select, reflect on, implement, and get recognition for learning activities. After completing each activity, teachers can receive digital stamps and badges which store information about their achievements. TLJ offers digital badging as one solution for personalisation to meet the needs of workers and employers, as an extension of workplace learning to include independent study, and as a credential to assess professional development. Teachers can create a portfolio that they can share with administrators and peers. Since many teachers found the project useful, the site has remained available since the completion of the project, and is now being run by volunteers (Gamrat, Zimmerman, Dudek, & Peck, 2014).

Further information:

> <http://learning-interfaces.com/tlj/>

The examples of innovative practices and original approaches to teaching described in this section provide pointers towards next-generation pedagogy. An analysis of these initiatives resulted in a framework called IDEAS, which is explained in the next section.

4. IDEAS for next-generation pedagogy

Based on a thematic analysis of the examples described in Section 3, we have identified five key characteristics of innovative, next-generation pedagogy: *intelligent, distributed, engaging, agile and situated* encapsulated in the acronym, IDEAS. A description of each element is given below. We present these “IDEAS” as signposts on the roadmap of next-generation pedagogy, along with a number of “landmark practices” for each that were observed in the initiatives studied for FUTURA. These practices are offered here as suggestions of possible actions or practices that could be considered by distance education providers in their strategic planning. The suggestions are intended to be indicative rather than comprehensive, and descriptive rather than prescriptive. It is hoped that they will spark reflective thinking, brainstorming, debate and imaginative planning for future policies and strategies at institutional and cross-institutional level.

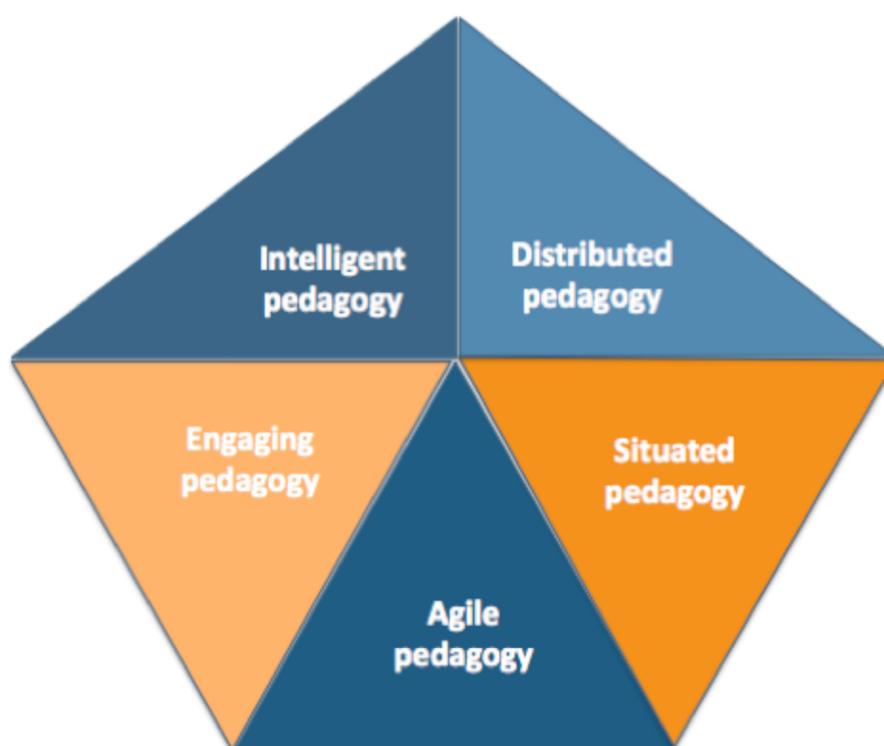


Figure 4 Next-generation pedagogy characteristics: Intelligent, Distributed, Engaging, Agile & Situated (IDEAS)

■ Intelligent pedagogy

Intelligent pedagogy is the appropriate use of technology to enhance the learning experience. Landmark practices observed in the FUTURA exploration include the following.

Informing educational decisions using learning analytics

- > Using analytics to give learners access to different parts of a learning platform, for example as enrolled students or visitors

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- > Identifying students who may be off track in their studies and providing appropriate support for them, for example by sending automatic emails prompting them to take recommended actions, or by requiring them to discuss their situation with a tutor, coach or advisor before enrolling for another course
 - > Identifying students who may be suitable coaches/ mentors for others after they have graduated
 - > Showing students live details of their progress and how their performance compares to others on their course
 - > Identifying students in financial need and directing appropriate support to them
 - > Identifying the most popular learning materials and their characteristics, creating more engaging resources, and adapting courses to suit the audience.
 - > Replacing the Learning Management System (LMS) with a new software architecture that is integrated into other institutional systems, such as student data management, human resources, and financial management, to enable more effective use of analytics.

Teaching digital competences

- > Ensuring that digital competences are explicitly built into intended learning outcomes for students
- > Supporting staff in developing their own digital competences
- > Using existing systems and tools, such as the DIGCOMP framework, to build a culture of digital competence.

Taking learning and teaching beyond the institutional learning platform

- > Inviting students to be curators or creators of blogs, wikis, OER repositories or news feeds relevant to the course content
- > Setting up, or participating in, platforms where students and staff can work on projects in virtual teams with professionals and community members outside of the institution
- > Setting up a software architecture that enables the incorporation of a wide range of educational applications (tools, systems and content) from a growing global marketplace of such resources.

Creative use of emerging technologies

- > Using technology such as remote labs or augmented and virtual reality to enhance the educational experience for learners
- > Identifying or creating applications (apps) for mobile devices that support learning, together with students.

■ Distributed pedagogy

Distributed pedagogy refers to shared or distributed ownership of different elements of the learner's journey by different stakeholders in the process. It includes, at the one end of the spectrum, collaborative partnerships between institutions based on agreements, and at the other, a deliberate disaggregation of services to allow learners to select different aspects of their learning experience from a marketplace of potentially competing providers. Where previously a university education

required institutions to provide learning materials, teaching, assessment and accreditation, there is now an emerging disaggregation of services in higher education, whereby institutions may choose to provide a specialised service (or suite of services) to complement offerings provided by other institutions. It is possible for a single institution to have offerings at both ends of this spectrum. Landmark practices observed in the FUTURA study illustrating distributed pedagogy follow.

Making the most of strategic partnerships

- > Sharing services and resources with other higher education institutions regionally or nationally
- > Building curricula and credentials with employers and employer bodies
- > Tailoring programmes both to enhance students' employability and to support innovation in industry
- > Partnering with agencies that can provide specific services more flexibly, for example round-the-clock general academic support for students.

Disaggregating services

- > Offering courses and course materials openly (e.g. via OERs or MOOCs), along with assessment and formal credits (microcredentials) for successful demonstration of learning outcomes
- > Collaborating with other institutions to recognise credits obtained via open, non-formal learning
- > Offering Challenge Exams or other forms of recognition of prior learning, enabling learners to potentially achieve formal credit for learning from a wider variety of formal and non-formal sources than is currently the norm.

Involving a wider community of interest in research and teaching activities

- > Setting up projects in which students can work with professionals and interested members of the public to address problems of wider interest to society.

■ Engaging pedagogy

At the heart of next-generation pedagogy is student engagement in the learning process. Some landmark practices in the FUTURA study in relation to engaging pedagogy follow.

Designing for active learning

- > Learners generating some of the content - this may include creating assessment questions for peers, sourcing and curating content from the Web, or creating their own content as OERs (with the express purpose of reuse by the public) which are published either on the Web or in a closed online space visible to peers
- > Learners playing an active role in using technology effectively for learning, for example by sourcing suitable learning apps on the Web to help manage their learning
- > Learners building up portfolios of their best exemplars of work for their own future reference or to use as evidence of achievement
- > The use of gamification in courses where appropriate

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- > Encouraging learners to proactively seek and use feedback, not only from the teacher but also from their peers and from a wider community of academic and professional practice.

Reducing the focus on content and increasing the focus on learning

- > Reduction of content in the curriculum to allow learners more time to focus on learning how to find and evaluate information, and how to apply it in real-life contexts
- > Use of approaches to learning that include problem solving or the completion of projects, often in teams.

Supporting teaching staff

- > Encouraging staff to find, select, reflect on, and participate in learning activities that match their levels of expertise and interests
- > Offering staff teaching enhancement programmes that fit easily into their workload
- > Providing recognition for continuous professional development, for example in the form of digital badges/ microcredentials for achievements that can be shared with administrators and peers via online professional profiles and social networking sites.

Other aspects of engaging pedagogy are related to providing customised pathways through the programme, and being responsive to learners' needs (covered in Agile Pedagogy below), and providing authentic contexts and meaningful purposes for academic activities (covered under Situated Pedagogy below).

■ Agile pedagogy

Agile pedagogy refers to flexibility and responsiveness to learners' needs. Some of the landmark practices observed in the FUTURA initiatives in relation to agile pedagogy follow.

Facilitating personalisation and flexibility

- > Modularising degree programmes as stand-alone blocks that can be studied through the home institution or through partner institutions
- > Providing different entry points to degree programmes and offering second chances
- > Eliminating most pre-set deadlines but keeping fixed moments for assessment of learning
- > Providing a self-assessment tool to help students decide if a flexible programme is right for them
- > Recommending an optimal course plan (learning pathway), with grade requirements and milestones, for those learners who need it
- > Offering a variety of personalised assistance services, such as an online tutoring service to support students around the clock
- > Tailoring communications to suit the needs of individual students and teachers and responding rapidly to students' needs
- > Tailoring access to learning resources, activities and support to different types of users with different enrolment statuses.

Expanding the options for recognition of prior learning

- > Issuing microcredentials, such as nanodegrees, digital badges or skill certificates endorsed by employers, based on successful completion of assessment
- > Enabling students to showcase their digital badges or credits on their online profiles in social media or professional networking environments
- > Integrating e-portfolios into students' personal learning environments
- > Awarding academic credits for evidence of prior learning, e.g. from corporate training, external courses (including MOOCs from other institutions), Challenge Exams, and e-portfolios.

Widening participation

- > Seeking to recruit lifelong learners as opposed to typical undergraduates
- > Offering money-saving and time-saving options for students, such as discounts on tuition fees for those who stay at the institution for a postgraduate degree, or a subscription-based fee whereby students pay less if they progress more quickly through the programme
- > Using free online courses and resources (e.g., MOOCs and OERs) as transition points or as credits towards formal degree programmes
- > Finding a sponsor (such as a national or regional government) to support free premium access to personalised support, academic credits and certificates of achievement to online employment-focused MOOCs.

Fostering internationalisation and student mobility

- > Partnering with other universities
- > Inviting students to experience different pedagogies and perspectives by taking a course at a different institution
- > Offering students the option of selecting a number of “free” credits to use as they desire, including on MOOCs or distance courses offered by other institutions.

■ Situated pedagogy

Situated pedagogy refers to the real-world relevance of the curriculum and the contextualisation of the learning process in terms of learners' personal or professional goals. Some examples follow.

Contextualising learning activities in the real world

- > Ensuring that teaching and assessment reflect authentic contexts and give learners opportunities to apply what they have learnt in the real world wherever possible
- > Partnering with companies, community organisations, government institutions and non-governmental organisations to identify key job-related competencies, integrate career development opportunities into the curriculum, and foster real-world relevance
- > Setting up an online platform to facilitate the coordination, development and documentation of real-world projects.

Expanding work-related learning opportunities

- > Facilitating virtual mobility in the form of virtual placements, internships and research projects for industry clients
- > Integrating assessments that simulate on-the-job work into programmes, and emphasising feedback instead of grades
- > Incentivising students to participate in business projects by providing payment for successful solutions
- > Offering online access to job vacancies, employer lectures, international opportunities, networking events, career profiles and CV-building resources
- > Enabling students to portray their knowledge and capabilities to prospective employers via a video platform
- > Encouraging alumni to share their work-related experiences via video with current students, and providing mentoring or internships
- > Embedding innovation and entrepreneurship knowledge and skills in the curriculum.

Focusing on today's "big issues" in society

- > Facilitating student-led social entrepreneurial activities or research projects addressing society's "big issues", with input from the public or community partners on custom-built platforms
- > Partnering with non-profit organisations that are widening participation in higher education, for example those that are targeting their programmes towards refugees
- > Engaging in local and regional initiatives for environmental protection and sustainability.

The IDEAS and their associated landmark practices identified above paint a picture of a rich educational experience for learners, accompanied by new roles for academics and administrators, and new kinds of engagement by higher education institutions with the outside world.

5. Possible uses for the FUTURA roadmap

The FUTURA roadmap is based on an exploratory study and is aimed at informing the development of a vision and strategies that will enable online, blended and lifelong learning provision in higher education to thrive in the future.

The examples of initiatives discussed in Section 3 may be used as inspiration for course teams, departments or institutions to explore innovative practices.

The IDEAS framework presented in Section 4 may be used to guide institutional change at two levels. At a strategic level, it could be used as the basis of a template for representing organisational alignment of policies, strategies and practices. At an operational level, it could be selectively used as a checklist built into curriculum development procedures.

As suggested by Chilean sociologist Tironi (2005), “the answer to the question “What kind of education do we need?” lies in the answer to a different question: “What kind of society do we want?” We hope that the IDEAS framework and its associated signposts and landmarks will help to enhance the quality of learning and teaching in distance education, and that it will act as a catalyst to harness the collective, creative energy of stakeholders within the sector to address society’s 21st-Century challenges through innovative thinking.

Glossary

Accreditation - process of quality assurance through which accredited status is granted to a programme of education or training, showing it has been approved by the relevant legislative or professional authorities by having met predetermined standards (Cedefop, 2008)

Active learning – process whereby students engage in activities, such as reading, writing, discussion, or problem solving that promote analysis, synthesis, and evaluation of class content (CRLT, 2016).

Adaptive learning technologies - technologies that can adjust and customise themselves to meet students' learning needs (Johnson et al., 2015)

Assessment - process of appraising knowledge, skills and/or competences against predefined criteria, such as expectations or measurement of learning outcomes (Cedefop, 2008)

Augmented reality - technology that overlays computer-generated visuals over the real world through a device camera (Ramirez, 2014)

Badges – digital tokens that signify accomplishments, such as the completion of a project or mastery of a skill, and are awarded by institutions, organisations, communities, groups, or individuals (Glover & Malone, 2014)

Blended learning – educational approach that combines online and face-to-face learning (High Level Group on the Modernisation of Higher Education, 2014)

Collaboration between higher education institutions - joint work of higher education institutions to foster learning and teaching

Collaboration between higher education institutions and employers - strategic partnership aimed at tackling specific problems not currently addressed through mainstream education (Universities UK & UKCES, 2014)

Competency-based education - approach to teaching and learning more often used in learning concrete skills than abstract learning.

Constructivist approaches to curriculum design - use activities where learners actively construct new ideas or concepts by building on their past knowledge and experiences. Students are expected to take responsibility for their own learning through active participation. Constructivist approaches include problem-based or inquiry-based pedagogies, with an emphasis on critical analysis and hypothesis testing. Social constructivism emphasises the collaborative construction of knowledge. (Jisc, 2016a).

Digital literacy/ Digital competences - set of academic and professional situated practices supported by diverse and changing technologies (Jisc, 2014)

Disaggregated services - charging for every specific educational service provided to students, particularly in lifelong learning

E-portfolio - personal learning online space, where learners can store their work, record their achievements, and access personal course timetables, digital resources relevant to their own study and links to other learners (Hartnell-Young et al., 2007)

Employability - combination of factors which enable individuals to progress towards or get into employment, to stay in employment and to progress during career (Cedefop, 2008)

European credit transfer and accumulation system (ECTS) - systematic way of describing a higher education programme by attaching credits to its components (modules, courses, placements, dissertation work, etc.), to make study programmes easy to read and compare for all students, local and foreign; encourage mobility of students and recognition of formal, non-formal and informal learning; help universities to organise and revise their study programmes (Cedefop, 2008)

Experiential learning - informal learning focused on learning from experience (UNESCO Institute for Lifelong Learning, 2012)

Flexible and personalised learning - educational experience that enables individual students to choose how they learn and which learning pathway they want to take; it is closely related to accessibility and to the use of technologies

Formal learning - learning that takes place in education and training institutions, is recognised by relevant national authorities and leads to diplomas and qualifications (UNESCO Institute for Lifelong Learning, 2012)

Gamification - implementation of game mechanics into a non-gaming task, to encourage and motivate people to either carry out that task, to execute it quicker, or to produce higher quality results (Jisc, 2016b)

Internationalisation - approach that considers a global perspective; it can take the form of recruitment of international students, networking between institutions from different countries, student and staff outbound and inbound mobility, foreign language learning, globally-focused curriculum, and transnational delivery of courses and degrees

Internship - (usually) unpaid work experience for a graduate (Borbély-Pecze & Hutchinson, 2014)

Learning analytics - educational use of web analytics; measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs (Siemens, 2010)

Lifelong learning - all learning activity undertaken throughout life, which results in improving knowledge, know-how, skills, competences and/or qualifications for personal, social and/or professional reasons (Cedefop, 2008)

Massive open online course (MOOC) – a free web-based course available to anyone who would like to enroll in them

Microcredentials - “A credential is a way of certifying that an individual has gained a specific skill or knowledge, or engaged in a particular experience. Microcredentials are credentials that extend this to the social web... They differ from traditional credentials in three main ways: First, they tend to be more granular. Second... because the credentials are presented in digital format, and can be parsed automatically, they allow for rapid exchange and verification over the web. This is in stark contrast to transcripts, professional certifications, and the like, which often require cumbersome and costly verification processes. Finally, because the construction and distribution of a microcredential is fairly simple, anyone can create them.” (Microcredentials Research Group, Arizona State University, 2016)

Non-formal learning - learning acquired in addition or alternatively to formal learning; it usually takes place in community-based settings, the workplace and through the activities of civil society organisations (UNESCO Institute for Lifelong Learning, 2012)

Open – characteristic of a piece of data or content that enables anyone to use, reuse, and redistribute it, subject only, at most, to the requirement to attribute and/or share-alike (High Level Group on the Modernisation of Higher Education, 2014)

Open Educational Resources (OERs) – learning materials, such as presentations, lesson plans, activities and simulations, that are freely available for use, reuse, adaptation, and sharing (UNESCO, 2002)

Project- and problem-based learning (PPBL) - teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an engaging and complex question, problem, or challenge

Qualification - formal outcome (certificate, diploma or title) of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards and/or possesses the necessary competence to do a job in a specific area of work; official recognition of the value of learning outcomes in the labour market and in education and training (Cedefop, 2008)

Recognition of prior learning (RPL)/ Prior learning assessment and recognition (PLAR) - the evaluation and acknowledgment of learning that occurs outside of *formal* credit awarding training and educational programs (Spencer, n.d.)

Remote lab - real, physical, laboratory where the equipment can be operated remotely

Teacher development - opportunities (either formal, non-formal or informal) for teachers to keep up to date with new technologies, trends and competences to improve the quality of their practice

Virtual mobility - set of technology-supported activities that realise or facilitate international, collaborative experiences in a context of teaching and/or learning (Vriens, Achten, Op de Beeck, & Van Petegem, 2011)

Acknowledgements

We would like to thank the following people for their kind contributions to the FUTURA project.

Experts consulted:

- > Prof. Terry Anderson (Professor Emeritus at Athabasca University, Canada)
- > Prof. Tony Bates (Consultant at Tony Bates Associates Ltd., Canada)
- > Prof. Mark Brown (Director, National Institute for Digital Learning, Dublin City University, Ireland)
- > Prof. Bernhard Ertl (Professor of Technology Enhanced Learning, Danube University Krems, Austria)
- > Prof. Rob Koper (Professor of Learning Sciences and Learning Technologies, Open University of the Netherlands)
- > Prof. Anja Oskamp (Rektor, Open University of the Netherlands and President of EADTU)
- > Dr Ebba Ossianniilsson (Swedish Association for Distance Education, and Ossianniilsson Quality in Open Online Learning Consultancy)
- > Prof. Angelique Lansu (Co-ordinator E-learning Environment, Assistant Professor of Earth Sciences, Open University of the Netherlands)
- > Wray Irwin (Director, Centre for Employability and Engagement, and Social Entrepreneur in Residence, at the University of Northampton, UK)
- > Darco Jansen (Programme Manager for EADTU)

Members of Focus Group, Sept 2015:

- > Participants from UOC (Dr Christine Apple, Dr Lourdes Guàrdia, Cris Girona, Francesc Santanach, Guillem Garcia, Ramon Capillas, Josep Grau, Eva Patrícia Gil, Xavier Aracil, Dr Ingrid Noguera, Ivan González, Dr Alexandra Malicka, Toni Bertrán, Mireia Garcia, Toni Martínez, Iván Alsina, Míriam Peralta, Isabel Solà)
- > Participants from Art of E-learning: Terese Bird, Dr Brenda Cecilia Padilla Rodríguez, Gabi Witthaus (Facilitator)
- > Participants from Massachusetts Institute of Technology (MIT) (Jeff Merriman, Tom Coppeto, Norman Wright and Cole Shaw)

Members of the Art of E-learning research team:

We would also like to thank Dr Betsy Alkenbrack, Terese Bird and Dr Paul Rudman, who contributed to the research for FUTURA.

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