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HOW DO YOU BUILD A BOLD RESEARCH CULTURE? INSIGHTS FROM THE NATIONAL INSTITUTE FOR DIGITAL LEARNING EXPERIENCE

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Summary

This paper reflects on and offers insights into the challenge of building and fostering a strong culture of research and innovation in the area of blended, online and digital (BOLD) learning by drawing on the experience of the National Institute for Digital Learning (NIDL) at Dublin City University (DCU). It begins by outlining the importance of a strong research and innovation culture that engages with some of the big questions facing Higher Education in order to help steer a pathway through such rapidly changing and uncertain times. The development and associated activities of the NIDL are then described with a number of success factors identified and benchmarked against other international research centres. In briefly reporting lessons and examples from these centres the paper serves to illustrate some of the enabling conditions that are crucial to supporting teaching and learning transformations in the digital world. Finally, we conclude that strategically focussed and well networked research and development centres play an important role in building individual agency and institutional capacity to harness the BOLD opportunities available to 21st century educators.

The importance of a strong research culture

Higher Education is facing powerful change forces (Halloran & Friday, 2018). A recent book exploring what Higher Education will look like in 2040 illustrates how more than ever university leaders and policy-makers need to engage in futures thinking, especially if we wish to both set and steer our own transformative agenda (Davy et al., 2018). While the future is impossible to predict by embracing a transformative mission supported by an open and strong research culture, which fosters innovation in teaching and learning, then it may be possible to turn uncertainty into opportunity. One such opportunity is the disruptive impact that new digital technologies are predicted to have on the Higher Education landscape. Orr et al. (2018) demonstrate how around the globe new entrepreneurial models are beginning to challenge conventional modes of delivery and helping to extend access to Higher Education beyond traditional campus-based learners. OUA (2018) argues that the future of education will be influenced by four factors. Firstly, the changing nature of work and the fact that in the future it is likely that many people will have multiple careers. Therefore, there is a need to go beyond knowledge recall to helping learners develop higher-order skills such as critical thinking and problem solving and to enable them to be lifelong learners. Secondly, we are seeing a spectrum

of learners, from the demands of the "now generation" who want flexible and adaptive learning opportunities personalised to their individual needs through to those who are learning for leisure reasons rather than for work purposes. Thirdly, we are seeing the emergence of new forms of accreditation, such as digital badges, certificate of participation, micro-credentials, and blockchain technology (Martindale, 2018) to enable learners to document and record their learning across different contexts. Finally, we are seeing an unbundling of education (McCowan, 2017); in the future learners may choose to pay for components of learning such as: resources, support, guided learning pathways or accreditation. Importantly, as Brown (2017) argues, the unbundling movement is not on an independent trajectory and needs to be located in wider debates about our preferred education futures.

Similarly, any consideration of the future needs to think about how we would like new BOLD models of learning serve to create better education systems and more socially just societies—for all. Over the past 20 years an increasing range of educational technologies have evolved to offer a rich variety of ways in which learners can interact with content and tools to communicate and collaborate (Weller, 2018). Research exploring the use of BOLD models for education has rapidly expanded in recent years, focusing in particular on how digital technologies can be used across formal and informal learning contexts, the types of digital literacies teachers and learners need to be able to harness their technical and pedagogical affordances, and the impact of non-formal offerings such as Open Educational Resources (OER) and Massive Open Online Courses (MOOCs) on traditional educational settings. UOC (2018) provide a list of current research on the use of digital technologies for education (more specifically e-learning) based on an extensive analysis of over 800 recent articles. The topics include: mobile learning, assessment, MOOCs, virtual reality, e-learning adoption, games and gamification, platforms, course evaluations, tool evaluation, learning analytics, instructional design, adaptive learning, literacy, video, social media, intelligent systems, training, e-health, resources and blended learning. Therefore, it is evident that a raft of digital technologies will continue to have an increasing impact on Higher Education. However, the challenge from both a research and implementation perspective is to avoid a narrow techno-centric focus by recognising new digital technologies should be in the service of big ideas, not as the big idea in itself. This key point underscores the importance of promoting a future-focussed research culture that explores the big questions facing Higher Education in the digital-era.

In order to provide personalised guidance and support for learning, there is a need to focus on the crucial and changing roles of teachers in supporting student learning in the digital world. This includes the creation of enabling conditions that encourage learning personalisation, learner agency and self-direction. Teachers' and learners' roles are changing as a result of the increasing use of technologies; there is a need to rethink teaching facilitation strategies that harness the potential of technologies. Teachers' roles are shifting from one of delivery to facilitation, and they need to use technologies to foster communication, collaboration and reflection. Both teachers and learners need new digital literacy skills, and although learners are

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technological savvy they don't necessarily know how to use technologies for academic purposes. They want personalised and flexible learning and need to harness the potential of being part of a connected global community of peers. In the future it is likely that learners will learn across a range of contexts, therefore they need to take control of evidencing their achievement of learning outcomes through e-portfolios or more radically through the use of blockchains. Furthermore, new approaches to design are needed to create pedagogically informed learning interventions that make appropriate use of digital technologies (Conole, 2013). Digital technologies and in particular social media are opening up education (dos Santos et al., 2016), to widen access and participation to everyone by removing barriers and making learning accessible, abundant, and customisable for all. It offers multiple ways of teaching and learning, building and sharing knowledge. It also provides a variety of access routes to formal and non-formal education. OER and MOOCs are challenging traditional educational offerings and providing students with ways of augmenting their formal education with free materials.

Overview of the NIDL and associated activities

The National Institute for Digital Learning (NIDL) aims to be a world leader at the forefront of designing, implementing and researching new blended, online and digital (BOLD) models of education. It has a mission of transforming lives and societies by exploring BOLD new models of education for a better and more sustainable future for all. The NIDL is committed to providing strategic leadership, building strong communities of innovation, and enabling and contributing to world-class research. It supports a comprehensive suite of professional development opportunities in BOLD education from workshops to advanced postgraduate and doctoral studies. In addition, the NIDL is committed to promoting access to university-level online degrees and qualifications through the DCU Connected initiative and through a suite of free online short courses through the FutureLearn platform. The NIDL was established in November 2013 and undertakes a range of learning, teaching and research activities exploring how technologies can be used to support digital learning. It consists of three units:

- the Teaching Enhancement Unit, whose focus is to support the design, development and evaluation of distinctive and transformative professional learning experiences for staff;
- the Open Education Unit, whose focus is to support the design, delivery and effective management of distinctive and transformative online learning experiences for distance students; and
- the Ideas Lab, whose focus is to support the design, development and research of new and emerging models of BOLD education with the potential to help transform lives and societies.

The NIDL has associated with it a set of core principles: glocal, access, inclusion, impactful, openness, enterprise, engagement, transformation, lifelong learning and distributed leadership. The NIDL team are involved in a range of courses on BOLD learning; from accredited modules to specialist postgraduate degrees and doctoral study. The Open

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Education Unit is responsible for overseeing the DCU Connected platform and increasingly works with the faculties to develop quality online courses. The NIDL Ideas Lab is where learning and digital innovation seed, blossom and grow. Founded on the principles of design thinking, rapid prototyping and a learning-centred approach the Ideas Lab is focused on agility, on acceleration and the scaling of learning ideas into full-implementation. The Ideas Lab Team aims to bring about transformative learning whilst focusing on the digital horizon. Under the leadership of the Ideas Lab DCU has partnered with FutureLearn and has developed a series of MOOCS including several on Irish language and culture.

The development of NIDL's research culture

Research is core to the NIDL's mission and this section reports on efforts to establish and foster a strong research culture within and across the three units. During the establishment phase of the NIDL one of the initiatives to help embed futures thinking and research at the heart of organisational culture was creation of an International Advisory Board of leading scholars from around the globe (https://www.dcu.ie/nidl/people/advisory-board.shtml). Another key initiative was the formal appointment of the lead author as a visiting Professor to support research and act as mentor and critical friend to academic staff. Also in 2014 the NIDL funded Ireland's first Horizon Report for Higher Education in order to keep a strong futures focus and build links with other Irish educators. From the outset the aim was to build a wider community of interest in research across the DCU, with over 50 staff from faculties and service units, such as the Library, joining the Digital Learning Research Network. In the first two-years of operation monthly research hot topics were also open to DCU staff and regularly hosting visiting scholars with an international reputation for their research was a feature of the NIDL's activities.

In order to support a more focussed approach and collaborative working culture the NIDL anchored its research around DCU's four main platforms of a wider Research and Innovation Framework (Figure 1), which places a strong emphasis on fostering innovation and contributing to societal impact. More specially, anchored in this framework, five broad research strands were defined to encapsulate the NIDL's main research interests: (a) lifelong learning, (b) opening up education, (c) student transitions and success, (d) curriculum innovation and teaching enhancement, and (e) learning futures. A deliberate effort was also made to interface with and build positive relationships with other relevant research centres along with DCU's Institute of Education. In terms of the latter the NIDL recently funded several doctoral scholarships in partnership with Institute of Education and in 2016 co-hosted a National Digital Learning Research Symposium. A distributed leadership model was adopted to help build a research culture to harness the skills and interests of a wide range of people across the university.

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Figure 1. DCU's Research and Innovation Framework

Several other initiatives were crucial to supporting the goal of embedding research at the core of NIDL activities. Firstly, there was a deliberate effort to seek out and participate in externally funded projects with a research and development objective. In this respect NIDL research teams have contributed to more than a dozen national and international research projects, including several major European projects in the area of MOOCs and a collaborative study with Beijing Normal University. Furthermore, the NIDL has strategically engaged with major professional bodies in the area through taking on leadership roles and actively participating as an institutional member (e.g., ALT, EADTU & EDEN). In the case of the U.S. based Online Learning Consortium (OLC) in 2018 one of the NIDL's doctoral students was the recipient of an inaugural emerging scholars award. The NIDL has also hosted a number of international events since it was established and in 2019 will host the 28th ICDE World Conference on Online Learning. The number of scholarly outputs produced by members of the NIDL is also a measure of research activity, with almost 500 outputs since the start of 2014. While in the first few years the strategy was to use conference papers as a vehicle for networking and seeking feedback on research in progress more recently the focus has shifted to publishing in appropriate ranked journals. Having said that the NIDL is committed to supporting open access publications and for the last three years has undertaken an exercise to identity the top 10 open access journal articles published over the year. In 2019, the NIDL will partner with two other universities to take on a formal editorial role of a major international journal published by Springer in an open access format. This initiative is further evidence of how the NIDL continues to evolve to enhance the quality of research and scholarship.

Factors for success

The experience of developing the NIDL into a vibrant research institute provides valuable insights into some of the important factors for success in establishing and maintaining similar institutional research centres. Firstly, the foundation for success can be traced to strong leadership with the collective vision and commitment to developing the research capacity of staff and their ability to translate evidence-based findings into practice. In DCU's case the

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support of the university's President was crucial to both the establishment and continued development of the NIDL. Secondly, the value of a Director who has good knowledge and is well networked internationally with strong links to other high-profile international researchers cannot be underestimated in contributing to the NIDL's success. Notably, the NIDL Director has adopted a philosophy of building more leaders than followers, which is evidenced by the number of jointly authored publications. Thirdly, the importance of building up a strong team of staff committed to addressing common problems and working together rather than as "lone ranger" researchers is a key ingredient. Fourthly, the need for appropriate structures with clearly articulated and distinct areas of responsibility but with soft boundaries helps to foster collaboration and develop research capacity. Fifthly, engagement with relevant international communities and professional bodies has helped to benchmark the NIDL and ensure that staff are part of a wider research network. Sixthly, complementing in-house activities with externally funded research projects and delivery of externally focussed conferences and workshops has helped validate the NIDL's work and build staff capability. Finally, active engagement with key faculty staff and timely hosting of face-to-face events along with strategic use of social media has helped to ensure research activities have an impact both within and beyond the institution.

Benchmarking the NIDL

The NIDL is a relative new comer in the spectrum of centres exploring the use of digital technologies for education. It is worth reflecting on the similarities and differences to more established centres. While Gaebel et al. (2014) claim that most European universities are involved in some form of e-learning their activities are often driven by individual academics or departments and a low percentage of institutions adopt a more coordinated or networked approach. In this regard Smith and Zanios (2014) provide a useful set of guidelines for universities on setting up e-learning centres. They argue that there is the need to learn about the know-how, best practices, and rules of thumb of implementing e-learning. Despite the progress that has been made in recent years in the general area of BOLD education, many institutes/organisations that wish to take a bigger step to more fully implement digital learning environments face the problem of not knowing where to start from, nor what to do. One of the challenges is that the use of new digital technologies is a field of rapid continuous development. For this reason, Bichsel (2013) suggests that institutions take a multi-pronged approach to developing services, infrastructure and related pedagogical supports to best fit the institutional context. While there is no single recipe to what works Smith and Zanios list a range of functions of centres focusing on the use of digital technologies in education:

- support of academic staff, by working with subject specialists to design and set in place the e-learning infrastructure for courses, modules or programmes of study;
- defining requirements for best e-learning practices and individualised e-learning approaches;
- provision of pedagogic and technical e-learning solutions, and production of new knowledge;

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- helping universities to build next generation e-learning tools and services for its core residential and its extended education environment.

Figure 2 shows the stages associated with the establishment of a dedicated institutional research and development centre for promoting new BOLD models of education; from establishment, through to mature operation and finally evaluation. Following a hub and spoke model it shows how this type of central unit needs to relate to various elements of management, and to student learning, staff development, and learning resource development. Beetham et al. (2001) state that educational technology staff are located in a wide range of central services as well as in departments and in hybrid locations. Centres are often located in Education departments; for example, the Technology-Enhanced Learning Centre at Lancaster University in the UK consists mainly of staff from Education, but in addition there is a loose network of academics involved in the centre's activities from across the university. This network is not dissimilar to the NIDL's wider research network, which builds a community of practice beyond the institute. An illustrative selection of examples of research and development centres with common missions of promoting the use of new technologies in Higher Education is now described.

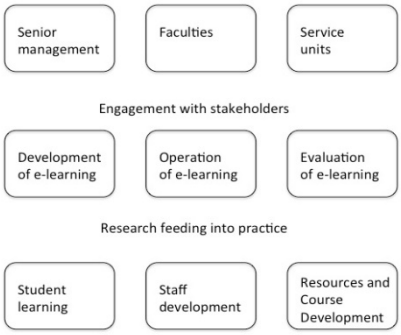

Figure 2. The e-learning research and development cycle and associated influences

Other illustrative examples

The Institute of Educational Technology (IET) has been in place since the inception of The Open University in the UK in the late 1960s. IET undertakes a range of digital learning-related research activities and was one of the first organisations to create an OER repository, OpenLearn. It produces an annual future-focussed horizons report and also offers a Masters in Open and Distance Education (MAODE) which recruits over a hundred students annually, and has a vibrant portfolio of PhD students. IET is centrally located reporting to the Pro Vice Chancellor for Learning and Teaching and has a dual function in terms of teaching/research, and working with faculties to promote the use of digital technologies.

University College London's (UCL) Knowledge Lab was established in 2004, it aims to understand and to develop digital technologies to support and transform education, and beyond. The Knowledge Lab devises new pedagogies, designs and implements innovative

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digital media and smart technologies for teaching and learning, and aims to inform policymakers and educational stakeholders. Activities include: undertaking cutting edge research on digital media and technologies, providing interdisciplinary postgraduate courses, creating empowering technologies for communication and learning that lower the barriers to knowledge and widen access, and incubating enterprise and achieve impact via partnerships with public sector, business and industry.

Another well-established centre is the Centre for Distance Education (CDE) at Athabasca University in Canada. It offers a range of masters and postgraduate courses. Most courses are offered almost entirely online and interestingly the model is not the traditional one of a course starting and finishing at fixed times, instead students can join at any point. The Centre is also home to the Canadian Institute of Distance Education Research (CIDER), which publishes the online journal "International Review of Research in Open and Distributed Learning". The location and organisational structure of research centres should never be taken for granted and this is certainly the case for CDE, which has recently been moved into the Faculty of Humanities and Social Sciences. The key point, nevertheless, is that leading universities serious about harnessing the potential of BOLD new models of education recognise the importance of promulgating a strong research and innovation culture through the strategically aligned activities of research and development centres.

Conclusion

Beetham and Sharpe (2007) argue that e-learning is no longer seen as a technical and administrative tool, existing simply to deliver content. Practitioners continue to seek guidance on pedagogically sound, learner-focused and accessible learning activities, and learning contexts are increasingly rich in electronic and mobile technologies. Research centres such as those described in this paper have an important role to play in terms of understanding how technologies can best be used in education. A number of factors have been shown to contribute to the successful establishment of a research and development centre; including the need for leadership and vision, robust approaches to research, and appropriate channels to feed research findings into policy and practice. In addition, more and more institutions are recognising the need for strategies on the use of digital technologies for education. Flavin and Quintero (2018) provide a useful overview of 44 strategies in UK institutions and considered these in relation to the concepts of disruptive innovation (Bower & Christensen, 1995), sustaining innovation and efficiency innovation. Brown and Beetham (2010) looked at the role of educational technologists and argued that institutions see enhancing the student experience as a high priority. They conclude that educational technology is now seen by institutions to be mission critical. As a relatively new centre, NIDL has had the privilege of building on the experience of establishing a new research and development centre, based on lessons learnt from other centres and what works and what is problematic.

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