

Proceedings of the HEA Future Focus Forum

Digital transformation and empowering technologies in higher education

19th February 2019

Herbert Park Hotel, Dublin 4

Introduction

Higher education will change significantly in the coming years due to digital transformation. The development of a Higher Education Digital Transformation Framework is a key action in the HEA Strategic Plan 2017-2021. In addition, the [Action Plan for Jobs 2018](#) commits the government to developing a new National Digital Strategy, to position Ireland to maximise economic and societal benefits from digitalisation. To place Irish Higher Education Institutions (HEIs) at the forefront of the digital transformation agenda, harness the opportunities of an increasingly digital world, and prepare for the challenges that this may present, some critical questions must be explored: How can our HEIs provide leadership in ensuring an ethical and responsible use of technology and data? How do we empower people to build a data-first culture and future proof our digital infrastructure? What are the challenges and how do we prepare for them? What international best practice exists to inform a national approach to digital transformation in higher education?

These questions formed the basis of discussions at the first HEA Future Focus Forum, held in the Herbert Park Hotel, on 19th February, 2019. The Forum aimed at providing a space for key stakeholders to consider the opportunities and challenges posed by digital transformation for the higher education sector and how these may shape immediate and future policy for higher education in Ireland. The Forum was opened by Paul O’Toole, CEO of the HEA, who invited attendees from across the higher education sector, the education sector more broadly, industry and the government, to reflect on their level of preparedness for the digital transformation era and how they can best adapt in a digital world.

Keynote addresses were provided by Mary Mitchell O'Connor (Minister of State for Higher Education) Tim Fowler (Chief Executive of the Tertiary Education Commission, New Zealand) and Mary Aiken (Adjunct Associate Professor, UCD). In addition, two three-member panels comprising representatives drawn from Irish, US and Austrian HEIs, industry and a student representative body, debated issues relating to the future proofing of digital infrastructure for Higher Education and providing leadership in the responsible and ethical use of technology.

It is clear that digital transformation will be a key focal point for HEIs into the future. HEIs were encouraged to consider how their policies are being applied in practice and what additional supports are required to advance initiatives aimed at enhancing the provision of high-quality educational experiences for students in higher education settings. Digital literacy and lifelong learning are essential to upskill for future jobs and HEIs must be increasingly agile to adapt and meet changing needs in the external environment. HEIs must be willing to accept a degree of uncertainty and embrace change – developing a supportive culture for digital transformation in HEIs will be essential to the success of new initiatives. Underpinning all transformation initiatives, must be regard for the responsible and ethical use of technology. We must learn from international best practice in the management and use of technology within our HE system, to safeguard and support our students and other key stakeholders.

Opening Address

Mary Mitchell O'Connor, Minister of State for Higher Education

Digital transformation must be central to each HEI's activities, underpinning business strategy and supporting a rich and high-quality learning experience for all – digital literacy is essential for the inclusion of all in our society.

Delivering a National Digital Strategy is a key priority for the Irish government. Its development is being led by the Department of the Taoiseach, with the involvement of many other government departments. A public consultation, which concluded in November 2018, will also influence its development. The final strategy will set out how we can embrace digital advances to maximise societal benefits and will include a focus on educating and empowering citizens to use digital technologies to improve their lives.

At the [World Government Summit](#) in Dubai, February 2019, higher education's response to the future of jobs was discussed. A focus on students is central to this. Graduates will need to be adaptable, flexible and creative with strong communication skills to thrive in the future world of work. Lifelong learning will be essential to upskill for future jobs. To support this, the Irish government launched its third [ICT Skills Action Plan: Technology 2022](#) in February 2019, which sets out priority actions to meet the need for graduates with high level ICT Skills. The strategy recognises this, not just as a sectoral issue, but as a national economic priority, as strong demand for computing and engineering graduates is forecast in the coming years "driven by the continuing growth of the technology sector, the impact of emerging technologies on all sectors of the economy and the spread of digitalisation". By 2022, the plan aims to deliver up to an additional 5,000 graduates per annum through indigenous supply, with the remainder serviced by inward migration.

[Future Jobs Ireland](#), to be launched in Spring 2019, also aims to drive Ireland's development as an innovative and globally connected economy, well positioned to adapt to future challenges and opportunities in the global context. The initiative recognises that technology already infuses everything we do and is built around five key pillars, the first of which focuses on "Embracing Innovation and Technological Change". The success of the strategy will hinge upon the capacity of our higher education institutions to develop and support learners.

Prioritising students is essential. Students of today are 'digital natives', with mobile devices constantly in use, and social media channels used as a primary means of communication. Students are 'savvy shoppers' able to research and compare the offerings of higher education institutions online. Higher education institutions must be able to meet student needs and provide quality teaching and learning experiences. It is critical that students are involved in the development of digital offerings and that their feedback is sought and taken on board. The [National Forum for the Enhancement of Teaching and Learning in Higher Education](#) is leading the way in supporting and coordinating initiatives to foster digital literacy among students. Several projects funded under the [HEA Innovation and Transformation call](#) will also be enabled by digital technologies.

Context setting

Gemma Irvine, Head of Policy and Strategic Planning, HEA

The HEA is aware that there is a lot going on across the higher education system in relation to digital transformation. The HEA is interested in adding value in this space – our Strategic plan commits to developing a higher education digital transformation framework. By working together, sharing best practice and identifying efficiencies we can move this forward. The Future Focus Forum is an opportunity for disruptive thinking in this area, challenging the status quo and considering what might be for the future. We need to keep in mind the learners of the future – what will they be like in 20 years' time and what will their needs be?

Future proofing digital infrastructure for Higher Education

Tim Fowler, Chief Executive, Tertiary Education Commission, New Zealand.

Insights to New Zealand's experience of implementing digital transformation initiatives in the Tertiary Education sector (spanning further and higher education) were shared by Tim Fowler, Chief Executive of the Tertiary Education Commission (TEC). His presentation focused on TEC initiatives with tertiary education providers, rather than student facing initiatives.

Digital transformation demands culture change – this means letting go of past ways of working, being brave, and walking towards a degree of uncertainty and risk.

New Zealand currently has a population of 4.93 million and is forecast to reach 5 million people by 2020. The country has experienced rapid growth in recent years, presenting challenges for the Tertiary education sector, which spans 500,000 learners. The Ministry of Education is responsible for tertiary education policy, while the TEC is responsible for implementing this. The TEC leads the government's relationship with the tertiary education sector and is responsible for investing and disbursing over NZ\$3billion in funding. The funding they provide to each HEI typically equates to approximately 50-60% of the HEI's overall revenues. The TEC is responsible for monitoring overall system performance, while the [Academic Quality Agency](#), provides external academic quality assurance for all New Zealand universities. Until recently, the TEC's sole relationship was with the providers, however they have recently assumed responsibility for management of careers and advisory services, which will require them to engage more directly with students.

A challenge facing the tertiary education sector in New Zealand is that the providers are not agile enough to meet the changing needs of employers and the economy. Higher education institutions have high fixed costs, making it difficult to reposition them quickly for changes in demand. Many young people are increasingly concerned about securing employment and developing the relevant skills that will enable this. In New Zealand, this has led to many young people choosing to complete short courses, for example in coding, to enable them to go directly into employment, rather than progressing into further and higher education courses. In reviewing this 'pipeline' of students from second-level schools into tertiary education, the TEC identified that there was a need for better information and management data to inform decision making. To achieve this, the TEC needed to develop its digital infrastructure.

The digital transformation journey the TEC embarked upon required letting go of certainty and embracing change – while they were clear about the high level direction they wanted to take, they were not sure of all the steps along the way. Some of the principles and approaches underpinning the project included:

- A commitment to open access to information for all stakeholders, including tertiary education providers, the TEC and the public.
- Tertiary education providers were not asked for more information – instead, the TEC reviewed how the data that they were already collecting could be used better.
- The TEC became a catalyst for change – they championed the data and the change process.
- The process was innovation driven – information gathered was transformed using a visualisation tool (Qlik-Sense) to make it more accessible and user friendly.
- The TEC's role was clarified as providers of tools and support, enabling access to data, but not the answers. Bulk data was made available as a free good to a range of public and private organisations, so that they could incorporate insights into the development of their educational products.
- Better decision-making on investments – access to data enabled the tertiary education providers to make better decisions for themselves.

As part of the project, the TEC was able to develop additional applications that would enable TEC data to be integrated with data from other sources, including data on graduate outcomes

and salaries, and data from secondary schools. In rolling out the project, the TEC purchased 3000 log-ins to the Qlik-Sense tool and provided these free of charge to tertiary education providers, together with training in how to use the tools. They also provided log-ins to 500 secondary schools, so that schools could access information on where their students had progressed to, what they were studying, at what level and whether they had completed their studies. The granular data available, enabled initiatives to be developed and targeted towards issues discovered through data analysis – for example, they were able to distinguish between schools that had a high/low rate of girls entering engineering courses, and then develop initiatives to tackle this. They also identified cases of ‘under-matching’ – where students with a specific level of educational achievement coming out of high school, opted to study at a lower level than they could have pursued at higher education level. This was of great concern from an access perspective, as a large percentage of Maori and Pacific Island students were identified in this group. This enabled a new focus on pathways for these students.

A public facing application on the TEC’s website was developed to enable learners to access data of interest, as well as a business to business portal. All applications developed have been customer-led and collaboratively built.

What was critical to the success of the project was the web of relationships that were forged in the process – while technology can be an enabler, it cannot solve or drive the change itself. The availability of a strong, diverse team, with the analytical ability to use the data gathered effectively, was critical to the overall project’s success. Avoiding group think and hiring for excellence, gender and ethnic diversity, and based on a philosophy of working together as a team, was a key learning and recommendation from the project.

*Regina Murray, Senior Director, EMEA Higher Education Sector, Microsoft Ireland
Presentation available at this [link](#)'*

To meet the needs of customers and learners, we need to move from a ‘know-it all’ culture to a ‘learn it all’ culture, with a strong focus on teams – this has been central to [One Microsoft’s](#) strategy. This philosophy draws on Dweck’s work on the Growth mindset, which posits that your abilities can grow with effort and persistence, that goals are opportunities to grow, and that the purpose of what you do every day is to improve¹. As Drucker famously

¹ Dweck, C (2016) *Mindset: the new psychology of success* – updated version (Ballantine Books: New York)

wrote “Culture can eat strategy for breakfast”, so it’s important to consider how you can shift the organisational culture and bring everyone with you on this journey.

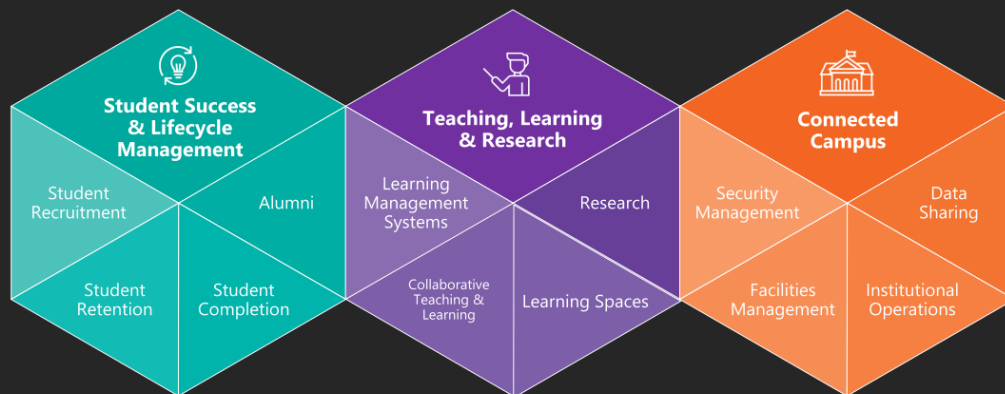
Technology is a supporting mechanism that can accelerate change and transformation. Microsoft has been able to garner new insights from data, including on the culture side – for example, analysing leader communications on cultural attributes to assess whether leaders are adopting a growth mindset with their teams. Digital is now pervasive in every industry – everything is connected and feeding into the Internet of Things.

Workforce trends for the future indicate that scarcity of talent for future jobs will be an issue – there is a need to rapidly develop new skills to address this. According to [The Future Laboratory](#), 65% of students today will do jobs that have not yet been created. LinkedIn estimate that 808million people will need to learn new skills for their jobs by 2020. It is therefore a shared imperative and priority to close the global skills gap. Higher education will have a crucial role to play in supporting learners on a lifelong journey, enabling them to re-skill at each stage along the way. Recent technological innovations are extremely powerful in what they can do and are therefore having a huge impact on our world and our education. Some of the engines of the future will be Artificial intelligence, Internet of Things, Mixed Reality, Blockchain and Quantum Computing.

Higher education is somewhat fragmented – new models and new providers are entering this space and disrupting the status quo, with some offering wholly online learning options and others using online offerings as a means of boosting overall revenues. Microsoft has experienced strong demand for some of its accredited online courses on [EdX](#), with huge sign-up in a short time period.

Microsoft has developed an education transformation framework for higher education, which aims to support higher education institutions to develop a holistic digital transformation strategy, based on their particular vision and desired outcomes.

EDUCATION TRANSFORMATION FRAMEWORK



<http://aka.ms/etfhe>

An example from the [University of New South Wales](#) in Australia was shared of a Department that embarked upon a significant process to transform teaching and learning for students. This involved a change in pedagogical approach to build learning communities, using data and artificial intelligence to elicit new insights on student learning, and linking in with Moodle to provide personalised feedback for students on how they were progressing.

Microsoft is also investing heavily in the design of its [Smart Campus](#) in Redmond, Washington. Sustainability is a key requirement for the design, as well as creating interesting, safe work spaces for staff.

Paul Doyle, Head of Professional Development Programmes in Computer Science, Technological University Dublin, Ireland

The future is inherently unpredictable, yet what is clear is that technology is a disrupting force. Students' experience of higher education today is fundamentally different to that of the previous generation. Students are now able to immediately look up answers to questions at the touch of a button - access to information is key. This impacts the way that we teach and engage students.

Some of the technologies identified back in 2000 are now being used differently to what was expected at the time. For example, digital ink. Focusing on technology trends above learner needs is therefore not advised, as technologies will continue to come on stream and be

adapted in different ways. We need to look at the learners' needs first and consider what they expect and how they are learning. Cloud technology enables us to work anywhere and student information is no longer the preserve of the lecture hall only – instead it is in a myriad of places, including on YouTube, learning platforms and in digital libraries.

Researchers and academics also have new requirements of the library services within higher education institutions – as open access comes to the fore and research data management becomes a key issue, the role of the library and types of services demanded are changing.

As higher education institutions further embrace digital technologies, ensuring clear policies are developed and implemented around the collection, management, (re)use, and security of data will be critical. Investment will be required to ensure that data is appropriately encrypted, with clear rules around data access and sharing. Decisions will be required around where to store the data, whether in individual higher education institutions, or centrally in the cloud.

Future pressures that may arise in the use of digital in higher education include: Digital identity for online learners; Data transfer; Powering the internet of things; Cyber security and use of Artificial Intelligence to personalise learning experiences for students.

Oisín Hassan, Vice President for Academic Affairs, Union of Students in Ireland (USI), Ireland.

Students' focus in relation to digital transformation in higher education often centres initially on the availability of technical infrastructure, such as Wifi, within their institutions. Students tend to view their experiences of higher education in a holistic way, taking into account the curriculum, their social engagement and wider experiences. Digital transformation is not the main concern typically raised. There is a need for further research to better understand what is of interest to students and how students can engage with materials available. There is also a need to consider how to further build digital literacy among students and staff.

Panel Discussion, moderated by Vivienne Patterson, Head of Skills, Engagement and Statistics, Higher Education Authority, Ireland

The role of a state agency in supporting digital transformation initiatives, particularly with regard to data analytics and consumer insights, was discussed. For New Zealand, the shift in culture from an agency of 'control' to one enabling HEIs, has been a work in progress. The

New Zealand university system has been under pressure to perform internationally and HEIs have tended to view reporting to the TEC as a compliance exercise. The TEC's focus has therefore been on "trying to put time back into their day, rather than taking it out". It has also involved demonstrating the value of the work, growing champions and investing in relationships.

Developing a supportive culture for digital transformation in HEIs is essential – incentives for academics to develop their digital capacity must be created, as these are currently oriented towards research activity. An example from the UK showed the effectiveness of appointing a Digital Director for each department, with the drive and passion to champion the change, share and showcase good practices, and bring people along on the journey.

There is great potential for digital transformation initiatives to promote and support the inclusion of students with disabilities – accessibility is a key issue. If proper standards are not followed in developing digital offerings, it can further disable students. How to include stakeholders so that it is fully transformative and enabling for everyone, is therefore a concern. Microsoft has built enabling technologies into their products, such as a translator app, speech to text functions and supports for those with auditory issues and dyslexia. It is vital that technology students are taught about the need to consider accessibility in their design of new products.

The trend towards 'personalised education' was discussed. Student demand for rapid feedback on assessments has increased – in the USA, 98% of students expect their data around performance to be used to enhance their educational experience and outcomes. Technology can be an enabler for this. It can also help to identify students that need greater supports. There is also scope to use technology to respond to other 'demand side' expectations of students, such as timing of course start-dates, course duration etc., as this has typically been very supply driven in the past.

While there are other providers operating in the online education space, some of whom may become more prominent over time, there remain significant opportunities for HEIs, who can partner with corporates to develop programmes that meet the skills needs of industry. Combinations of online and on-campus learning programmes appeal to many students.

The Cyber Effect: The Impact of Technology on Humankind

Mary Aiken, Adjunct Associate Professor, University College Dublin and Academic Advisor to Europol's European Cybercrime Centre.

Cyberpsychology is the study of the impact of technology on human behaviour – the Encyclopedia of Cyber Behavior acknowledges “the unprecedentedly pervasive and profound influence of the Internet on human beings”². It has been said that “cyberpsychology is the new psychology”³. Interestingly, Ireland is a centre of excellence in this area of study.

It is important to remember that what happens in the so called real-world has an effect in cyberspace;

“Claims for the independence of cyberspace...are based on a false dichotomy...physical and virtual are not opposed; rather the virtual complicates the physical and vice versa”⁴.

There is a need for us to develop a more symbiotic relationship with technology, that is, one that is mutually beneficial. Notably, human behaviour can change in technology mediated environments due to the power of anonymity⁵ and the Online Disinhibition Effect⁶.

The Internet ‘Privacy Paradox’⁷ is another construct worthy of consideration. Many believe that information they share with friends is private, however they may be unaware of potential multiplier effects, depending on privacy settings selected. The internet can enable significant escalation and amplification⁸ of behaviour. It can also facilitate influencing processes along with the wide dissemination of knowledge. However, social technologies⁹ can be used for positive or negative effect, for example, from altruistic acts such as crowd sourced fundraising, to the disturbing phenomenon of fake news.

² Yan, Z. (2012) *Encyclopedia of Cyber Behavior*. IGI Global. <http://www.amazon.com/Encyclopedia-Cyber-Behaviour-Zheng-Yan/dp/1466603151>.

³ Norman, K. (2008) *Cyberpsychology: An Introduction to Human-Computer Interaction* Cambridge: Cambridge University Press

⁴ Slane, A (2007) ‘Democracy, Social Space and the Internet’, *University of Toronto Law Journal*, 57: 81-104.

⁵ Joinson, A.N (2001) ‘Self-disclosure in computer-mediated communication. The role of self-awareness and visual anonymity’. *Journal of Social Psychology*, 31: 177-192. DOI: 10.1002/ejsp.36

⁶ Suler, J. (2004). “The online disinhibition effect”. *Cyberpsychology & Behaviour*, 7(3), 321–326.

DOI:10.1089/1094931041291295

⁷ Barnes, S (2006) *A privacy paradox: social networking in the United States*. Retrieved 1st Nov, 2017 from <http://firstmonday.org>

⁸ White, R. W. & Horvitz, E. (2009) ‘Cyberchondria: Studies of the Escalation of Medical Concerns in Web Search.’ *ACM Transactions on Information Systems*, 27(4), Article 23.

⁹ ‘Social technologies’ as a descriptor includes social media and online search engines.

In 2016, NATO recognised cyberspace as a new domain – as an environment in and of itself. Cyberspace is described by the US Department of Defence as:

“A global domain within the information environment consisting of the interdependent networks of information technology infrastructures and resident data, including the Internet, telecommunications networks, computer systems and embedded processors and controllers”¹⁰.

There are three layers to cyberspace – the physical network, the logical network and cyber-persona (that’s us, the humans). We can therefore draw on environmental psychological¹¹ learnings to date in the investigation of cyberspace. When a student logs on, arguably they are entering a unique psychological space – HEIs must therefore consider cyberspace as an environment in the context of student well-being, engagement and learning processes.

A future framework must consider the relationship between technology and the developing child, as children are our students of the future. A multi-faceted approach is required including physical, behavioural, physiological, social, affective and motivational aspects of children’s engagement in the digital environment.

Generation Alpha (born between 2013-2030) will grow up with iPads in hand and may never experience life without a smartphone – educational programmes must be designed according to their learning experience and specific needs. All aspects of digital transformation in society must be considered – from birth to entry into higher education. Studies have highlighted potential negatives regarding infant development, for the purposes of this presentation, described as ‘Cyber Babies’ (0-3 years old). For example, infants being forced to compete for attention, for eye contact, as parents and caregivers spend excessive time focused on devices.¹² Teachers have reported developmental delays in young children who are able to ‘swipe’ effectively but are unable to pick up a pencil upon arrival in pre-school. Some studies suggest that more than two hours screen time per day could damage a child’s brain

¹⁰ DOD Dictionary of Military and Associated Terms, as of April 2019, available at: <https://www.jcs.mil/Portals/36/Documents/Doctrine/pubs/dictionary.pdf>

¹¹ Proshansky, H. M. (1987). "The field of environmental psychology: securing its future." In *Handbook of Environmental Psychology*, eds. D. Stokols and I. Altman. (New York: John Wiley & Sons).

¹² Radesky et al (2014) ‘Patterns of mobile use by caregivers and children during meals in fast food restaurants’. *Pediatrics* 133(4), e843-849. Available at: <http://doi.org/10.1542/peds.2013-3703>

development¹³. However, the phenomenon of screen time has been poorly defined in studies to date and is therefore a somewhat contentious topic that requires more comprehensive scientific investigation. Nonetheless, we must pay attention to these early warning signs. Parents and educators require support – that is, guidelines and protocols informed by “stages of cyber cognitive development”, outlining age-appropriate introduction of technology are urgently required.

‘Cyber Kids’ (4-12 years old) face various challenges, including: exposure to legal but age-inappropriate content online, such as, extreme violence and self-harm content; along with cyberbullying. Studies indicate increased levels of anxiety and depression,¹⁴ along with changes to cognitive function, attention span, decision-making and memory. Notably, harms are reduced and benefits greater if screen time is accompanied by direct parent-child interaction¹⁵.

Compulsive use of social technologies is a concern regarding ‘Cyber Teens’ (13+), related to sleep deprivation, obesity and vulnerability to advertising, along with negative outcomes, such as poor concentration and grades, anxiety, depression, and suicidal ideation.¹⁶ A 2018 study found that 63% of teens said that teachers, social media companies and politicians are failing to address cyberbullying¹⁷. A YouGov survey (2019) worryingly highlighted that 18% of young people in UK do not think that ‘life is worth living’¹⁸. In recent years, the HSE along with UK agencies have reported increases in eating disorders in young people. The association with “pro-ana” and “pro-mia” websites that encourage and glamorise anorexia and bulimia targeting vulnerable, self-conscious teens, has also been highlighted.¹⁹ There is a need for

¹³ Lancet Child and Adolescent Health (2018).

¹⁴ Royal Society for Public Health (2017) *Social media and young people’s mental health and wellbeing* <https://www.rsph.org.uk/our-work/policy/social-media-and-young-people-s-mental-health-and-wellbeing.html>

¹⁵ Livingstone, S (2019) “Who is advising parents on screen time? Evidence based advice for health visitors”. LSE Blog. Available at: <https://blogs.lse.ac.uk/parenting4digitalfuture/2018/12/13/who-is-advising-parents-on-screen-time-evidence-based-advice-for-health-visitors/>

¹⁶ Aiken, M. P. & O’Sullivan, B. (2017, July, 13). “We need to talk about the Irish ‘digital age of consent’” Available at: <https://www.irishtimes.com/opinion/we-need-to-talk-about-the-irish-digital-age-of-consent-1.3152388>

¹⁷ Pew (2018) “A Majority of Teens Have Experienced Some Form of Cyberbullying”. Available at: <http://www.pewinternet.org/2018/09/27/a-majority-of-teens-have-experienced-some-form-of-cyberbullying/>

¹⁸ Booth, R (2019) “Anxiety on rise among the young in social media age”. *Guardian.com*, 5th Feb 2019. Available at: <https://www.theguardian.com/society/2019/feb/05/youth-unhappiness-uk-doubles-in-past-10-years>

¹⁹ Pollack, S (2017) “Surge in teenage girls being hospitalised for eating disorders”, *Irish Times*, 10th June, 2017.

statutory regulation to prevent young and vulnerable people from accessing or being exposed to harmful content online.

Undoubtedly higher education will change significantly in the coming years due to digital transformation, however, we need to overcome the challenges and risks associated with young people's use of and access to digital technologies before we can discuss transformation. Interestingly, as we rush towards digital transformation in higher education, a very large recent pan European study has found that when it comes to learning, the medium matters. Findings show that youth more likely to absorb information from printed books rather than screens – a critical finding in terms of planning for higher education.

It's important to remember that technology in itself is not good or bad, it is either used well or poorly by humans. Arguably, significant opportunities await HEI's including: ultra personalised learning via chatbots and robots; more free time and quality of life; remote working and study resulting in less commuting time; blended and re-imagined learning environments; digitally transformative flexible learning pathways; and applied learning schemes via next generation technology industry apprenticeships.

Science can assist the transformation process, however, traditional timelines of research funding cycles are problematic. There is a danger that *“rapid technological developments may overtake the phenomenon under study before...findings are published”*²⁰. There is therefore a need for academic experts and educators to advise and inform processes now, and not just at the end of a five-year study – in short, we need “academic first responders.”

Ireland's National Skills Strategy 2025 outlines a vision where Ireland is a place “where the talent of our people thrives...through the effective use of technology to support talent and skills provision, to grow enterprise and to enhance the lives of all within society.” As we work to improve our National Digital Strategy and develop a Digital Transformation Framework for the Higher Education Sector, it is important that a transdisciplinary approach is adopted:

*“The best approach is **transdisciplinary**... We need to stop expecting individuals to manage cyber issues for themselves or their families. Science, industry, governments,*

²⁰ Aiken, M (2018) *Life in cyberspace*. European Investment Bank. Available at: https://www.eib.org/attachments/big_ideas_life_in_cyberspace_en.pdf

communities, and families need to come together to create a roadmap for cyber society²¹”.

Cyber Ethics must also underpin new developments:

“What is new is not always good. Technology only brings progress when we are able as a society to mitigate its most harmful effects”²².

Open discussion

We need to discuss the creation of safe spaces online, and tech educational protocols regarding the developing child. It is important to discuss good practice and regulation regarding the Internet and social technologies, along with the enhancement of digital literacy, and the responsible use of technology and data. As a society there is a need to debate governance issues, as well as developmental, educational, moral and ethical implications of the impact of technology on children and young students.

Providing leadership in responsible and ethical technology

Moderator: Orla Murphy, Head of Digital Arts and Humanities, University College Cork, Ireland

We now have an urgency to make change - knowledge making, meaning making.

The National Forum for the Enhancement of Teaching and Learning is beginning to make inroads in assessing the degree of digitality within our curricula across higher education institutions.

We need to champion education as a public good, as it's through education, research-led innovation and knowledge-making that advances are made. Additional government investment to support this work is required. The successes described in New Zealand, have been enabled by significant investment in education 'for the win'.

Gerald Bast, Rector of the University of Applied Arts in Vienna, Austria

H.G. Wells famously wrote *“Civilisation is the race between education and catastrophe”*. We have to consider what kind of education it is that we want? It's not about data and facts, it's about meaning. The philosopher Zygmunt Bauman posits that if *“we are all in agreement that*

²¹ Aiken, M (2018) *Life in cyberspace*.

²² Aiken, M (2018) *Life in cyberspace*.

the task of education was, is, and probably will remain, preparing young people for life....then education (including university education) is now in the deepest and most radical crisis of its crisis-rich history."

The technological revolution will massively affect social life, democracy and labour. Large parts of currently existing jobs will break away and we will have to (partly) redefine what is meant by human labour. Climate change, migration and aging societies will globally change societies and private lives. Artificial intelligence, synthetic biology and genome editing will challenge the role of humankind in the universe and its determining influence on the course of civilisation.

The first technological revolution took 100 years and was accompanied by much disruption, poverty, and riots. Never before have we seen technological advances changing societies and economies so dramatically, in such a short space of time and at a global scale. People may quickly be replaced by robots in many industries. Jobs are in danger in: Transport; Finance; Insurance; Service industries; creative industries; management; public administration; education; legal professions; medical diagnostics; and surgery. With the new technological revolution, will new jobs arise as quickly as they are lost? What new skills will be required?

Some of the most important skills identified for 21st century economies are: complex problem solving, critical thinking and creativity. Creative skills include abstraction; dealing with ambiguity and uncertainty; taking new perspectives; contextualization; thinking in surprising alternatives; intuition and imagination. If we believe that higher education is about preparing students for society and employability, we have to ask if these competencies are currently the main educational goals currently pursued by our higher education institutions?

The future of education lies in areas where humans are better than machines - it is not a list dominated by STEM and technology. Higher education institutions will have to undergo fundamental changes by 2050. Areas that will need to be considered include:

- Topics (like migration) rather than single disciplines;
- Higher education institutions as centres of lifelong learning;
- Online learning tools – MOOCS and more;
- The vital role that artificial intelligence and augmented reality devices will play in teaching, learning and research;

- The role of Academics will change – emphasis will be on engaging learners critically. Personalised curricula and collaborative learning in teams for assessment.
- Degrees may become less important.

By the year 2050, the majority of the European population beyond the age of 18 will participate in some form of Higher Education. New types of study programmes will focus on: adaptivity for change; social intelligence; and societal responsibility. People that can bridge knowledge through inter-disciplinary work will be required, with transferable skills and relational skills.

Panel discussion

- *Brendan Guenther, Chief Academic Digital Officer, Michigan State University, USA*
- *Siona Cahill, President of the Union of Students in Ireland (USI), Ireland*
- *Gerald Bast, Rector of the University of Applied Arts in Vienna, Austria*

The role of Chief Academic Digital Officer emerged in Michigan State University, to enable and support the institution to respond to student needs more effectively. In the USA, HEIs are heavily subsidised by the State to develop students for future society. But society is facing major challenges – in Michigan, drug use among young people is a significant issue. The role of Chief Academic Digital Officer was situated in the university's Innovation Hub and tasked with working at the institutional level to try and build relationships across faculties and create incentives for faculty to respond to evolving student needs. Michigan University's Digital Strategy is very focused on people, not technology. A new initiative has been developed to support an active campus – this involves measuring student engagement in co-curricular activities as part of their student learning and reflecting this in their transcripts. All first year Michigan students (12,000) are invited to live on campus in their first year, which encourages face-to-face interaction among students and can reduce problems associated with social isolation.

Opportunities for student voice and engagement through technology was discussed. It was noted that students could receive an average of 100+ notifications per hour to their phones – students are heavily engaged in these online spaces. Their interests lie in opportunities for personalised learning that meets their needs. Students expect HEIs to lead out on good practice, including consulting and engaging them in creating meaningful user experiences.

Students also need to better understand what data is being gathered on them by HEIs, how it is being used and how it is stored. Engaging student in proactive discussions on this is important. Data on students should only be collected where there is a defined need and with consent.

While the future challenges discussed, including those associated with job losses, are great, it is important to remember that sometimes our predictions can be wrong. A key issue for consideration here is the agility (or lack thereof) of HEIs – rather than trying to predict the future, we should consider how to make HEIs more agile so that they can adapt to changes in the external environment. The issue of autonomy of HEIs is important to consider here, and the degree to which HEIs are rewarded for outputs and successes. A suggestion was made that awarding funding for digital transformation projects after they had been completed, may foster more innovation – the challenge here is that some projects will succeed while others fail.

The potential role of the HEA in supporting digital transformation and enabling a system wide view was raised – the possibility of developing a digital platform similar to that described in New Zealand, and progressing a data driven approach, merits further exploration.

In the USA, individual HEIs have their own data warehouses and there are not the same mechanisms in place for data sharing at a system level. Making information available at a national level on course places, completion rates etc would be very beneficial. Average completion rates in many HEIs in the USA are only 50%. In ‘elite’ universities like Michigan State, the completion rates are closer to 80-90%. Approaches to even out the opportunity gaps are required – there is a need for greater information on the number of students declined course places, student retention rates and how the system may be disadvantaging certain types of students.

Closing remarks

The HEA looks forward to working with key stakeholders in the development of the Digital Transformation Framework for Higher Education. The discussions and issues raised over the course of the day will inform this process and feed into policy developments.