

COVID-19 Digital and Education Working Group

Briefing paper series

Topic – Future of Digital/STEMM Education: an industry perspective

An RMIT Enabling Capability Platform Post COVID-19 ReStart Research Initiatives –
A Digital Start and A Healthier Start, March 2021

The COVID-19 crisis has changed many practices dramatically, with activities that were unthinkable a year ago now becoming routine. In universities, this has vastly accelerated changes in academic practice that were already in train, and which will lead to a predominance of quite a different approach to teaching practices in the post-COVID era. Clearly the era of “chalk and talk” and its variants is officially over, but the issue of what the replacement could or should be is very much open. Here we have solicited the input of three digital education experts to address what they see as key future issues in this area and what potential solutions there may be.

The Key Future Issues

Learning environments using tools such as Microsoft Teams became commonplace in 2020. Ms Rita Arrigo, Industry Digital Strategist at Microsoft, takes us over the horizon to the future of learning environments in universities and some potential solutions. With a shift in practice comes a shift in culture and required competencies, and the abruptness of this shift meant that those lacking the necessary skills were quickly exposed. Ms Louisa Dale, Director of Insight at Jisc in the UK, addresses the strategic issues of digital culture, skills and confidence. The sudden surge in demand for internet access brings with a commensurate risk of alienating those with comparatively less access. Mr Robert Morsillo, Digital Inclusion Senior Specialist at Telstra, talks about how technology may increase the digital divide for students.

The Potential Solutions

COVID-19 has fundamentally shifted the landscape, pushing us towards digital at unprecedented speed. And while this is challenging and problematic in many ways, it also presents opportunities to radically rethink our approaches to teaching and learning. The sector is responding with great ambition. Ms Arrigo describes how, as we enter this era of Remote Everything, education innovation has had a major acceleration. In 2020, Microsoft witnessed a surge from 5 million to 80 million Teams users worldwide in the education sector. With 21st Century curricula moving from creating critical thinkers to creative thinkers, and universities being the engine to develop the skills needed by our future graduates, specialised life-long learning is driving rethinking in education. The power of personalised, adaptive learning inclusive to all abilities adapting to the way we like to learn, is being recognised as a key trend. Managing student success, modernising teaching and learning, empowering research and providing effective, efficient physical and digital infrastructure is key to education transformation. Digital and micro credentials allow graduates to engage in life-long learning. Data informed decision making ensures personalised learning adapted to their needs. Universities must work collaboratively with industry to offer innovative cloud services for students as we move into this new era of education. So how do we create new immersive experiences in remote learning that go beyond current trends focused on video and chat? Students at Imperial College in the UK used the immersive platform Alt Space VR environment as a new student ‘meet and greet’ platform where students can traverse the virtual world, join talks, be around a campfire or a range of other VR worlds. Students create inclusive customised avatars that can be used with a range of VR Headsets including HTC Vibe, Oculus and Windows Mixed Reality headsets. This VR platform can be used with

a normal PC or iPad. Minecraft is another tool that can be used to create immersive student belonging experiences. Students at UC Berkeley in the US used Minecraft to create a virtual campus when the university was closed due to COVID-19. In terms of 21st Century curriculum, the Microsoft FarmBeats Student Kit combines agricultural studies with Internet of Things technologies. The kit includes pre-packaged curriculum that makes it easy for instructors to set up student activities to measure and analyse data collected in real environments using pre-built remote sensors. In 2020, Case Western Reserve University in the US sent Microsoft HoloLens 2 devices in the post to first year medical students so they could continue to learn Anatomy using Mixed Reality. As a final example, RMIT University provided hands-on experiential learning to its IT students during the COVID-19 pandemic through the use of Minecraft on Raspberry Pi computers, commonly used in STEM teaching due to their low cost and extensive community of hackers and makers.

So how far has COVID-19 shifted the education sector landscape towards a digital future? The evidence presented in the report [Learning and teaching re-imagined: a new dawn for higher education?](#) (Jisc 2020), based on research conducted from June to October 2020, provides a fascinating contemporary insight. Through this work, sector experts from the UK higher education organisations came together with more than 1,000 university representatives to identify the major challenges for the UK sector. Ms Dale describes two of the report's recommendations that also resonate at a global level.

One of the report's key recommendations is that universities use their strategic and structural planning processes to effect the digital transformation of learning and teaching. Strong leadership and a clear vision are essential for successful digital transformation. As digital becomes a central feature of learning and teaching, universities and their leaders will need the strong support of their governing bodies and executive teams.

At the strategic level, leaders need to identify a feasible level of digital learning and teaching and develop a strategy that sets a clear vision across their entire university. The learning and teaching reimagined strategic framework: [Digital at the core](#) is designed to assist the transformation. However, the major cultural shift caused by the COVID-19 crisis also needs to be recognised: never has building a culture of trust and belonging across an organisation been so important. There remains much to learn as universities progress through the digital transformation of learning and teaching. Creating the conditions for continuous adaption and progression may require a rethink of leadership and decision-making.

Another key recommendation from Jisc (2020) is around digital literacy of staff. Universities must ensure their professional development strategies for staff include digital training, peer support mechanisms, and reward and recognition incentives to encourage upskilling. Staff self-reported a huge leap in digital capabilities in 2020, with university leaders reporting significant take-up of digital skills workshops and training sessions. Nevertheless, the research also found a need for greater digital confidence at all levels. Staff identified a major barrier to developing their digital skills as 'time poverty'. The importance of recognition and reward to incentivise staff development of digital skills was also a consistent theme.

The heightened impact of COVID-19 school closures on students from low-income families has brought into sharp focus the growing complexity of technology usage and the digital divide. The Australian Digital Inclusion Index 2020 (see www.digitalinclusionindex.org.au) reports that while internet infrastructure is available to almost all Australians, more than 2.5 million remain offline. We know that at present only some 75% of households have taken up the NBN (including voice only customers). The gaps between digitally included and excluded Australians are substantial, particularly for low-income

households and mobile-only users. Affordability remains a key challenge and we know that students in these households who fall behind at any point in their education are less likely to catch up again. Telecommunications providers in Australia, like other essential services, stepped up in 2020 and offered temporary relief by way of extended hardship programs, extra data and/ or calling allowances, and worked with education departments across the nation to provide connectivity to students without home internet access. With the support of NBN Co, they were also able to offer specially priced fixed broadband packages based on eligibility for Family Tax Benefit A/B and manage the extra demand on their networks due to home working or education. However, many of these responses are temporary and do not address the ongoing affordability issue of home internet access for low-income families and students. Educators need to keep in mind that students may rely on access to public Wi-Fi and mobile broadband on small screen devices for their digital classrooms. Finding ways to support students and others who are excluded with appropriate digital devices, connectivity and usage skills requires all organisations to consider the diversity of their constituencies and how they might contribute to help close the digital divide.

Overall, while 2020 has been a challenging year with on-going challenges for many, there is a hunger throughout the sector to share experiences and celebrate best practice. Perhaps most importantly of all, we've seen the power of collaboration with industry experts and university staff working together to envisage how we, as a sector, may chart a digitally enhanced, futureproofed way through COVID-19 and beyond.

Synthesis of Issues

Technology is never static, and we need to be conscious of future developments and emerging needs, especially with the opportunity for future developments being shaped by educational needs (rather than the other way around). We also need to keep in mind the students' environment and digital access and identify what skills and competencies they will need to flourish in this brave new digital world. In the past, these skills included real-time notetaking with a pen and paper and close reading of printed textbooks. What are the 21st century equivalents?

Questions for further consideration include:

- What is the role of AR, VR and similar technologies in the future classroom?
- What barriers and limitations exist, and how might they be overcome?
- What skills and competencies do students require? How do we best build and improve these?

Conclusions

Technological progress is often accelerated by exigencies, such as the COVID-19 pandemic. Exploiting the full potential of technologies such as AR & VR will require changes to the education sector's digital culture. The development of appropriate staff literacies and competencies is paramount as well as consideration of the digital divide for students. This will require clear vision by sector leaders and an agile and experimental attitude, both in the classroom and elsewhere to in order to identify and support excellent student experiences.

References

Learning and Teaching Reimagined. 2020. Jisc. Retrieved from <https://www.jisc.ac.uk/learning-and-teaching-reimagined>.

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