

EdTechXEurope 2019 - reflections

25 June 2019

This month I was pleased to attend the 2019 *EdTechXEurope* conference in London. It allowed me the opportunity to look at where the edtech sector is up to, what disruption it is bringing and what all of that means for traditional tertiary education providers.

Firstly, for those of you unfamiliar with EdTechX, it comprises both the *EdTechX Global Event Series* – which is a suite of conferences and similar events in key cities (I attended my first EdTechX event in Singapore in late 2016) as well as a *Special Purpose Acquisition Company* listed on the New York Stock Exchange focused on the Education, Education Technology and Training Sectors. The founders are Charles McIntyre and Benjamin Vedrenne-Cloquet. While we have an annual Australian EduTech conference, there's no relationship with EdTechX to my knowledge.

When I attended last year's EdTechXEurope conference – I came away with a clear understanding of how disruptive edtech was going to be in the 'upskilling' part of the tertiary education sector. Many of the speakers discussed their efforts to disrupt the schools and universities and how difficult it was to 'move' large, long established, very bureaucratic institutions. They also spoke about the growing demand from employers to upskill and reskill their staff – as they adapted to new technologies being brought into the workplace. As a consequence, many were successfully pivoting from attempts to engage with/disrupt the university sector in particular – and instead were focussed on meeting the reskilling/upskilling needs of employers and career changing individuals. If you're interested in reading more of my observations from last year's conference – there's [a brief report](#) on my website.

Turning to this year's conference – what did I learn?

Interestingly there was much less discussion about which areas of the education system edtech is changing. And to my mind that's not because the threat of disruption to providers involved in upskilling and reskilling has dissipated, if anything I think people who're heavily involved in edtech have accepted that this is a key sector for them to operate in. Instead this year's conference was much more about **how** the teaching and learning process is being changed by edtech – and particularly by artificial intelligence.

As with last year's conference – Charles and Benjamin laid it all out in their opening address – but because they're immersed in the edtech sector and its latest developments, it wasn't until after the conference that I felt able to pull all of the threads of their opening address together – in terms of the threat and opportunities presented by AI (artificial intelligence).

Let me explain some of their key points and what I made of them....

Firstly some background – the record shows that disruption in other industry sectors has progressed sequentially – for example hotels having to accommodate AirBnB, traditional car manufacturers being threatened by Tesla, TimeWarner by Netflix, taxis by Uber, and traditional shopping chains under threat from Amazon.

By contrast in education – when you look globally – we are grappling with a number of disruptive forces all at once. They are:

- Consolidation
- Globalisation, and
- Disruption.

If you want more data and information on who is driving these changes and exactly what's happening – then I would strongly recommend you check out the HolonIQ website. They are the key source of global data on education start-ups, technologies, deal flow, schools, universities, training/skills, jobs, research and patents.¹

In terms of edtech investment – the venture capital sector invested \$8.1 billion into education technologies in 2018:

- 50% in China
- 20% in the US
- 15% in the rest of Asia (excluding China)
- 8% in Europe, and
- 7% in the rest of the world (and that's the category where the Australian investments sit).

And it's only the start. McKinsey estimates that by 2030 learning and artificial intelligence will add an extra \$13 trillion in global economic growth.

It's not just people attending EdTechX events or currently working in the sector who recognise the transformational power of education and AI. There's a growing group of people wanting to learn about AI so that they can bring their ideas and expertise to the sector. By way of example, the three most popular courses offered last year by leading online learning provider, Coursera, were:

1. Machine learning
2. Neuro networks/deep learning
3. AI

That was ahead of other popular contemporary courses such as programming, cybersecurity and English for career purposes.

Artificial intelligence

AI is now the fastest growing technology in the edtech sector. It's currently worth \$900 million and is predicted to grow to more than \$9 billion by 2030. And it's critically important because it's bringing new and better ways of teaching and learning – the science of learning is being used to improve teaching and learning practices in ways which are clearly evidence-based, replicable and effective.

AI is improving the effectiveness of teaching... and along the way is bringing a new, significant, wave of disruption.

If we look back to 2012-13 edtech was focussed on online content – we were digitising content and introducing some personalisation to the learning process. Benjamin and Charles liken this to a 'Spotify' moment for education. While they didn't expand on this point – I would suggest that the shift that more online content brought in education was like the shift from online music repositories (like iTunes) to streaming music on demand (Spotify) – an improvement in variety for users/learners

¹ I am a partner of HolonIQ and in that role I contribute advice on the Australian education sector.

but not a radical change in terms of the technology being used or the user experience.

By contrast they describe what is happening now in the edtech sector as a ‘genomics’ moment. By that they mean the profound disruption that AI and Deep Learning are combining to bring to education will be as significant as the mapping of the human genome and the extraordinary scientific advances it is bringing.

The examples I heard at the conference suggest to me that they’re right in their description of how big the transformation for education through the use of AI and Deep Learning will be – through using data and neuroscience to improve the efficacy of teaching and learning.

Following are some examples from the conference of the kinds of educational changes edtech companies are creating with AI and how they are significantly improving learning...

Sana Labs is a Swedish company using the power of AI to personalise learning at scale. Personalised learning can improve student learning gains by up to two standard deviations for the average pupil – using AI *Sana Labs* is bringing those educational improvements to maths and language teaching and to professional education (upskilling). And their results are truly impressive – a global education company involved in upskilling employees in the finance industry – used *Sana Labs* technology and deep learning to improve their offerings – the result:

- 1.8x increase in student proficiency (students learned more)
- 19% increase in student retention rates, and
- 91% accurate predictions of future performance of learners.

How do they achieve this? Through personalised review sessions which allow *Sana* to accurately determine the next step in learning or remediation for each student, in real time. Their first objective is to identify the knowledge gaps specific to each learner, and trace these back to their root cause. They do this by using algorithms and what’s described as “spaced repetition techniques”. Collectively their algorithms also ensure long-term knowledge retention in preparation for learners’ final exams.

Another example which was showcased is *Century Intelligent Learning* – an award winning educational platform developed for schools, colleges (VET providers) and universities. *Century* has partnered with University College London and Imperial College London to develop a platform that uses learning science, artificial intelligence and neuroscience, to create constantly adapting learning pathways for students and powerful assessment data for teachers. Their results are impressive:

- 30% improvement in student learning
- Learners from disadvantaged backgrounds learning at the same pace as other learners
- Reduction in teacher workload of 6 hours per week
- Real-time analytics for teachers and administrators

These organisations and others at the forefront of the integration of AI into the education process are using personalisation and predictive analytics, combined with AI, to track learner engagement and behaviour and respond to it – to improve the efficacy of learning. They are monitoring student learning and providing that feedback to teachers in real time, allowing (where necessary) for changes in what, when and how things are taught.

One of the more controversial ways in which AI is being deployed is in real-time monitoring of students in classrooms and online – studying their engagement with their teacher as they listen and learn. I first saw AI video monitoring and feedback technology being deployed on my last trip to

China (as part of the HolonIQ *Global Executive China Immersion* program)² – and at that stage I thought privacy concerns in the West would mean that it would take some time for the lessons Chinese ed-tech companies and education systems were learning, to improve education in the West.

I was wrong.

There were examples being discussed throughout the conference – including at the private Spanish University, *IE University*, where this is an accepted practice and students' engagement in their online lessons is being monitored to give teachers real-time feedback and improve student learning. If you're interested in understanding this more – other organisations which were showcased during the conference were *Class Charts* (a UK company) and *Face++* (a Chinese company).

One of the other companies which impressed me with their use of AI to improve student learning was *KnowledgeFox*. They've developed a learning management system for microlearning and it's seriously impressive. Apart from KnowledgeFox being easy for companies to integrate into their own LMS or HR IT system – they've achieved some excellent results using gamification, learning reminders, and a scientific algorithm to personalise the learning experience. Businesses are using them for micro-courses in:

- onboarding new employees
- change management
- product training
- compliance training
- sales training
- blended learning
- language training.

Here in Australia there are hundreds of traditional tertiary education providers offering short courses in these areas. For how long I wonder...?

KnowledgeFox is being used by businesses including Credit Suisse, Samsung, Vienna International Airport, etc. At what point will they or a company like them move seriously into the upskilling space in Australia?

In the 15 years KnowledgeFox has been in operation the educators and data scientists in the company have discovered that learners learn more and retain more of the knowledge they learn if their formative assessment contains 20% 'hard' questions and 80% easy questions. If you ask any more difficult questions of learners, they will become demotivated and drop out of the course - even when it's a micro-course and even when those enrolled are medical practitioners for example. If you get the balance right and ensure most questions students are asked are easy – then they will stick with their learning and get more of the hard questions correct and retain more of that knowledge.

To me – as someone with a background in education and educational assessment – this seems like a major breakthrough in our understanding of the science of learning. But what does it mean in a compliance driven tertiary education system such as we have in Australia?

Would ASQA and TEQSA be comfortable with assessment tasks which deliberately included 80% of questions being easy? I'm not sure that they would – and if I'm right about that then we may be

² If you are interested in my reflections from that program, they're available [on my website](#).

operating in a system which acts against the educational best interests of learners... and in doing so leaves the door wide open for organisations like KnowledgeFox and others to step in and offer micro-courses which are much more educationally sound and effective – and which sit outside the accredited tertiary education sector.

‘Learnability’ and adaptability

Two inter-related themes which emerged during the conference were ‘learnability’ and ‘adaptability’. Speakers discussed how traditional education systems taught people ‘things’, for example, maths, history, plumbing, IT, etc. Traditionally we give people a ranking of some kind to show their level of performance in these areas – eg Claire is a competent plumber, or she scored 95% on her history test.

What we don’t currently assess and report on are our learners’ ability to learn. Instead we teach people to learn things/knowledge.

It’s not clear to me that we explicitly teach them to learn (and that’s particularly true in the tertiary education sector). And yet – learning is going to be key to students’ future success in a rapidly changing world. A number of speakers commented that we should be thinking more about measuring and reporting on ‘learnability’.

On a related theme a number of speakers discussed the importance of adaptability in today’s and tomorrow’s workplaces. That triggered an interesting discussion which separated the interpersonal trait of adaptability (or ‘fitting in’ which could see people endlessly adapting themselves – in which case the status quo would always prevail) with the ability to identify and lead the adaptation of systems and processes. This latter definition of adaptability was widely discussed in the sessions I attended and was explicitly recognised as a key skill for future workplace success.

Founders Academy, with its alternative approach to business education, has taken the need for adaptability and placed it at the heart of their course design. As they note: “The future is uncertain, complex, tech-enabled, and purpose-driven... to shape that future, future business leaders need a new type of DNA. We call it AQ: Adaptability Quotient – the ability to thrive in a world of accelerating change.”

And what do they offer? Business courses which are tuition-free and intensively future-focussed, and which involve 3 components:

- 30 days on-line before starting the programme, engaging with the Academy to familiarise you with their learning model before you study
- 3 months full-time study intentionally designed to simulate what it’s like to work in a high-growth tech company, the course is designed to reflect project sprint cycles which allow learners to put their developing skills into practice, and to solve real world problems as a team, and
- then a 6-month paid placement full-time in a leading tech company.

A number of other alternative learning models/businesses were also showcased they included:

- a new online apprenticeship for the hospitality sector from French company *Skilloggs* – learners spend 28 hours a week in the kitchen, 7 hours fully online (for their off the job learning) and have 3 one hour face-to-face bootcamp sessions per week. This coming year Skilloggs will launch a Bachelor of Food Technology degree which will be 95% online and won’t just include traditional course content but will also include subjects on 3D Printing (for

the latest in pastry techniques), drones (for future delivery options in the learner's food business), and web development (for the website for the learner's future business).

- The *London Interdisciplinary School*, a new UK university, launches next year and will deliberately not teach along faculty lines. Instead the aim is to use cross-disciplinary projects as the basis of their teaching model. As they say “we don't know what the world of work will look like in 2050 but we do know that we will need brilliant problem-solvers who can tackle these issues in new ways. We will teach our students the knowledge, skills, and frameworks they need to create the change they want to see.” They aim to have their students tackle key 21st century challenges, including:
 - Childhood obesity
 - Knife crime
 - The commuting conundrum – as cities centralise there's a need to design a socioeconomically fair incentive scheme to encourage people to travel in non-peak times or via alternative routes
 - Making palm oil supply chains transparent
 - Mosquito gene drive to fight malaria
- Tom Rippen, the Founder and CEO of *On Purpose* described his organisation's focus on purpose before profit. Specifically, that means no accreditation and no certificate issued at the end of the course. The sole focus is on helping people learn skills to move into purposeful work. Offering two levels of education, for CEOs and Associates, the focus is on gaining work in/leading purpose driven organisations. Learners spend 4.5 days a week on-the-job and have only half a day spent in the classroom. On Purpose's networks and the results they've achieved for their learners mean formal education certification is not important to the success of their graduates or to their business model.
- *Makers Academy* – is a coding bootcamp which has advised the UK government and worked with leading grocery chain Tescos and many other large companies. They've been described by Forbes magazine as “London's leading software development boot camp, ... their students learn how to code in 12 weeks and are set up with all the skills needed to become a developer and secure a job at the end of the course.” They offer a job placement guarantee to all of their students (your money back if you don't gain a full-time job or at least a 6 month employment contract after graduation) and they have an holistic focus to their program and the support they offer. As with On Purpose, formal accreditation of their organisation and courses is not considered relevant – they've built their reputation reskilling people to work successfully as coders – and that's what their learners are focussed on as well as the employers who engage their graduates.
- *FutureLearn* -the online arm of the UK's Open University was also showcased during the conference. This organisation is not just globally interesting and influential with 9 million learners and over 150 partners, for Australian listeners it has further relevance because in April this year online jobs board, SEEK, took a 50% stake in FutureLearn. While SEEK's notice to the ASX at the time of the acquisition noted the reasons for their investment in FutureLearn – it was interesting to hear from the CEO of FutureLearn as to why they thought the SEEK investment made good sense for them. With four key areas of focus:
 - Business/management
 - Health and psychology
 - Tech and coding, and
 - Teaching

FutureLearn is looking to benefit from SEEK's successful joint venture with Swinburne University in what was initially referred to in Australia as Swinburne Online but is more accurately OES, Online Education Services (and now involves much greater ownership by

SEEK and other university partners beyond Swinburne). Despite having a strong online learning platform themselves, FutureLearn is looking to learn from OES and use the SEEK investment to strengthen their online platform. They also want to use SEEK's global footprint (its employment businesses are some of the largest in key locations including China, India and elsewhere across the world) to expand FutureLearn's student cohort.

As CEO, Simon Nelson, pointed out – EY Parthenon has worked with FutureLearn to estimate demand for higher education between now and 2030. Their best estimate is that there will be up to 13.9 million new students per year between now and 2030. To meet their learning needs in a traditional model would require governments across the developing world to build an extra 700 universities each year, every year for the next decade. Clearly that's not feasible and so alternatives like FutureLearn have a role to play.

Their educational offerings are also innovative, comprising a modular design where the three levels of offerings are available from across their partner institutions and they collectively build on each other:

1. Unlimited short courses from their 150+ partner institutions for only £269 per year (approx. AUD\$550 per year), leading to
2. Micro credentials – short, internationally recognised credentials, leading to
3. Degree programs offered on a 'pay as you go' basis

The interoperability of their partners' offerings into cross-institutional degrees is also providing a platform for further international collaboration. For example an Entrepreneurship Graduate Certificate offered jointly by the UK's University of Coventry and Australia's Deakin University. Having their courses already tailored to the FutureLearn platform allows for much easier collaboration between institutions on opposite sides of the globe

A couple of other observations/things you don't typically see at an Australian tertiary education conference:

1. The use of a hologram to enable Lee Newman from IE University to appear on a panel in downtown London from his offices in Spain. And to clarify – it wasn't just a pre-recorded speech captured on video and dressed up with a few fancy 'beam me up Scotty' type gimmicks. Lee participated in the panel and interacted with the audience as if he was there in person – but he was instead participating from Spain in the form of a 3D hologram. Apparently this is technology which IE University uses to engage their online learners most of whom are not based in Spain – it was very impressive.
2. The second conference initiative which impressed me was the Global Start-Up Super League session where representatives from 28 edtech start-ups from 25 countries around the world (none from Australia unfortunately) gave a 90 second pitch on their business model and then answered questions from a panel of judges for 90 seconds each. There were some incredible businesses and founders showcased (and those chosen to present had previously been involved in, and won, smaller/regional start-up competitions). I was incredibly impressed by the vision, dedication and achievements of all the competitors. The top 3 start-ups as judged on the day were:
 - i. *StudySmarter* (gold medal winner) – an app created by a German start-up which creates learning plans, mind maps, flashcards and summaries based on a student's own lecture/study notes – and (if they chose) enables

students to learn collaboratively with others in other locations studying the same topic. They have partnerships with more than 350 universities, cover 1,600 courses, have created more than 102,000 summaries and nearly 870,000 flashcards. These study resources have in turn assisted 89% of all students who've used them to improve their grades.

- ii. *Insimu Patient* (silver medal) – supported by the Hungarian government and the European Union this app allows both medical students and medical professionals to practice their future clinical diagnostic work, gain real experience, and learn from their mistakes by working on virtual patients.
- iii. *CRSP Dsgn* (bronze medal) – an African based start-up focussed on addressing the significant lack of resources in Africa and the rest of the developed world to demonstrate theoretical STEAM (Science, Technology, Engineering, Art and Mathematics) concepts and to deliver them in a way which supports 21st Century learning models. Their flagship product is a range of affordable educational robotics kits, developed to enable grade 4-9 students to learn about electric circuits, and create robotics inventions, within their existing classrooms.

Reflections

The conference came in the same week that ASQA announced the cancellation of 50 providers - many of whom were cancelled because they had exited the system, and because they no longer had students they had not submitted their annual data returns – hence the cancellation of their registration. Among the 50 were 7 enterprise training providers and 20 other providers which had been operating in the system for years and which shared a number of characteristics – including operating on a fee-for-service basis, teaching only domestic students, and having only recently been re-registered. I have to say the ASQA decisions came as a shock to me – perhaps more so because of the educational conversations, innovations and debates I'd been immersed in at the conference.

When I reflect on the ASQA decisions a raft of questions spring to mind – again against the backdrop of the conference and the innovation showcased there. My questions include:

1. Why these longstanding, good providers are exiting the formal system?
2. Is it because there's already less room in the domestic fee-for-service market for registered providers, as edtech companies move in with non-accredited offerings which rely on their reputation with industry as their signifiers to the market?
3. Is it because our regulatory regime and training package development processes have constrained business viability and innovation to the point that in some industries and businesses, employers can access cheaper, more relevant training from outside the formal sector and are voting with their feet?
4. Is it because the continual changes to government funding have ruined the business models of well performing training providers to the point where it no longer makes sense for them to stay in the sector?

I would love the Australian government (or the NCVER) to fund a research project to find out why these organisations pulled the pin, or had the pin pulled on them.

Until we have firm evidence I would have to say that my time in the sector leads me to believe that it's likely that a combination of the factors I've listed above were behind the recent spate of exits from the formal vocational training system. I'd also suggest that with the work being done by leading edtech entrepreneurs – we're likely to see more, not less, of this occurring in the future. Good

providers are likely to increasingly leave the formal sector because the very nature of the sector (it's regulatory and funding requirements) means they can't compete with an edtech sector at the start of a 'genomic' shift.

If the non-accredited sector brings better learning and assessment practices to tertiary education – particularly the upskilling and reskilling parts of the sector – then how do you keep a formal provider afloat?

Rather than ending on that fairly depressing note – I would urge those of you working in senior leadership roles within traditional, formal tertiary education providers to reflect on both the threats and the opportunities being created by the edtech companies I've highlighted in this analysis and those like them.

Imagine what you could do if your staff and students had access to the AI-backed learning and assessment practices on offer in the edtech sector today?

I think it's imperative that providers keep their fingers on the pulse with what's happening in the edtech sector, and then think through whether or not your provider needs to do all of your delivery in the formal/accredited sector, and how you can improve the learnability and adaptability of your graduates?

I hope my conference reflections have given you both a lot to think about and some insights into the disruption the tertiary education sector is facing. I very much welcome your ideas and thoughts.

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