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# Is UK edtech 2070-ready?

The Open University's Future of Learning 2070 report predicts a fantastical world of technology-assisted education, but is this the direction the sector should take?



*The technology is patently on the horizon, but the prospects for development in edtech are less clear*

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## The breakdown:

- The Open University (OU) has released its [Future of Learning 2070 report](#), predicting what edtech might look like in 50 years.
- The report includes predictions of AI coaches, full-sensory VR, and 'brain-to-brain' learning.
- American trials have shown some basic advances in brain-to-brain learning, transmitting elementary Tetris strategies electronically between participants' brains.
- Chatbots are already widely in use at universities like Leeds Beckett, where AI programmes assist students with applications during clearing.

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### What's the issue?

Harold Wilson's "University of the Air" was the brainchild of sociologist Michael Young, the man who coined the term 'meritocracy'. In the early days, the OU was rebuffed by many – minister of state Jennie Lee fought hard against her superiors in the Department for Education to get the project off the ground. Her contribution is recognised at the OU's headquarters in Milton Keynes where a staggering £17m high-technology building bears her name. But the OU was not the result of a fascination with new technology for its own sake – it was the opportunities tech offered for social transformation that galvanised support.

Commissioned to celebrate the 50th anniversary of the Open University (OU), the Future of Learning 2070 report points to an education sector where the traditional rules no longer apply. Classrooms in 50 years' time will, the report reckons, include brain-to-brain learning, AI coaches and full-sensory virtual learning. Reports like this may be fanciful, but why should that be a bad thing? The OU started with a far-fetched report handed to Wilson and Lee. With the release of this report, perhaps their 50-year-old mission is more achievable than ever.

### What has happened so far?

The report is penned by leading OU academics and considers the edtech applications of brain-to-brain communication, the AI coach and virtual reality. Brain-to-brain communication may seem fanciful, but perhaps that is why so much energy has been expended on its development. Prof John Domingue, director of the Knowledge Media Institute at OU, predicts students will gain the ability to "understand a new language, to play musical instruments or diagnose a disease" with the non-verbal assistance of a teacher.

“ *Whilst unquestionably fascinating, virtual reality and artificial intelligence could be a long way off being adopted on a widespread scale.* Dave Kenworthy, director of digital services at CoSector

In the last few years, science journals have included many (mainly American) studies on the topic. In 2015, at the Center for Sensorimotor Neural Engineering of the University of Washington, scientists demonstrated that simple thoughts could be transmitted electronically. Using a cap studded with electrodes, scientists measured tiny changes in brain activity. A participant was asked questions, and answered “yes” or “no” by looking at two different colour strobe lights. The ‘yes’ light flashed 13 times a second, and the ‘no’ light flashed 12 times a second – these tiny differences are not noticeable to the naked eye but triggered different neurons to fire. That change in brain activity could be interpreted and sent via the internet.

In the same year, the same institute connected three participants to solve a Tetris game. Monitors measured magnetic stimulation at the occipital cortex of two participants, then integrated the two decisions and transmitted it to a third participant. Using these two viewpoints, the receiver could take decisions on how to fit the Tetris blocks together. This experiment offers an opportunity for collaborative problem-solving on a scale never before seen. Using two senders instead of one increased the accuracy of the receiver – across five experiments, the success rate averaged 0.813.

Domingue wrote in the AI coach section of the report: “I believe that the concept of ‘self-hacking’ will emerge... at some point, it is entirely feasible that AI algorithms will know us better than we know ourselves. With the masses of ingested and analysed data, AI systems will have an understanding of how we are motivated and triggers for changes in our emotional state.” He predicts that soon 24-hour supervisors will shape our study behaviour, perhaps even influencing our mood to make us want to study.

Edtech was valued at £17.5bn in 2018 and is set to rise to £19bn by 2019.

Edtech UK & The Education Foundation predicts the edtech sector will reach approx £176bn by 2020

Already, AI programmes like Thinkster Maths can learn how students process instructions as they complete maths exercises. In a blog published in June 2019 on FE News, Professor Rose Luckin, a specialist in learner-centred design at the UCL Knowledge Lab, discussed research on “collaborative problem-solving efficacy”. Measuring hand movements and eye contact, she found “the synchrony of individual group members’ behaviours can signify positive collaborative behaviours”. This information was then used to “inform the design of AI algorithms” which can help computers tailor group study exercises to where they are most useful. Chatbots are already widely in use at universities like at Leeds Beckett, where AI programmes assist students with applications during clearing.

Monica Grady, OU professor of planetary and space science, wrote about the future of virtual reality (VR) in education using her experiences with the Open Laboratory, a digital experiments platform that aids kinaesthetic learning. “With external funding the OU established the Open Laboratory which offered them access to top-level equipment they could not normally access, like an electron microscope. Students operate the microscope remotely as if they were sitting in front of it.”

### **What happens next?**

The technology is patently on the horizon, but the prospects for development in edtech are less clear.

The UK government is keener than it ever has been to invest in edtech. At the beginning of June 2019, the government announced a £5m investment to fund better online learning for adults. These schemes would, according to the Adult Learning Technology Innovation Fund, support the utilisation of AI and automation. The AI sector – which contributes £184m to the economy and generates £1bn in inward investment – is one of the UK’s most buoyant digital sectors.

There are also 16 centres for doctoral training (CDT) within 14 partner UK universities. These UK Research and Innovation (UKRI) schemes are backed by a £200m investment. One, led by the University of Edinburgh, explores natural language processing which develops AIs' understanding of human language. The research aims to understand the nuances of speech then summarise and simplify them.

Earlier this year, the DfE announced that Tech Nation would run applications under the Applied AI programme to give startups opportunities to meet investors. Its new national data strategy aims to establish ethical parameters for AI developments, including the use and collection of data.

In an interview with Education Technology, Dr Eileen Kennedy, senior research associate at UCL, said edtech developers rarely had a detailed understanding of pedagogy and the teaching experience. Canvas, a learning platform from American company Instructure, thinks it has understood this concern. Its predictive modelling can correctly anticipate a student's outcomes in 80% of cases. Chief executive Dan Goldsmith says its DIG initiative "can provide the instructor and student what they could do to affect that result". The company has also developed the concept of e-portfolios that provide a source of unique (and ethical) data for the company to analyse.

In June 2019, the European Council on Foreign Relations (ECFR) published a paper called Strategic Sovereignty: How Europe can regain the capacity to act, in which policy fellow Ulrike Franke reported on the EU's position within global AI developments and obstacles which may be stopping European-based developments. The EU lags behind China and the US in "three key elements of AI" – namely its dependency on foreign chip companies, a "politically defensive mindset" towards AI, and a lack of venture capital. The last two problems have created a 'brain drain' and a problem in accessing 'big data' on which AI developments depend.

## [Click here to read the OU's Future of Learning 2070 report in full](#)

Dave Kenworthy, director of digital services at CoSector, is less concerned with these distant predictions. He wrote in Education Technology in November 2018: “Whilst unquestionably fascinating, virtual reality and artificial intelligence could be a long way off being adopted on a widespread scale by the sector, and it remains to be seen if these will have long-term value or if they are perhaps a novelty in the current climate.”

Kenworthy says edtech developments would be better focused at improving teaching practices, assessment processes, training and development: “Silicon Valley giants that will be the main providers of the exciting VR and AI tech will pique the interest of students, but in terms of setting up the background mechanics to tackle the more pressing issues first, it’s down to the industry experts who are close to the institutions and understand their practices to make this happen.”

### **Conclusion**

Technologies like those suggested by the OU report are bound to generate interest. What’s more, the science could soon make these predictions viable. The UK government, however, appears to be prioritising other types of edtech which focus on lessening teachers’ workloads. Whilst this is an important consideration for the sector, it lags behind private sector developments; while some schools in the UK lack decent internet connectivity, the demand for internet-enabled mobile phones is through the roof. The government needs to get ahead of the developments, or we may find that our schools will be less well-equipped than our living rooms. The enormous gap between commercial and educational tech is well-established, and it runs the risk of getting bigger.

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Contact

EDITOR

CHARLEY ROGERS

charley.rogers@wildfirecomms.co.uk

KEY ACCOUNT DIRECTOR

BOB TOMBLIN

bob.tomblin@wildfirecomms.co.uk

ACCOUNT MANAGER

LISA PEARCE

lisa.pearce@wildfirecomms.co.uk

MARKETING MANAGER

SOPHIE POSTMA

sophie.postma@wildfirecomms.co.uk

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