THE UNIVERSITY OF QUEENSLAND
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The legacy lives on – UQ and World War I

The art of giving

Customs House – a Brisbane icon

Do we control our own media?

THE NEXT LEARNING FRONTIER

Using the latest online technologies, UQ has flipped the traditional learning model and challenged 75,000 people across the globe to improve their everyday thinking.

By Dr Jason Tangen, Senior Lecturer in cognition with the School of Psychology.

In a classic essay called *Electronic Tutors*, Arthur C Clarke famously wrote; "any teacher that can be replaced by a machine should be!" These words resonated with me in 2007 as I parroted my third repeat Honours-level statistics class of the final week. A student asked me whether she could record the lecture for a friend who couldn't make it to class. I consented, but I started to question whether my live performances added anything to my students' learning experience above and beyond the mini voice recorder in the front row.

Over the past two years, Massive Open Online Courses (MOOCs) have exploded with the launch of edX, Coursera, Udacity, Iversity and FutureLearn, among others. These courses are free and open to anyone. You don't need any previous education or experience, and can participate as much or as little as you'd like. Enrolments for a single course have exceeded 300,000 students from 209 countries.

Now, anyone can watch the best teachers from elite universities across the globe – anywhere, anytime, on any device. You can learn classical mechanics from 77-year-old Walter Lewin from Massachusetts Institute of Technology, who rides a fire-extinguisher-propelled tricycle across his classroom; you can take courses on robotics and artificial intelligence from a dozen different institutions; you can even learn about heat transfer in the molten chocolate cake from eminent researchers and world-class chefs in Harvard's *Science and Cooking* course.

After watching these incredible performances and even using some of their demonstrations in my own lectures, it became very apparent that Clarke's dictum was true: I could be replaced by a video recording, and I probably should be. Packing students into giant lecture halls with stadium seating to hear me present old material or watch online videos together just seems ridiculous. The 500-year-old "sage on stage" model of higher education appears to be broken.

> *"Any teacher that can be replaced by a machine should be!"*

Last year, when The University of Queensland joined the edX consortium founded by Harvard and MIT, I wanted to begin addressing the problem by designing a MOOC that was entirely different from the traditional lecture. The course is called *Think101x: The Science of Everyday Thinking*, and deals with topics ranging from hindsight to horoscopes. Along with UQ lecturer and Postdoctoral Fellow Matthew Thompson and producer Emma MacKenzie, we are challenging people to be more curious. Knowing how to think is far more important than knowing what to think.

Rather than simply uploading video recordings of live lectures or talking heads on slideware, we wanted to offer the best online experience that we could imagine. We travelled far and wide to film conversations with some very clever people including Daniel Kahneman, who won the Nobel in economic science; Elizabeth Loftus, who pioneered the study of false memories; and even talked to the MythBusters about testing claims and distinguishing between fact and fiction. We met 21 leading thinkers from across the world and combined hundreds of hours of conversations, demonstrations and assessment into short, highly polished episodes on how to evaluate claims, learn and remember information better, and ultimately make smarter decisions. *Think101x* is about everyday thinking, so there were no lab coats and no standing in front of a whiteboard or bookshelf—we filmed real arguments at the dinner table and the pub instead.

If students can kick back at home and watch weekly episodes on their computer, television or other device – where does that leave the on-campus experience? What happens to the UQ Advantage? Our goal with the *Think101x* MOOC was not to replace the campus experience with an online experience. Instead, we wanted to use our edX course to free-up our time and

resources to offer the best live experience possible.

On 3 March 2014, Semester 1 classes commenced at UQ and 186 students were registered for *PSYC2371: The Science of Everyday Thinking*, to be held in the new, iconic Advanced Engineering Building situated near the University Lakes on the St Lucia campus. On the same day, *Think101x: The Science of Everyday Thinking* went live on the edX platform, where 75,000 people were enrolled.

Each week, a new episode was released on edX and the 186 students at UQ watched the videos at their leisure, completed the quizzes and discussed and debated the material with the 75,000 people across the globe in the online discussion boards. When they showed up for class at UQ each week, our students were now familiar with the topic. We essentially "flipped" the focus from teaching to learning and assigned online lectures as homework – before coming to class – so that class time was devoted to discussions, demonstrations, debate, peer interactions and time to think.

In line with everyday thinking, we introduced a horoscope activity to demonstrate the confirmation bias; we examined topical media reports to evaluate claims and opinions; and students analysed their own responses to an initial questionnaire to demonstrate hindsight bias, intuitive physics, the law of large numbers, regression to the mean, false consensus and the gambler's fallacy. We engaged in "dinner table discussions" where students argued for one side of a given controversy. They assessed the validity of dozens of pseudoscientific techniques and phenomena (e.g. magnet therapy, crystal power, detox diets and telepathy) and proposed experiments that would test the efficacy of these claims. The classes became an interactive experience where we exchanged ideas, debated issues and had the time to provide immediate, directed and thoughtful feedback. This new model of teaching seems to better reflect the ethos of the UQ Advantage.

Every week of the UQ course, we filmed highlights of each class and bundled them with the 12 online episodes on the edX platform. Through edX we are offering the best of both worlds: the best online content featuring international experts, and the best live and interactive experience with discussions, debates, demonstrations and activities that were designed to reinforce the content. Academics from other institutions, school teachers, and even self-organised groups at a coffee shop presented the components of the course anywhere, and adapted them for their own purposes at no cost. We asked each instructor to contribute to the development of the course, however, by uploading their own activities and ideas, along with their input on how to improve and enrich the course. By leveraging the enormous scale of the MOOC, we have created a crowdsourcing platform for these teachers to provide feedback and improve the components of the course, ultimately improving our UQ offering. If others follow the same model, it could be a significant time and cost saving and could allow us to focus our time and efforts on what we do best.

Following the famous quote by Arthur C Clarke on replacing teachers with machines, he suggested that these "electronic tutors" would help to eliminate the repetition in teaching, make learning more like play, and paradoxically humanise education. I'd like to think we are well on our way to realising Clarke's vision.

To find out more about *Think101x: The Science of Everyday Thinking*, visit edx.org/school/uqx

ABOUT THE AUTHOR

Dr Jason Tangen is a Senior Lecturer in cognition with the School of Psychology at UQ. Tangen's research is broadly based on expertise and evidence. Trained in Canada, Tangen relocated to Australia in 2004 to continue his research. More recently, Tangen is the course coordinator for the edX course, *Think 101x: The Science of Everyday Thinking*. He is also leading The Forensic Reasoning Project, with the aim of examining the nature of expertise in forensics with a view to improving training and the value of expert testimony.