E-Learning and the National Broadband Network

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Abstract

A recent paper from February 2013 foreshadowing the dynamic changes in e-Learning from Australia’s roll-out of the National Broadband Network.

Introduction

This historic paper is only six years old and was selected to complement the other articles in this issue covering the future of the National Broadband Network (NBN). The NBN roll-out commenced around ten years ago and is well on the way to providing high-speed broadband access to most Australians across the continent. High-speed broadband provides many potential benefits, such as learning via electronic media (e-Learning), but also facilitates disruption, as we have seen with streaming services and social media, threatening some traditional information providers.

The paper (Barber, 2013) was written by James Barber of the University of New England and argues that the NBN will accelerate dramatic changes in education and teaching: in particular, the move away from bricks-and-mortar campuses towards global networks and the rise of mobile learning (m-Learning). When combined with Massive Open Online Courses, m-Learning will result in access to education becoming a universal human right.

Most readers would be aware of the proliferation of devices in the home which are enabled for e-Learning, such as smart TVs, smart mobile telephones and intelligent appliances. Combine this with the seemingly unlimited resources available to consumers on the internet, and you can appreciate the unprecedented learning opportunities, which the NBN will facilitate.

The historic paper concludes with the observations that until the invention of the Internet, universities did not have to be innovative because they have effectively had a monopoly (p. 12.5) and let us hope that Australian universities embrace the opportunity that the NBN provides before it becomes a threat to them (p. 12.6).

The disruption to traditional learning will continue as the technical capabilities of appliances expand and the NBN facilitates more diverse access to e-Learning resources.

References

initiative and now contains more than 15 million articles (only 20% of which are in English), all of which are continually updated and corrected by contributors themselves.

The enormous appeal of Wikipedia demonstrates another profound shift in the way that universities of the future will teach — the movement away from acquisition of knowledge as the fundamental purpose of education to incorporate its creation and re-creation by students themselves. This is unfamiliar territory for academics of any generation who were raised on the idea that only professional educators are qualified to teach. But Facebook, Wikipedia and blogging have radically undermined this assumption because all consist of information that is created by, not just communicated to, participants. The acts of teaching and learning are blurring as a consequence. Schooled in Google and Wikipedia, students today want to inquire, not rely on the professor. They want a conversation, not a lecture.

The most recent development in open courseware is of course the MOOC, which is an acronym for “Massive Online Open Course” in which huge numbers of students enrol in online courses, network with one another online and undertake online quizzes and self-directed learning. The term MOOC was first coined in 2008 but entered common parlance only towards the end of 2011 when Stanford University professor, Sebastian Thrun, offered a free online course for which 160,000 people took up the offer. Inspired by the success of his experiment, Thrun and his colleagues launched a free online university called Udacity in February 2012 and within the first three months of operation had achieved over 100,000 enrolments.

Six days after Udacity, Coursera was launched by a star-studded line-up of U.S. universities including the University of Pennsylvania; the University of Michigan; and Princeton and Stanford Universities. These universities offer their courseware free of charge online, and there is facility for students to interact with one another and take quizzes to monitor their progress. By the end of April, courses had amassed a staggering 1,000,000 enrolments.

Not to be outdone, two weeks after Coursera was launched, MIT and Harvard University joined forces to launch edX and on 17 August 2012, arguably the world’s finest public university UC (Berkeley) threw its hat into the ring with edX. Like other MOOC providers, edX also offers free online courseware to students around the world; its stated goal is to enrol one billion student enrolments in the next decade.

Effectiveness of e-Learning

Among the most common objections to e-learning continues to be that it is a very poor substitute for face-to-face teaching. Given the technological advances described earlier, however, this objection rather begs the question of whether the distinction between “face-to-face” and “online” has any real meaning in a post-NBN world. But even before the improvements that broadband will bring, there was solid evidence in support of e-learning methods.

Prior to the development of Web 2.0 technologies like MySpace and Facebook, there had been two major meta-analyses of the effectiveness of online education (Bennion et al. 2004; Cheung et al. 2002). Meta-analysis is a technique for combining the statistical results of multiple research studies to obtain a composite estimate of the size of the effect. In this way, different studies using different online techniques and different measures of learning can be combined into a single study and a global measure of the effectiveness of online learning can be calculated.

The result of such an experiment is first expressed as an effect size, which is the difference between the mean score for online learning and the mean score for face-to-face classes divided by the pooled standard deviation. Individual effect sizes are then combined into a single, overall index. Importantly, meta-analysis is only ever performed on studies that satisfy the most rigorous methodological standards, normally involving random allocation of students to classroom and online conditions.