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Education Across Space and Time

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Abstract

From St. Paul's letters to the 1st century churches to today's Massive Open Online Courses (MOOCs), education has always fought the constraints of space and time. This review of the 2000-year evolution of distance education examines the changes in pedagogy, organization and technology that have created contemporary open, distance and eLearning. How will the multiplication of open educational resources influence the next generation of education across space and time? Do MOOCs imply that education can now be fully automated? As the processes of teaching and learning are unbundled, will students look to a variety of specialist organisations for services? Is the traditional business model of higher education on the verge of collapse?

Introduction

It is a great pleasure to kick off this ODLAA Conference.

Thank you for choosing the marvellous theme, *Education Across Space and Time: meeting the diverse needs of the distance learner*. Australia has been a leader in the development of education across space and time. Living on a large island continent in the southern hemisphere you are very aware of the challenges and opportunities of distance. Thirty years ago, at the time of my first visits to Australia, I remember reading Geoffrey Blaney's book *The Tyranny of Distance* with great pleasure.

In 1985 you hosted the World Conference of the International Council for Distance Education in Melbourne. My wife and I made a wonderful tour all around Australia. At every stop leaders of Australia's distance education institutions welcomed us into their homes. From Adelaide to Alice Springs, from Darling Downs to Darwin and from Townsville to Toowoomba we enjoyed marvellous hospitality from your vibrant distance learning community.

My lasting memory from the 1990s is a Congress of the Association of Commonwealth Universities held in Perth. We had a magnificent dinner, with lots of good Australian wine, by the Swan River on a glorious evening. The then Minister, John Dawkins, a politician of impressive longevity, startled us overseas visitors with a speech in which he was robustly critical of Australian universities and announced the creation of the Distance Education Centres, now of blessed memory.

Much water has flowed under the bridges of the Swan River since then. Fashions in distance learning have come and gone, but the movement has never stopped growing.

Today it is attracting new adherents in the most surprising places. They are welcome, but by assuming that distance learning only began when they discovered it, they risk underperforming.

I joined the distance learning movement 40 years ago, when a three-month unpaid internship at the infant UK Open University revealed the future of higher education to me and inspired me to re-orient my career. Four decades make me a veteran – or an old fuddy-duddy – so today I shall put our work in its historical perspective.

Over the years distance learning has changed constantly but we can trace common threads through its history. From St. Paul's letters to the 1st century churches to today's Massive Open Online Courses (MOOCs), education has challenged the constraints of space and time.

So 'education across space and time' is my title. I shall review the evolution of distance education over 2000 years and examine the changes in pedagogy, organization and technology that are the basis of contemporary open, distance and eLearning.

Some simple theory

Let me get my simple theoretical frameworks out of the way first. Julius Caesar divided Gaul into three parts and the western Christian Church distinguishes three aspects of God. I too tend to think in threes, so I give you first the iron triangle and then the three-legged stool.

You cannot conduct education across space and time in the classroom. Distance learning expands education beyond the classroom. For much of human history this was not a pressing need. Today, however, when countries stand or fall by the education of all their citizens, it is an urgent need. The many ministers of education that I met while working for UNESCO and the Commonwealth of Learning share three aims. They want to increase access to education, improve its quality and cut its cost.

Representing these as three vectors shows that it is impossible to achieve this in classroom teaching, which is why I call it the iron triangle. You want to stretch the triangle like this to give more access, better quality and lower cost. But you can't.

Pack more students into the classroom to raise access and you will be accused of damaging quality. Try to up the quality with more and better teachers and learning resources and the cost will go up. Cut costs directly and you will threaten both access and quality.

This iron triangle has created in people's minds an insidious link between quality and exclusivity in education. That link has lasted for centuries, but finally there are signs that it is being broken. To stretch the triangle and achieve, simultaneously, wider access, higher quality and lower cost you need technology.

The evolution of distance learning reflects the arrival of a succession of technologies that helped to offer better education to more people through space and time at reasonable cost.

How does technology do this? Think of it as a three-legged stool. You can always distinguish three components in distance learning. Today they sometimes merge into each other by using the same technology, but it is best to keep them conceptually distinct. First, you need materials to learn from – you must have a medium to provide content to the learner. Second, the students need support. Some people can learn happily and successfully simply by accessing the content, but most like to have occasional

human mediation between them and the study material. Finally, you need administration and logistics. The materials must reach the students; tutors must know how to contact their students; exams must be administered and marked, and so on.

So distance learning is a three-legged stool – and just as a stool will dump you on the floor if any one leg gives way, so a distance learning system will be dysfunctional if any of these legs is weak.

Let me now make this real with a brisk walk through the history of distance learning.

A little history

You may think I am eccentric to start with Saint Paul, but think about it for a minute. Today, Monday, February 4, passages from his epistles will be read out in thousands of churches around the world. Yesterday, Sunday, millions heard such readings and listened to sermons reinforcing them. The impact of Saint Paul's distance learning system, even today, makes even the biggest MOOC look trivial.

You can easily identify the three legs of the stool. Paul created materials by writing his letters and scribes made multiple copies. People, donkeys and ships carried these around the Mediterranean to a growing number of churches, which provided the student support system.

Priests would read out the letters and provide commentary, perhaps with discussion. Saint Paul's system was open. There were no barriers to attending church and engaging with his thinking – unless the danger of being thrown to the lions during one of the periodic Roman crackdowns on Christianity discouraged you.

This became a powerful educational movement. We can argue about the relative importance of Saint Paul to the worldwide spread of Christianity, but without question his early system of correspondence education gave the church doctrinal consistency and later, with a new technology, doctrinal controversy.

That new technology, printing, came over a millennium later. The fastidious hand copying of manuscripts was no long necessary. The written word came directly into the hands of ordinary people. We call academics 'lecturers', recalling their role as oral intermediaries between the written word and students when books were scarce. But by giving the written word to individuals printing introducing another important concept in the evolution of education across space and time: independent study.

People could now make up their own minds about what a book meant, which led to the upheavals of the Protestant Reformation and less deference to authority. When I was at the Korea National Open University last year I heard a charming Korean saying that there is no nicer sound than the rustle of turning pages as someone reads a book late at night.

However, we do not consider independent study to be formal distance learning. That requires interaction with an institution to recognise the results of learning. Back in the 1970s I co-authored a paper entitled: *Independence and Interaction: Getting the Mixture Right*, which enjoyed considerable success here in Australia. I still believe that getting the right balance of independent study and interactive activities is the key to cost-effective distance education.

Printing revolutionized the ‘materials’ leg of our stool, facilitating independent study.

The next key technological advance greatly strengthened both the logistics and support legs, fostering easier interaction with institutions and individuals. The development of railway networks in the nineteenth century made for rapid and reliable movement over distance. Postal services were transformed and as postal systems allowed documents to be exchanged more readily, education reacted quickly.

The Penny Post, the first universal postal service, was introduced in Britain in 1840. Isaac Pitman exploited it immediately to teach shorthand by correspondence. He launched the commercial correspondence education industry, which defined distance education for more than a century.

Note that the blackboard was invented at the same time. It dominated conventional teaching for more than a century and is only now beginning to yield to new classroom technologies such as the whiteboard and the flip chart.

Correspondence education improved distance learning radically in two areas. Materials distribution was much faster and more convenient for the student, since the post delivered study materials to homes. It also transformed student support. In our world of instant online communication the ability to mail an assignment and get the tutor’s commentary and marking back within a week may not seem much – but it was a radical advance. A colleague did her secondary schooling by correspondence in India nearly half a century ago and said later that none of her teachers in conventional institutions ever supported her as well as her correspondence tutor in faraway Oxford.

Distance learning then began to attract research. Since we are in Australia I introduce a personal note.

In 1985 Deakin University gave me my first honorary degree. I was a callow youth compared to my fellow honorary graduates, who were both major figures in the early research on distance learning. Borje Holmberg developed the theory of distance education as a guided didactic conversation. Otto Peters explored the notion of distance learning as an industrial form of education. Peters’ work, in particular, spawned much subsequent scholarship to which Australians contributed some impenetrable papers about Fordism and post-Fordism.

In the 20th century various new technologies came and stayed: radio, film, television, computing and computer assisted learning. Enthusiasts predicted that each new medium would revolutionise education. In 1940 the motion picture was hailed as the most revolutionary instrument introduced into education since the printing press. In 1962 programmed learning was the first major technological innovation since the invention of printing. Not long afterwards it was the impact of computers.

Note that these prophets all took printing as their touchstone, not the previous technological marvel. Wise practitioners of education across space and time conclude from this story that there is no magic educational medium and doubt that there ever will be. No single technology is revolutionary but a combination can be. By the 1960s, the blending of technologies had created a rich communications environment.

The Open University

At the foundation ceremony of the UK Open University in 1969 the Chancellor, Lord Crowther, captured this in these words:

“The world is caught in a communications revolution, the effects of which will go beyond those of the industrial revolution of two centuries ago. Then the great advance was the invention of machines to multiply the potency of men's muscles. Now the great new advance is the invention of machines to multiply the potency of men's minds. As the steam engine was to the first revolution, so the computer is to the second.”

It is hard to overstate the impact of the UK Open University. Established with strong political support, it created a new synthesis of the technological, pedagogical and ideological strands of distance learning. This novel combination attracted worldwide attention. The OU slogan: ‘open as to people, open as to places, open as to methods and open as to ideas’ encapsulates this.

Let me take these strands one by one.

Technology

On the technological front the UKOU transformed correspondence education into multi-media distance learning. To begin with it used of a range of media – mostly mass media – to enrich teaching and learning with much more attractive materials. It also exploited burgeoning developments in telecommunications to improve learner support. Then, as personal and social media enriched the mass media, the UKOU followed the trend, retaining some mass media while incorporating the online media of the Internet and the World Wide Web. The UKOU had computer conferencing in its teaching systems in the 1980s and was interacting online with 150,000 students by the late 1990s. Its Knowledge Media Institute, set up in 1995, is the world’s premier R&D centre for the application of evolving technology to education across space and time.

At the end of his tenure as founding Vice-Chancellor in 1980, Lord Walter Perry, said that the UKOU had institutionalised innovation. It’s a risky claim to make but I believe it is still true. In another quote Perry said that if you innovate in too many ways at once you scare students away. By introducing open admission and distance learning he believed that the Open University was already pushing at the limits of students’ tolerance for change, so the UKOU offered a recognisably conventional curriculum rather than seeking novelty there too.

Pedagogy

In its pedagogy the aim of the UKOU was to establish an effective teaching-learning system. It sought to cure the primary weakness of the correspondence education industry by providing strong student support: both academic and counselling.

In the 1960s correspondence education had a reputation, sometimes deserved, often undeserved, for poor treatment of students and shoddy business practices. I mentioned earlier a colleague for whom well-supported correspondence education opened doors to the life of the mind in a wonderful way. But the bad apples in the barrel made people wary.

A significant historical document for distance educators – and also a most entertaining read – is a paper by Jessica Mitford in the *Atlantic Monthly* in 1970 entitled ‘Let us now Appraise Famous Authors’. She blew the lid off the dodgy practices of a large commercial correspondence school with the same verve that she had exposed the abusive practices of the US funeral industry in her book ‘The American Way of Death’ a few years earlier.

Perry and his planning team travelled around the world looking at institutions that were doing distance education. Their most useful visit was to the University of New England at Armidale, because it impressed on them the importance of providing opportunities for face-to-face interaction. This led the UKOU to offer optional tutorials – which involved some 8,000 part-time lecturers when I was there in the 1990s – and also residential schools for some courses.

The system captured the public imagination – and in the case of the residential schools – prurient press interest. For an entertaining account – with plenty of poetic licence – I recommend the film *Educating Rita*.

Ideology

This brings us to ideology. The Open University carries a heavy freight of idealism.

Prime Minister Harold Wilson, who was very keen on the educational potential of television, proposed to call it the University of the Air. But the planning committee decided to name the university for the purpose that it would serve, which was to open up higher education, not for a technology that it would use.

Hence the name, the logo and the ‘four opens’ (people, places, methods and ideas) that define the University’s mission.

Note that openness was considered novel only because it was associated with distance learning at scale at degree-level. Most previous distance education had been at other levels and there it was taken for granted that it was open – anyone could join in. For example, anyone prepared to risk being identified as a Christian could benefit from St. Paul’s epistles. Jumping forward to the last century, if you followed the riveting TV series *Downton Abbey* you will recall that one of the maids took a correspondence course in typing and shorthand in order to get a more attractive job.

But in 1960s Britain less than 10% of the age cohort had access to a university system with highly selective admissions. There were few opportunities for adults to study for degrees part-time. In this context the Open University’s removal of any academic criteria for admission was radical, as was the establishment of a distance learning system that allowed people to study anywhere.

Naturally people fused the concepts of open education and distance learning into the term open and distance learning, giving us the acronym ODL. Australian scholars contributed to a burst of learned articles stressing that open education and distance learning are not the same thing. You can have either without the other, just as you can have both together.

Once you unpack the notion of open education it can take you beyond issues of admissions and distance. For example, the Open University’s curriculum was closed in

the sense that the programmes and courses were defined by the University – students had to take them as they were although they had great flexibility to mix and match.

However, at the same time as the UKOU opened 40 years ago, the State University of New York set up Empire State College with the aim of opening up the curriculum. It allowed students to work with mentors to invent their own courses of study. Its slogan ‘my degree, my way’ captures this perfectly.

For completeness I note that an even more radical manifestation of openness predated both the Open University and Empire State College by a century. The London University External Degree Programme simply offered examinations worldwide. How you acquired the necessary knowledge was up to you: if you could pass all the required examinations you got your degree. That programme has produced five Nobel laureates over its 155 years of existence so no one can call it ineffective.

These dimensions of openness: open admissions, distance learning at scale, and open curricula remained the principal expressions of openness until the end of the 20th century.

From the 1970s open universities were established in many countries. In my book *Mega-Universities and Knowledge Media: Technology Strategies for Higher Education*, I explored the implications for higher education in general. Then from the 1990s the distance learning revolution began to take hold in the secondary school system, which inspired me to publish *Mega-Schools, Technology and Teachers: Achieving Education for All* in 2010. Secondary schooling is now, in my view, the most vital area of focus for distance learning. The success of the campaign for universal primary education has left hundreds of millions of children ready for secondary schooling but with no chance of getting it. The resources for building conventional schools are not there so every feasible alternative must be tried. Open schooling is the most promising.

Into the 21st century

During all this time the Internet and its various manifestations were steadily changing the world. People started using the terms eLearning or online learning as synonyms for ODL. I hope I have shown that distance education did not begin with the Internet.

Online learning is, however, creating massive further growth in distance education. Tony Bates, an astute observer, judged the results of eLearning to be disappointing when he surveyed the North American scene in 2011 but this year he is much more optimistic. With students opting to study online in ever-larger numbers, universities are taking it much more seriously. Instead of the Lone Ranger approach, which leaves eLearning up to individual academics and results in poor quality courses and incoherent programming according to Bates, institutions are now taking corporate-level responsibility for it.

You will have plenty of opportunities to talk about the technologies of online learning at this conference. Let me finish by returning to the ideological aspects

of ODL and flag two new aspects of openness that have emerged more recently: Open Educational Resources and Massive Open Online Courses, or MOOCs.

Open Educational Resources

The notion of making academic content freely available for re-use and adaptation made waves in the late 1990s when MIT started putting its lecturers course notes on the Web. This was the extension to learning materials of the idealism that had already inspired open source software and open access to research papers and data.

UNESCO held a forum in 2002 to explore the implications of MIT's initiative for developing countries. The Forum coined the term Open Educational Resources and defined them as educational materials that may be freely accessed, re-used, modified and shared.

Ten years on, last June, UNESCO held a World Congress on OER. UNESCO and the Commonwealth of Learning had held forums on OER in all world regions in the preceding months and I took part in all of them. A set of recommendations on OER was developed through these forums and approved by acclamation at the Congress as the Paris Declaration. Its key recommendation – the punch line if you like – is to encourage the open licensing of educational materials produced with public funds.

There are signs that some governments are already taking such action. For example, my own home province of British Columbia is going to offer free, online open textbooks for the 40 most popular postsecondary courses.

Having spent much of last year fostering governmental awareness of OER I am delighted by the progress being made. OER are an important development for all forms of education, not just distance learning. There is now a high volume of Facebook traffic among students recommending OER to each other.

Massive Open Online Courses

Let's turn to MOOCs. I hope to co-author a book on Mega-Courses one day, but here I shall summarize a paper I wrote as a fellow at the Korea National Open University last year. Its title is *Making Sense of MOOCs: Musings in a Maze of Myth, Paradox and Possibility*.

MOOCs became last year's higher education sensation after MIT offered its first MOOC. This online course, 6.002x, *Circuits and Electronics*, was free and open to anyone, anywhere in the world, with no admission requirements. It attracted 155,000 registrations from 160 countries. Of these only 7,157 passed the course.

Anant Agrawal, the programme head, said the exam was 'very hard'. To criticisms of the extraordinarily high drop out rate of more than 95%, he replied, 'If you look at the number of passes in absolute terms, it's as many students as might take the course in 40 years at MIT'.

Since MIT announced its first MOOC many other US universities have launched similar ventures. There is a herd instinct at work. Coursera, a for-profit company that helps

universities do MOOCs, now claims nearly 2 million registrations and is presently offering 200 courses with over 30 partner institutions.

Both the MIT courses and the Coursera courses have had terrific drop-out rates, which MOOC providers have been trying to defend, although the media have given Coursera the rougher ride. One reporter found that ‘some classes were so rife with plagiarism that professors have had to plead with their students to stop plagiarizing’. In order to handle the challenge of scale, Coursera asks students to mark each other’s work.

MOOCs in perspective: quality

Let us try to put MOOCs in perspective. There is plenty to make fun of, but there are also possibilities and, either way, they are shaking up elite higher education. Most of the universities offering MOOCs are well-known US institutions, so the first myth is that university brand is a surrogate for teaching quality. It isn’t. These universities gained their reputations as research institutions. They have no special expertise in teaching, especially teaching online.

Where countries have quality assurance agencies for higher education, one of the criteria auditors look at is the rates of course and degree completion. They assume that students seek not merely access, but access to success, which institutions should do everything to facilitate while maintaining standards. On this criterion MOOC completion rates of less than 10% are a disaster.

The problem is that the MOOC universities now espousing openness have scarcity at the core of their standard business model. They measure institutional prestige by how closed they are, that is to say the numbers of people they do not admit. This makes them relaxed about high drop out and failure rates.

MOOCs in Perspective: Certification

This creates the central paradox of MOOCs: certification. In most MOOC institutions, success in the course exam, which MIT called ‘very hard’, does not lead to credit but, at most, to a certificate. Therefore, what determines whether a student can get a degree is not their mastery of MOOC courses, but the admissions process to the university for regular students.

This is disreputable. If you were students who had passed a MOOC that was the same as the course offered on campus you would be upset if you did not get credit for it. My late Athabasca University colleague Dan Coldeway called the practice of basing institutional reputation on tough admission requirements the principle of ‘good little piggies in, make good bacon out’. It is a venerable academic tradition but is it fit for the 21st century?

Fortunately, this refusal to award credit is not the end of the story because, as part of the general trend to unbundle higher education, other institutions are ready to offer credit for MOOCs from elsewhere. An example of particular interest, in which Australia’s Jim Taylor has played a seminal role, is the OERu, a consortium of reputable universities from all continents set up to help students who wish to study independently through OERs. It offers tutoring and assessment. Here we have another aspect of openness: open to new ways of putting programmes together

MOOCs in Perspective: Pedagogy

Turning to pedagogy, a reporter who took a Coursera course found it had little pedagogical input. Tony Bates stresses that MOOCs are not a new pedagogy. He notes that the teaching methods ‘are based on an old and out-dated behaviourist pedagogy, relying primarily on information transmission, computer-marked assignments and peer assessment’.

MOOCs in Perspective: for what purpose?

Why are MOOCs being offered? The tension is between the ideal of sharing knowledge freely and the need to make money. No one yet has a clear strategy for making money out of MOOCs for the universities involved. Free of charge to students is another dimension of openness, but even the most automated system is not cost-free to the institutions.

Historically, reputable distance learning programmes offer students opportunities for interaction. This adds cost but improves success rates. I fully accept that Internet technology allows us to automate many aspects of interaction but human beings are still needed.

Fortunately, these large-scale MOOCs are only part of the story. There are now partnerships between universities and private companies to offer online learning in which both parties make money and students graduate with degrees. For example, the 40 US state universities associated with the organisation *Academic Partnerships* are pleased with the way that it has been able to expand their impact and reputations. The individual courses enrol thousands of students rather than tens or hundreds of thousands – but these students are getting credit and graduating from their online programmes at the same rate as on-campus students. I understand that *Academic Partnerships* is having discussions with a number of Australian universities and I shall be interested to watch developments here.

MOOCs in Perspective: Possibilities

But to return to the MOOCs maze: despite my criticisms MOOCs are a fascinating development. With so many institutions involved they will not just peter out. They could chart new paths by improving teaching and cutting the costs of higher education. Although current MOOCs pedagogy is out-dated, this will now change fast. Competition will produce greater diversity and healthy experimentation. Soon the media, student groups and educational research units will publish assessments of MOOC courses that will lead to quality rankings.

Placing courses before a global audience will force MOOCs institutions to pay more than lip service to importance of teaching and put it at the core their missions. This is the real revolution of MOOCs.

They also seem certain to start a process that reduces the costs of higher education. Institutions will not be able to sustain for long the paradox of making courses open and free for some learners yet closed and expensive for others. The paradox will give impetus to the unbundling of higher education and encourage students to shop around for the different services that supply content, support, assessment and certification. It

seems certain that institutions will have to rethink their business models – less certain in which direction those models will evolve.

Conclusions

What can we conclude from this review of 2000 years of distance learning? I make four points.

First, I continue to believe that the key to cost-effective distance learning is to offer students a good blend of independent study and interactive activities.

Second, technology is finally stretching the iron triangle. Those who believed that education was safe from the transformations that technology has effected in all other areas of life have been proved wrong. The insidious link between quality and exclusivity is corroding away.

Third, distance learning has its own dynamic and its own processes. Unless the three legs of the stool are all strong students will not have a good experience.

Fourth and finally, distance education, which has long existed on the margins of mainstream education, is now taking centre stage. For conventional institutions the camel of distance learning is now inside the tent and they cannot shoo it out again.