MINISTRY OF EDUCATION
Te Tāhuhu o te Mātauranga

Government and sector-level tertiary e-learning initiatives

An annotated bibliography

New Zealand Government

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1 EXECUTIVE SUMMARY

Introduction

This paper provides an overview of the literature on government[1] and sector-level[2] tertiary e-learning initiatives[3] from 2004 to 2013 in New Zealand, Australia, Canada, the United Kingdom (UK) and the United States (US). It also has a focus on papers related to Open Educational Resources (OER) and Massive Open Online Courses (MOOCs).

Government e-learning initiatives

The outcomes of government tertiary e-learning initiatives were mixed, with some of them meeting their goals, while others did not. The instances of failure[4] were less common, with the most publicised one being the UK government's e-University venture. This was disestablished after significant investment, largely because it did not attract sufficient students. This failure was attributed primarily to an overemphasis on systems and content and not enough attention being paid to recruiting and supporting students.

Some writers of papers reviewed in this bibliography argue that governments should not fund tertiary e-learning initiatives because they are a logical extension of institutions' core business and therefore the responsibility of institutions. When supporting tertiary e-learning initiatives, the most common motivation of government was to widen learner access and increase their participation, support lifelong learning or improve economic growth.

However, as a necessary first step, government tertiary e-learning initiatives have mainly focused on the development of systems and supporting infrastructure, staff professional development, and the creation and dissemination of content. Governments' student-related tertiary e-learning initiatives have typically been implemented through a virtual campus or portal. Governments have also supported organisational leaders in their tertiary e-learning efforts.

Where governments use consortia to support the implementation of their tertiary e-learning initiatives, these are often fully commercial entities. But this creates tensions because governments support these ventures for educational, not commercial, reasons.

There have been limited attempts by governments to change the wider education policy and regulatory frameworks so that e-learning can play a more effective role in transforming tertiary education. Where governments have developed strategies to support tertiary e-learning, they have often positioned these as part of wider strategies, particularly those related to distance education or information and communication technologies (ICT).

Sector-level e-learning initiatives

The outcomes of sector-level tertiary e-learning initiatives were also mixed. For example, some of their goals have been clearly met, especially materials development and dissemination and initial student enrolments in MOOCs. However, despite large investments, there have also been some large-scale failures, most notably in the US and for cross-border ventures, including the disestablishment of Fathom, AllLearn, and the Global University Alliance.

These failures were attributed to a number of factors including:

- lack of adequate support or incentives for existing learners
- lack of understanding of distance education and e-learning
- overemphasis on content
- isolation from the members' core business and mainstream activities

[1] These are initiatives that were supported by the bibliography's jurisdictions' governments or government agencies at a national/federal, provincial, state or territory level.
[2] Sector level consists of initiatives involving institutional groupings of two or more institutions.
[3] Initiatives are defined broadly as including (but not limited to) strategies, action plans, dedicated committees and websites, and virtual campuses.
[4] Failures in the context of this paper were determined by formal announcements in the literature or more commonly where there was no discernible progress for at least one year and the consortium's objectives had clearly not been met, as was the case with the Global University Alliance and Universitas 21.

- failure to attract sufficient revenue
- an assumption that e-learning would replace traditional delivery.

Consortia typically adopted inflexible positions based on these factors and underlying assumptions, which meant they did not respond effectively to problems that emerged. And while both government and sector-level tertiary e-learning initiatives typically benefited the participating institutions, there were few cases in which there were more widespread "spill over" benefits.

New Zealand

The New Zealand government's major tertiary e-learning initiative (in terms of the number of institutions involved and the amount of funding allocated) was the e-Collaborative Development Fund (e-CDF) which ran from 2003 until 2009 when it was disestablished as part of the Government's rationalisation of funding streams. The e-CDF's overall objective was to improve the e-learning capability of the tertiary sector. It was different from the other jurisdictions' government tertiary e-learning initiatives because its participating institutions included private training establishments as well as wānanga. While the e-CDF improved the capability of systems and participating institutions, it had little effect on sector staff or on the sector beyond the participating institutions.

New Zealand's major sector-level tertiary e-learning initiative was a polytechnic consortium that (among other things) collaboratively developed e-learning materials and co-hosted certificate-level courses delivered by e-learning. New Zealand institutions were also involved in two large-scale international institutional consortia: Universitas 21 and the Global University Alliance (which was subsequently disestablished). More recently, New Zealand institutions have joined the Australian- and UK-led MOOC consortia.

Australia

Australia had fewer government tertiary e-learning initiatives than the other jurisdictions. Australia was also the only jurisdiction not to have a government tertiary e-learning initiative involving the university sector. Australia's major government tertiary e-learning initiative (in terms of funding and institutions involved) was the Flexible Learning Framework. The Framework was a formal collaboration between the federal and state governments and the vocational education and training (VET) sector. While it achieved good results in content development and contributed to normalising the use of e-learning in the VET sector, it was less successful in improving institutional ICT infrastructure and increasing the capability of staff.

The only Australian state government to support tertiary e-learning initiatives was Victoria. Victoria's tertiary e-learning initiatives included a virtual campus for their VET sector. Australia's major sector-level tertiary e-learning initiatives were the Open2Study MOOCs consortium run by Open Universities Australia[5], and ACODE (the Australasian Council on Open, Distance and E-learning). ACODE's members comprise all the New Zealand universities as well as many of the Australian universities and the University of the South Pacific. ACODE produced, among other things, a set of e-learning benchmarking guidelines.

Canada

The Canadian federal government supported a large number of tertiary e-learning-related quality assurance initiatives. However, the Canadian federal government's tertiary e-learning initiatives have all been since disestablished, with the possible exception of CANARIE (the Canadian Network for the Advancement of Research, Industry and Education).

Canadian provincial governments (especially Alberta, British Columbia, Ontario, and Saskatchewan) supported a large number and of tertiary e-learning initiatives, including virtual campuses and networks to support the sharing of e-learning materials and expertise. The outcomes of these Canadian provincial government tertiary e-learning initiatives were mixed.

[5] Note that Massey University is a member of Open2Study.

Some of them were disestablished, including a dedicated agency in British Columbia (BC). In Ontario the planned establishment of a dedicated state-wide online institution has not occurred.

But others appear to have met their objectives, including the BC Campus, which provides a comprehensive range of information and services to support students' in their e-learning efforts.

Canada's major sector-level tertiary e-learning initiative is its virtual university, which allows students to mix, match, and transfer courses between its members. Ontario also has a large-scale university consortium that develops multi-media resources and has established a virtual market for their exchange.

The UK

The UK government supported a number of tertiary e-learning initiatives. This is most likely because it not only created a stand-alone tertiary e-learning strategy, but also established a dedicated agency (the Joint Information Services Committee or JISC) to implement it and to support tertiary e-learning initiatives generally. JISC has supported a large number and range of tertiary e-learning initiatives, including a series of effective practice guides, standards development, managing and developing the JANET network, and a substantial research and publication programme.

Other UK government tertiary e-learning initiatives included a dedicated code of practice to support the quality assurance of e-learning, developed by the Quality Assurance Agency. The UK government has also supported workplace e-learning initiatives, including Learn Direct. The UK government also established the Open University.

The formal evaluations of the UK's government tertiary e-learning initiatives suggest that not all of their goals have been met. For example, the benefits of these programmes and their associated projects tended to accrue for individual institutions, most of which were universities. But these benefits were typically not realised throughout the sector.

The UK had relatively few sector-level tertiary e-learning initiatives, with the major ones being a MOOC consortium (led by its Open University) and a group of senior managers from a large number of universities who (among other things) represent their group's interests to JISC and HEFCE as well as administering national tertiary e-learning surveys and publishing research based on its results.

The US

The US federal government supported a number of tertiary e-learning initiatives. These included national technology plans and funding for online work-based course development. Unlike the other jurisdictions, the US federal government also made important amendments to wider legislation and regulations (for example by removing restrictions on distance education provision) that supported the growth and development of tertiary e-learning.

The US, unlike the other federal jurisdictions of Australia and Canada, had inter-state government tertiary e-learning initiatives. These included the Great Plains Interactive Distance Education Alliance, which was funded by the US Departments of Education and Agriculture and the American Distance Education Consortium to offer common degree-level provision across the member jurisdictions and institutions.

Many US state governments – especially, Florida New York and Texas – supported tertiary e-learning initiatives. The approaches in Florida, New York and Texas highlight the contrasting ways that US state governments have supported tertiary e-learning. For example, Florida's efforts have been around increasing the amount of tertiary e-learning provision and raising its achievement levels. Florida, like many other US state governments, has also established a virtual campus that provides access to a comprehensive range of information, resources, and services.

In Texas, a more specialised approach has been adopted, including the establishment of a dedicated committee to undertake research and analysis related to tertiary e-learning and

distance education. This committee has also been charged with the development of policy recommendations on institutional collaborations and shared resources. In addition, they are responsible for establishing best practice evaluations. The Texas state government also established a Second Life campus as well as undertaking a course redesign process and staff development programme.

New York has established dedicated strategies and an action plan as well as a specialised unit within the State Department of Education to support tertiary e-learning initiatives. The Department of Education also provides guidance for relevant policy development and tertiary provision delivered by e-learning as well as tertiary e-learning research and surveys.

The US had a large number of sector level tertiary e-learning initiatives. As well as the more widely publicised failures including Fathom and AllLearn, US sector-level tertiary e-learning initiatives also included the major MOOC consortia and strong involvement in the international OER sector-level consortia.

The major difference between the US and the other jurisdictions was the larger number of tertiary e-learning initiatives supported by non-government organisations. US non-government organisations also supported federal and state government initiatives as well as sector-level tertiary e-learning initiatives. These included comprehensive surveys of tertiary e-learning provision and institutional e-learning activities and plans, research, and workplace e-learning projects. They also initiated projects and provided advice and guidance on tertiary e-learning-related policy, security, teaching, learning, and infrastructure.

Open Educational Resources (OER)

There is little consensus about what constitutes open educational resources. For example, do they comprise only of content created by institutions and/or funded by governments, such as full courses, lesson plans, and digital learning objects, or should they also include learner-generated content?

There are also debates about how open OER really are, because they are often accompanied by restrictive licensing regimes and are typically only available for students in formal learning contexts.[6] These restrictions reflect the fact that OER are mostly developed by institutions that are not necessarily creating them for a wider audience; and OER that are the most useful for teachers may be less useful for learners and vice versa. These limitations have raised concerns about their ability to support a wider range of learners, including those involved in lifelong learning and informal study.

The UK government provided more support for OER initiatives than the other governments by establishing a programme that set up a joint project with US federal government agencies to develop a learning registry. They created a support centre for individuals and institutions wishing to use OER. However, a formal evaluation of this programme found that the use of its OER by the UK tertiary sector was low, with greater use by non-UK institutions.

The Australian government also supported OER through its Flexible Learning Framework. The Canadian federal government has funded a research network dedicated to learning object repositories as part of its wider research efforts. While the New Zealand government has not directly supported OER, it has established a more comprehensive and supportive licensing regime than the other jurisdictions.

The major sector-level OER initiatives were several large international consortia, including the Multimedia Educational Resource for Learning and Online Teaching (MERLOT), the Global Learning Objects Brokering Exchange (GLOBE), and OER Commons. One of the core roles of these consortia is to act as OER repositories. However, they also provide extensive networks to share and develop OER-related materials, knowledge and expertise.

[6] Formal learning is defined as learning that leads to an accredited qualification or course, typically provided by institutions.

The members of these consortia include government agencies from Canada (the aforementioned federally funded research network devoted to OER), Education Services Australia (an Australian federal government research organisation that conducts research on behalf of the tertiary sector and co-constructs products and services with them), and the US Environmental Protection Agency.

The membership of OER universitas (OERu) consortium comprises institutions. Unlike the other OER consortia, OERu has New Zealand polytechnics as members. It is also different from the other OER consortia because its major objective is to recognise learning that uses non-institutional OER or where non-enrolled students use institutional OER. This provides students with an alternative pathway to gain qualifications from recognised institutions by providing assessment and accreditation at scale.

MOOCs

There is debate about what constitutes a Massive Open Online Course (MOOC), because not all of them are massive and, like some OER, they can be accompanied by restrictive licensing regimes. They can also be delivered using a blended model where students form face-to-face study groups. And there is no internationally agreed definition of what constitutes a course.

However, despite these exceptions, MOOCs have large numbers of students enrolled who are in a course, in the sense that they can coherently engage with predetermined learning outcomes. MOOCs (even with face-to-face study groups) are offered primarily online and are viewed as open because there are almost no barriers to learners' participation.

The majority of MOOCs are offered through three large US-based consortia: Coursera, edX, and Udacity. Two of the noteworthy aspects of these consortia are, firstly, they were established by elite institutions, with Coursera and Udacity being Stanford University ventures, while edX was co-founded by Harvard University and the Massachusetts Institute of Technology.

Secondly, their scale is unprecedented. For example, Coursera (which is the largest) at February 2014 had about 6.5 million enrolments and 625 partners. edX had 44 partners and about two million enrolments. Udacity has a similar number of enrolments to edX, despite having no institutional partners and only offering limited and specialised provision.

Many other countries are now also forming MOOC consortia including the UK and Australia. The UK's MOOC consortium (FutureLearn) is a new collaborative venture led by the UK Open University and appears to have government support. Its membership includes New Zealand's University of Auckland and Australia's Monash University. Australia's MOOC is run by a pre-existing consortium (Open Universities Australia) without any government support. Its membership includes New Zealand's Massey University.

New Zealand's University of Waikato has developed a MOOC independently of any existing MOOC consortium. But neither New Zealand nor Canada has a sector-level or government-supported MOOC consortium.

In the US, Coursera and edX are partnering with the Colorado, New York, Tennessee, and Texas state governments to offer degree-level provision. Coursera is also working with the US Department of State to support its international education efforts. In contrast, the Californian state government is planning to develop its own MOOC platform.

There is considerable debate about the impact MOOCs might have on tertiary education. Those who think MOOCs will have a major impact on tertiary education point to the number of opportunities and challenges they present for institutions.

The opportunities MOOCs offer include their ability to 'unbundle' critical teaching and learning processes and services, provide more customised courses, extend institutional presence and reach, allow economies of scale to be achieved, and make large amounts of detailed data available to support an improvement in learner support, performance, and outcomes.

Some are less positive about the potential impacts of MOOCs. They are critical of its pedagogies, which are based on traditional pedagogical approaches, because they significantly reduce the amount of teacher-student interactions, rely on automated and/or peer assessments, and they do not effectively support high needs learners or students not experienced in online learning environments. Some fear that MOOCs could lead to widespread job losses, the increasing casualisation of the academic workforce, and the potential demise of smaller institutions.

Those who think MOOCs will not have much impact typically base their assumption on the number of substantial risks and challenges that would need to be overcome, such as the absence of established revenue and business models, the lack of accreditation, staff resistance, and the uncertainties about how they would be appropriately quality assured. MOOCs critics also point out their very low completion rates and that many MOOC learners already hold degree-level qualifications so the enrolments may not be sustainable because they are not attracting new students.

In between these divergent views are a smaller number of commentators who think it is too early to predict the potential impacts of MOOCs with certainty. While they are uncertain about the longer-term implications, they do agree with those who think that MOOCs will not have a large short-term impact because they believe institutions should not rapidly implement MOOCs or radically alter their teaching and learning environments and operations as a result of their introduction.

2 INTRODUCTION

Background

This paper presents an annotated bibliography of the literature relating to government and sector-level tertiary e-learning initiatives. It reviews 201 pieces of literature. We present this information in an annotated bibliography because it provides a framework to make the literature more accessible by outlining its important findings. However, an annotated bibliography does not seek to synthesise or evaluate the quality of this literature. It is intended to be a collation of materials that provides a guide on what literature is available and report on what it says.

Purpose

The objectives of this annotated bibliography are to:

- provide an overview of the literature on government and sector-level tertiary e-learning initiatives
- assist government agencies, tertiary sector peak bodies, and organisational leaders in their planning and implementation of tertiary e-learning initiatives
- extract important findings
- determine the major strengths and weaknesses of the literature in order to identify the most important areas for new research or further development.

Categories

The literature selected for the bibliography has been grouped into categories:

- New Zealand government and sector-level tertiary e-learning initiatives.
- Australian government and sector-level tertiary e-learning initiatives.
- Canadian government and sector-level tertiary e-learning initiatives.
- United Kingdom government and sector-level tertiary e-learning initiatives.
- United States government and sector-level tertiary e-learning initiatives.

- Open Educational Resources.
- Massive Open Online Courses.

Planned series

This annotated bibliography is the third in a planned series. It follows our other published annotated bibliographies, titled *Learners' Participation, Retention and Success in e-learning* and *Organisational approaches to e-learning in the tertiary sector*. Other bibliographies being considered for this series are on:

- workplace approaches to e-learning
- technologies and systems used to support tertiary e-learning.

3 METHODOLOGY

The literature in this bibliography was derived from three main sources. Firstly, it was obtained from an internet search that included governments and their agencies, sector consortia, and Ako Aotearoa (the National Centre for Tertiary Teaching Excellence), as well as the Australian Council for Educational Research's Blended, Online and Distance Education database. Secondly, literature was provided by the Ministry of Education's Library. And finally it was supplied by members of the Tertiary e-Learning Reference Group,[7] the Tertiary Education Commission, and some of the Ministry of Education's tertiary e-learning contacts.

We selected published research from journals, books, and the internet. We also sourced 'grey' literature, including media articles, project reports, unpublished theses and dissertations, and reports commissioned by government agencies.

Literature was selected for this bibliography if it:

- was published between 2004 and 2013
- covered national, federal, provincial, state, territory, government agency, and sector-level tertiary e-learning initiatives in New Zealand, Australia, Canada, the United Kingdom (UK) and the United States (US). For the purposes of this paper, these state, provincial, and territory initiatives are all referred to as state government initiatives
- covered sector-level tertiary e-learning initiatives, which we define as formal consortia and other institutional groupings of more than two institutions. Where these sector-level tertiary e-learning initiatives were the result of government tertiary e-learning initiatives, they were classified as government tertiary e-learning initiatives.

Initiatives are broadly defined in this paper and include (but are not limited to) materials and resources development, the establishment of tertiary e-learning projects, agencies, committees, websites, strategies, and action plans, inter-institutional delivery of provision, and virtual campuses.

Literature relating to other national, federal, provincial, and state governments and their agencies outside of New Zealand, Australia, Canada, the UK, and the US was excluded. Literature on sector-level initiatives that did not include institutions from the bibliography's jurisdictions was also excluded. Finally, literature that only focused on government and sector-level e-learning initiatives from the compulsory and/or early childhood sectors was also excluded.

Literature that relates to more than one jurisdiction is listed only once. Where one of the jurisdictions is New Zealand, it was included in the New Zealand section. In other cases, it was assigned to the jurisdiction deemed to be most appropriate.

[7] The Tertiary e-Learning Reference Group was set up as an expert group by the Ministry of Education and Ako Aotearoa to advise them on tertiary e-learning.

This bibliography uses the Ministry's definition of e-learning, which is 'learning that is enabled or supported with the use of information and communication technologies (ICT) including the internet and mobile devices'.[8]

The references used to support the findings below are listed at the end of each sub-section in the order in which they appear in the bibliography section.

4 FINDINGS FROM THE LITERATURE

New Zealand

Government tertiary e-learning initiatives

The New Zealand government's major tertiary e-learning initiative (in terms of the number of institutions involved and the amount of funding allocated) was the e-Collaborative Development Fund (e-CDF) which ran from 2003 until 2009 when it was disestablished as part of the Government's rationalisation of funding streams. The e-CDF's overall objective was to improve the e-learning capability of the tertiary sector. It was different from the other jurisdictions' government tertiary e-learning initiatives because its participating institutions included private training establishments and wānanga.

An evaluation undertaken on the early rounds of the e-CDF found that its primary objective had only been partly met. While e-learning capability had been increased in respect of systems, infrastructure, and formal documentation, this was not the case for staff, which was identified as the weakest area.

The evaluation also found that the e-CDF tended to confirm and strengthen existing relationships rather than establishing new ones and the projects tended to benefit participating institutions but not non-participating institutions. e-CDF projects that did not secure post-project funding were less likely to be sustainable.

New Zealand's only tertiary e-learning strategy was the 2004 Interim Tertiary e-Learning Framework. However, tertiary e-learning has been positioned within wider strategies and funds, including the Innovation Development Fund (which ran from to 2003 to 2008), the ICT Strategic Framework for Education (2006), the updated version of the Digital Strategy (2008), and the ICT Investment Framework (2012).

In 2005 the New Zealand government established REANNZ (the Research and Education Advanced Network New Zealand Limited) as a Crown-owned company. REANNZ's main role is to administer, maintain, and improve KAREN (Kiwi Advanced Research and Education Network). KAREN supports tertiary e-learning through the provision of a high-speed ICT infrastructure as well as its services and products, including video-conferencing, to member institutions.

The Ministry of Education supported tertiary e-learning research with a contestable fund from 2003 to 2008, which allocated monies for research projects that produced reports on e-learning-related professional development for tertiary teaching staff, industry training organisations' e-learning activities, and an e-learning benchmarking model for tertiary sector organisations.

More recent reports developed internally have covered tertiary e-learning provision, participation, and achievement, and extramural students, as well as the other annotated bibliographies in this series. The Ministry also created a tertiary e-learning portal in 2005[9] and worked with Ako Aotearoa and the tertiary sector on developing tertiary e-learning resources for students, staff, and organisation leaders.

[8] Ministry of Education website at http://www.minedu.govt.nz/NZEducation/EducationPolicies/TertiaryEducation/ELearning/WhatIsELearning.aspx
[9] This portal was subsequently disestablished during the time period.

Sector-level tertiary e-learning initiatives

The Tertiary Accord of New Zealand was New Zealand's major sector-level tertiary e-learning initiative. Unlike most consortia, its membership was exclusively from the polytechnic sector, including several regional institutions. The initiative's major achievements include co-developing e-learning materials and co-hosting e-learning certificate-level programmes.

New Zealand institutions were also involved in two large international consortia.[10] These were U21 Global (also referred to as Universitas 21) and the Global University Alliance, both of which included institutions from Australia, the UK, and the US. However, the Global University Alliance was disestablished after failing to attract sufficient students or investment. In 2013 Massey University and the University of Auckland joined the Australian and UK MOOC consortia respectively.

References

3, 4, 7, 10, 12, 29, 32, 47, 65, 74, 81, 85, 108, 117, 127, 129, 130, 131, 132, 133, 138, 139, 154, 159, 177, 178, 193

Australia

Federal government tertiary e-learning initiatives

The Australian federal government supported fewer tertiary e-learning initiatives than the other jurisdictions and unlike them did not support any that involved universities. The Australian federal government's largest tertiary e-learning initiative (in terms of funding and institutions involved) was the Flexible Learning Framework, which ran from 2000 until 2011. This was a formal collaboration with all the state governments and the vocational education and training (VET) sector.[11]

An evaluation of the Framework found that its investment had been directed primarily to staff development, content creation, and infrastructure, with very little of it being allocated to its policy and regulatory development objectives. The Framework's greatest success was in content creation. Large numbers of VET teaching staff participated in e-learning professional development programmes, and a substantial amount of funding, support, and initiatives had been devoted to improving their e-learning capability.

The evaluation found that, despite the large numbers and substantial funding and support, the staff who had been involved in the Framework's e-learning professional development programmes only represented a small proportion of the VET sector's teaching workforce. And the larger amounts of available content did not lead to major increases in the proportion of VET sector provision that was delivered by e-learning.

However, this evaluation concluded that, despite the small share of staff that had been through its professional development programmes and the small share of overall provision, the Framework had lifted the profile of e-learning in the VET sector and achieved a significant dollar return on investment. It had also led to the adoption of a consistent and efficient approach to e-learning at a national level.

In 2011 the Australian federal government replaced the Framework with a dedicated e-learning strategy for the VET sector, and contributed to the development of common online platforms. The Australian federal government established the National Broadband Network (NBN) in 2010 to provide a high-speed ICT infrastructure across Australia. The NBN has supported tertiary e-learning as part of its overall objectives. The Australian federal government also established the Teaching and Learning Council, which supported a number of tertiary e-learning research projects.[12]

[10] This does not include OER consortia, which are examined below, as are the MOOC consortia.
[11] This is equivalent to New Zealand's polytechnic sector.
[12] The Teaching and Learning Council has subsequently been disestablished.

State government tertiary e-learning initiatives

The only Australian state government to support tertiary e-learning initiatives was Victoria. Its tertiary e-learning initiatives included providing funds to individual polytechnics (referred to as TAFEs) and private training establishments to enable them to develop more flexible delivery options. They also established a virtual campus for their VET sector.

But despite Victoria's support for a larger number of tertiary e-learning initiatives than the other Australian state governments, it appears that South Australia and the Australian Capital Territory had the most tertiary e-learning provision, while Victoria and New South Wales had the least. Tertiary e-learning was also part of state and federal government rural, remote, and regional satellite technology projects.

Sector-level e-learning initiatives

Australia had two major sector-level tertiary e-learning initiatives. The first of these was the Open Universities of Australia's[13] Open2Study MOOC consortium[14]. The other was ACODE, which includes all the New Zealand universities as well as many Australian universities and the University of the South Pacific. One of ACODE's major tertiary e-learning initiatives is a set of benchmarks to help institutions improve their e-learning performance.

References

7, 24, 29, 31, 37, 38, 42, 43, 44, 70, 83, 84, 85, 100, 111, 125, 126, 137, 138, 147, 149, 167, 177, 193

Canada

Federal government tertiary e-learning initiatives

The Canadian federal government supported a large number of tertiary e-learning-related quality assurance initiatives. But the Canadian federal government's tertiary e-learning initiatives (including its quality assurance efforts) have all been since disestablished, with the possible exception of CANARIE (Canadian Network for the Advancement of Research, Industry and Education[15]).

Canada has more comprehensive tertiary e-learning infrastructure than the other jurisdictions, most likely because of the important contribution of CANARIE and the fact that many state governments, including Alberta, British Columbia, Nova Scotia, Prince Edward Island, and Saskatchewan, have established state-wide ICT infrastructure. Unlike the other jurisdictions, the Canadian federal government derives its monies to support tertiary e-learning initiatives from innovation funds.

Provincial government tertiary e-learning initiatives

Canadian provincial governments typically place tertiary e-learning within wider distance education strategies. The Alberta, British Columbia, Ontario, and Saskatchewan governments have supported more tertiary e-learning initiatives than the other Canadian provincial governments. For example, in addition to a state-wide virtual campus, Saskatchewan has established dedicated e-TV channels, a state-wide Virtual Private Network for tertiary institutions, and state-wide software licensing schemes.

British Columbia established 'BC Campus' which is a state-wide virtual campus that provides a comprehensive set of services and support for its tertiary e-learners. This includes (but is not limited to) access to, and details on, the available tertiary e-learning courses state-wide, facilitating the transfer of credit between institutions and providing OER to support their studies.

[13] Open Universities Australia's predecessor, the Open Learning Agency, was a sector initiative but received its initial funding from the Australian federal government.
[14] The Open2Study consortium also includes Massey University
[15] CANARIE appears to be the equivalent of New Zealand's KAREN network (see above) and the UK's JANET network (see below). It is now referred to as the Canadian Advanced Research and Innovation Network.

Interestingly, the British Columbia government also had some notable failures, including the disestablishment of its tertiary e-learning research programme and dedicated tertiary e-learning government agency. The Ontario government also failed to establish its planned online institution.

The Alberta government provided support for learners wishing to use e-learning in adult education through dedicated learning centres. In contrast the British Columbia government used e-learning to provide student support in adult education. And the Ontario provincial government developed a dedicated strategy to support its adult education e-learning efforts. The Ontario government also established Contact North, which is the network for its distance education and training. The Alberta government, like its British Columbia and Saskatchewan counterparts, also set up a province-wide virtual campus.

Sector-level initiatives

The major Canadian sector-level tertiary e-learning initiative is the Canadian Virtual University, an association of public Canadian universities specialising in online and distance education that allows students to mix, match, and transfer courses between members. The Cooperative Learning Object Exchange involves 25 Ontario universities working collaboratively to develop multimedia learning resources; they have also created a virtual market for their exchange. OntarioLearn is a consortium of 22 of Ontario's 24 community colleges which acts as a broker for the online courses developed by its members.

References

1, 7, 12, 13, 14, 15, 20, 23, 24, 25, 30, 35, 40, 50, 52, 53, 54, 85, 87, 113, 116, 126, 138, 140, 149, 165, 169, 177, 193, 194, 196, 197

United Kingdom

Government tertiary e-learning initiatives

The UK government has supported a large number of tertiary e-learning initiatives. This is most likely because it had not only a tertiary e-learning strategy, but also a specialist agency, the Joint Information Services Committee (commonly referred to as JISC), that was responsible for the implementation and support of the strategy as well as tertiary e-learning initiatives generally. JISC in turn is supported by key stakeholders, especially the Higher Education Academy (HEA).[16]

JISC's tertiary e-learning initiatives include:

- a curriculum redevelopment programme
- a project that examined the tangible benefits associated with e-learning and produced associated institutional case studies
- a series of effective practice guides on (among other things) e-portfolios, mobile devices, and Web 2.0 technologies
- a framework developed in conjunction with New Zealand, Australia, and the Netherlands to develop better systems interoperability and adopt modular approaches to system development
- a substantial research and publication programme that has produced reports on (among other things) student use of social software
- e-learning standards development and associated advice and guidance on educational technologies through JISC's Centre for Educational Technology, Interoperability and Standards
- briefings and white papers on a range of topics including MOOCs
- management of JANET[17]
- employer-institution and institution-institution initiatives.

[16] HEA is the UK equivalent of Ako Aotearoa.
[17] JANET is the UK equivalent of New Zealand's KAREN network.

A review of the Higher Education Funding Council for England's (HEFCE) 2005-2009 tertiary e-learning strategy found that there was broad support for its aims and objectives. But a number of concerns were also raised, including a lack of clarity about whether the strategy's objectives had been met, the allocated funding not clearly supporting the strategy's objectives, and the strategy's projects' lack of alignment with institutional priorities and time frames.

HEFCE updated this strategy in 2009 (but it was only to run for three years until 2012). Taking the concerns expressed during the review of the previous strategy into account HEFCE included more specific and measurable success measures in the 2009-2012 strategy. These are categorised by:

- the activity area from the 2005-2009 strategy (e.g. quality)
- the associated strategic priorities (for quality this was: institutional quality processes can support objectives and enhance benefits in all other areas)
- examples of development goals (for quality these included: enhancements through the use of technology are taken into account in quality assurance arrangements).

However, the major changes in the 2009-2012 strategy were the attempts to mainstream e-learning and devolving more of the responsibility for achieving its action areas to institutions rather than relying solely on JISC and HEA.

The 2010-2012 JISC strategy dedicated most of its funding to infrastructure and resources, with teaching and learning receiving the least. 'Radical innovation' projects would be prioritised, as they could not typically be carried out by individual institutions or institutional consortia.

The key findings of the JISC evaluations on various parts of their e-learning programme included that there was inadequate formal sharing of content and an overemphasis on technical solutions. In respect of JISC's publication and dissemination efforts, there was larger take-up of its print publications than its digital ones. Concerns were raised about the print and digital publications' lack of quantitative data and that their findings and recommendations were typically not applicable across the wider tertiary sector.

The overall conclusion of the evaluation of JISC's publication and dissemination efforts was that, while both the print and digital publications had a positive impact on many individuals and institutions, they were less successful in reaching sceptics and non-participants. But the evaluation acknowledged that this was primarily because of the differing attitudes to e-learning, which is largely outside JISC's control.

Other UK government tertiary e-learning initiatives included its Quality Assurance Agency developing a dedicated code of practice to support the quality assurance of e-learning. The UK government has also supported a number of workplace e-learning initiatives including Learn Direct. Learn Direct is larger, in terms of funding and the number of businesses and employees involved, than government-supported workplace e-learning initiatives in the other jurisdictions. The UK government also established the Open University.

The UK government primarily provides funding for e-learning through HEFCE diverting a portion of its overall teaching and learning funding. However, it also provides direct funding for tertiary e-learning initiatives including its e-University venture (UKeU).

In investment terms, UKeU was a larger failure than any of the other jurisdictions' government tertiary e-learning initiatives. It was formally launched in 2000, but was disestablished in 2004 after having spent UK£50 million. When it closed, only 900 students were enrolled, against a forecast target of 5,600.

A formal report undertaken by the UK House of Commons found that a number of factors contributed to UKeU's demise, including an overemphasis on systems and content and not enough attention on recruiting and supporting students, taking a supply-driven rather than a market-led approach, ineffective monitoring by HEFCE and the Department for Further

Education and Skills,[18] and setting up private sector type structures, processes, and remuneration after failing to attract institutional or private sector investment.

Scottish government tertiary e-learning initiatives

The Scottish Higher Education Funding Council, with help from JISC, supported tertiary e-learning initiatives that included infrastructure, staff development, quality assurance, content, and 'transformative' projects.[19]

Welsh government tertiary e-learning initiatives

The Welsh Higher Education Funding Council developed a dedicated tertiary e-learning strategy. Its success measures included adoption of benchmarking to assess whether institutions had the capacity and capability to support e-learning and expecting institutions to provide evidence that e-learning had enhanced the student experience and supported institutional objectives.

Sector level tertiary e-learning initiatives

The UK had relatively few sector-level tertiary e-learning initiatives. It had a sector-level network (referred to as the Heads of eLearning Forum) that comprised senior managers from a large number of universities. The Forum represents its members' interests to both JISC and HEFCE. The Forum also supports tertiary e-learning strategy development and is responsible for maintaining and publishing results from two nationwide tertiary e-learning surveys.

The UK also had a MOOC consortium, FutureLearn, which is a private company but is wholly owned by the UK's Open University. It has a growing number of institutional partners including New Zealand's University of Auckland and Australia's Monash University.

References

8, 12, 16, 24, 29, 30, 34, 36, 45, 56, 59, 65, 66, 68, 74, 75, 78, 79, 80, 85, 87, 88, 89, 90, 91, 92, 93, 94, 96, 116, 119, 124, 126, 134, 138, 143, 149, 154, 155, 168, 172, 174, 177

United States

Federal government tertiary e-learning initiatives

The US federal government has supported a large number and diverse range of tertiary e-learning initiatives. These included a series of National Technology Plans, funding for online work-based course development, a cyberlearning programme through the National Science Foundation, and the development of common online platforms, systems, and curriculum materials. The US federal government has removed restrictions from regulations and legislation relating to distance education and this has supported the growth and development of tertiary e-learning.

Unlike the other federal jurisdictions, the US has had at least two inter-state tertiary e-learning initiatives. The Great Plains Interactive Distance Education Alliance,[20] funded by the US Departments of Education and Agriculture and the American Distance Education Consortium, offers common degree-level provision across the different jurisdictions and institutions. The other major inter-state e-learning initiative, the Western Governors University (WGU), involves 19 states[21] and is financially supported by a number of leading corporations and foundations[22] and the US Department of Labor, which provides funding to support community college participation. WGU's provision is accredited through a regional body recognised by the US Department of Education and appropriate professional associations.

[18] At the time, this was the UK's equivalent of New Zealand's Ministry of Education.
[19] These are similar to JISC's radical innovation projects.
[20] The states, in alphabetical order, are: California, Colorado, Florida, Georgia, Iowa, Kansas, Kentucky, Michigan, Missouri, Montana, Nebraska, North Carolina, North Dakota, Oklahoma, South Dakota and Texas.
[21] The member states, in alphabetical order, are: Alaska, Arizona, California, Colorado, Guam, Hawaii, Idaho, Indiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming.
[22] Including Microsoft, Google, Oracle, Hewlett-Packard, AT&T, the Bill and Melinda Gates Foundation, and the Alfred P. Sloan Foundation.

State government tertiary e-learning initiatives

The Georgia and Minnesota state governments established a state-wide virtual campus for their university sector. The Georgia state government also has a shared online curriculum where its students can access oversubscribed degree-level courses. In contrast, the Minnesota state government provides funding for tertiary e-learning-related projects that are beyond an individual institution's capacity and also assists students in selecting their courses and determining their readiness for online learning.

The Colorado, Kentucky, New Jersey and Michigan state governments use institutional consortia to support tertiary e-learning initiatives in their universities (Colorado and Kentucky), community colleges (New Jersey), and workplace training (Michigan).

To support their students in their tertiary e-learning endeavours, the state governments of Kentucky and North Carolina both provide state-wide support services and position tertiary e-learning within their tertiary education strategic plans. In contrast, the state governments of Wisconsin and Montana created a portal to support their tertiary e-learning initiatives. But whereas Montana's portal was also administered by the state government, Wisconsin devolved responsibility for the administration of their portal to institutional consortia.

However, the US state governments that have supported the largest number of initiatives are Florida, Texas and New York. The Florida state government provides state-wide student support and has established targets for the amount of e-learning provision and its achievement levels. In addition, it has created a state-wide virtual campus for its university and community college sectors.

The Texas state government generally supports more specialised tertiary e-learning initiatives than the other state governments, including a Second Life 'campus', a committee whose core roles are to undertake research and analysis into tertiary e-learning and distance education, develop policy recommendations on institutional collaborations and shared resources, undertake best practice evaluations, and assist institutions in their course redesign efforts (which is being run as a separate project). The Texas state government has also established a content repository and supported less specialised tertiary e-learning initiatives such as staff professional development and curriculum development.

The New York state government developed dedicated tertiary e-learning strategies and an action plan. It also developed funding partnerships with its tertiary sector and provided programmes and support, as well as an e-TV channel. The New York State Education Department established a tertiary e-learning unit and provided guidance for relevant policy development and tertiary provision delivered by e-learning as well as tertiary e-learning research and surveys.

However, despite the levels of support for tertiary e-learning provided by the Florida, Georgia, Kentucky, North Carolina and Texas state governments, Maryland was noted as the southern state with the highest levels of tertiary e-learning provision, while Arkansas had the strongest growth. Among the southern states, Delaware had the lowest levels of tertiary e-learning provision and Oklahoma had the largest decline.

Sector-level tertiary e-learning initiatives

The US had a large number of sector-level tertiary e-learning initiatives fail including Cardean University, the US Open University, New York University Online, Fathom, and AllLearn. These failures and were attributed to a number of factors including:

- lack of adequate support or incentives for existing learners
- lack of understanding of distance education and e-learning
- overemphasis on content
- isolation from the members' core business and mainstream activities
- failure to attract sufficient revenue
- an assumption that e-learning would replace traditional delivery.

Consortia typically adopted inflexible positions based on these factors and underlying assumptions, which meant they did not respond effectively to problems that emerged. But despite these failures, the US still has more sector-level tertiary e-learning initiatives than the other jurisdictions, including the largest MOOC consortia, and strong involvement in the large, international OER consortia, which are examined in more detail below.

Non-government organisation e-learning initiatives

The major difference between the US and the other jurisdictions was the larger number of non-government organisation tertiary e-learning initiatives. Non-government organisations also supported US federal and state government and sector-level tertiary e-learning initiatives. Some of the major non-government organisations in this context are:

- **EDUCAUSE**, which provides a range of research and resources as well as specific initiatives on policy and security, teaching and learning, and managing infrastructure to support tertiary e-learning
- **the Alfred P. Sloan Foundation**, which publishes an annual report based on a comprehensive national survey that garners statistics and opinions on tertiary e-learning, as well as providing information on current and planned developments including MOOCs
- **the Bill and Melinda Gates Foundation**, which has provided funding to support workplace e-learning initiatives and has also established a dedicated MOOC research initiative, as well as providing grants to individual community colleges so they can introduce MOOCs
- **the William and Flora Hewlett Foundation**, a major backer of OER initiatives including OER Commons (see below for more details).

References

1, 2, 4, 6, 7, 10, 12, 13, 21, 22, 24, 27, 29, 30, 40, 49, 60, 66, 112, 117, 126, 136, 138, 145, 149, 153, 159, 161, 167, 173, 177, 179, 180, 181, 182, 183, 184, 185, 186, 187, 189, 191, 192, 195, 196, 197

Open Educational Resources (OER)

What are OER?

The term OER was first coined at a 2002 United Nations Educational, Scientific and Cultural Organization (UNESCO) conference. They are typically defined as education-related resources that include (but are not limited to) full courses or modules and their associated materials such as digital learning objects and textbooks that reside in the public domain or have been released under a licensing regime that permits their free use or repurposing by others.

However, this definition is not universally accepted, because it suggests that OER only include educational resources developed and supported by government, institutions, and individual teaching staff. This tends to exclude OER that might derive from other sources including learner-generated content. Open is also a contestable term, because some resources purporting to be OER are disseminated under restrictive conditions.

Government OER initiatives

The most common rationales governments use to support OER initiatives are to widen learner access and increase their participation. New Zealand has provided a more supportive licensing regime for OER initiatives than the other jurisdictions. In Canada and Australia, government licensing initiatives that can support OER have been at state rather than federal level.

Unlike New Zealand and the US, the Australian federal government supported OER projects through the Flexible Learning Framework. But at the time of writing, these had been disestablished. The reasons cited for this were budget cuts and possibly unspecified jurisdictional issues. The Canadian federal government, as part of its wider research efforts, has funded a research network dedicated to learning object repositories.

However, the UK government had more OER initiatives than the other jurisdictions, most likely because JISC established an OER programme, supported by HEA and with funding from HEFCE. The programme's initiatives included a repositories programme, funding for selected institutions to develop courses from repurposed or reused materials, and a support centre for individuals and institutions wishing to use OER. JISC also co-funded the development of a learning registry with the US Departments of Education and Defense.

HEFCE also provided funding for 29 OER projects, outside the auspices of JISC's OER programme, which included policy and process development, intellectual property rights, organisational cultural issues, and technical requirements. However, despite this support, OER use in the UK tertiary sector remains low and the OER produced by these initiatives are primarily used outside the UK.

An evaluation of JISC's OER programme found that institutions with greater involvement in it had improved their supporting infrastructure, had increased awareness of OER, and had more capable staff that could make better use of OER to support their teaching practices. But there was less evidence that these benefits were transferable to non-participating institutions. The evaluation also found that, while a sustainable approach had not been developed, this could be achieved by having OER more deeply embedded within institutions.

The evaluation found that institutions tended to use familiar systems and technologies to support OER and that key enablers for OER included financial incentives and supportive institutional policies and procedures. The evaluation identified the main barriers to OER as legal restrictions, time constraints, concerns about pedagogic fit, a lack of digital literacy and confidence among staff, format and platform choice, students' lack of skills to use OER effectively to support their learning, students' unwillingness to seek support, and publishers' restrictions.

This evaluation also noted that the repurposing of OER to improve their quality and usability and effectively utilising existing OER, especially those from existing large-scale repositories were not well supported by existing institutional arrangements. For example, JISC's OER repositories programme ignored large international repositories such as MERLOT, GLOBE, and OER Commons. These limitations made it difficult for the evaluators to form a favourable view of the programme.

Sector-level OER initiatives

There are a number of large international consortia that support OER initiatives, including OER Commons, MERLOT, GLOBE, and the OpenCourseWare consortium. While the primary role of these consortia is to act as OER repositories, they also offer additional services such as evaluation and quality assurance, as well as supporting specific OER projects and tools development.

Their members include government agencies from Canada (a federally funded research organisation devoted to OER), Education Services Australia (an Australian federal government research organisation that conducts research on behalf of the tertiary sector and co-constructs products and services with them), and the US Environmental Protection Agency.

The other major sector-level OER initiative is the recently launched OER universitas [23](OERu), which, unlike the other consortia, has several New Zealand polytechnics as members including Otago Polytechnic, which is one of its founding members.[24] However, OERu has more university members and, unlike the polytechnics, they come from all the jurisdictions covered in this bibliography.[25]

[23] This was formerly known, and is referred to in the relevant annotations, as OER university.
[24] The other polytechnic members are the Nelson Marlborough Institute of Technology, Northland Polytechnic, the Open Polytechnic, and the Waikato Institute of Technology.
[25] These include the University of Canterbury and Lincoln University from New Zealand, the Universities of Southern Queensland and Wollongong from Australia, Athabasca University and Thompson Rivers University from Canada, the University of South Wales from the UK, and Empire State College and the University of Southern New Hampshire from the US.

Unlike the other consortia, OERu has been established to recognise learning that uses non-institutional OER or where non-enrolled students use institutional OER. This provides students with an alternative pathway to gain credible qualifications from recognised institutions by providing assessment and accreditation at scale.

OER and learners

There is much debate about how effective OER are in supporting students, especially those who are informal or lifelong learners.[26] There is emerging evidence that OER do support students, including informal and lifelong learners. However, despite this emerging evidence, there is also a counter view that OER are only suitable for specific learners, who are typically confident, have higher levels of attainment, and are studying accredited qualifications.

This view is held for three main reasons. Firstly, OER are created by institutions and staff for their own purposes rather than to support informal and lifelong learning, and the ones that are most useful for learners are the least useful for teachers and developers. Secondly, OER design is dominated by traditional delivery approaches. Thirdly, OER materials that would support less capable learners are not as common because they are more complex and expensive to produce.

References

8, 13, 18, 19, 33, 36, 47, 48, 69, 70, 72, 81, 82, 95, 106, 107, 121, 122, 123, 125, 141, 144, 145, 161, 180, 184, 188, 195, 201

Massive Open Online Courses (MOOCs)

What are MOOCs?

The term MOOC was first coined in 2008 to describe an online course offered by Canada's University of Manitoba. However, MOOCs are difficult to define precisely. This is because not all are massive; there is no internationally agreed definition of what a course is; some have face-to-face study groups, commercially provided MOOCs are usually offered under restrictive conditions, and some commentators' position MOOCs as merely a specialised form of OER.

But while they are difficult to define accurately, one definition provides a guide to how they are generally interpreted. The 'massive' in MOOCs typically refers to courses that can manage large numbers of students without major disruption to existing operations. 'Open' refers to the fact that there are almost no barriers to learners' participation (virtually the only prerequisite is internet access). They are primarily delivered online and a course can usefully be defined in this context as a 'coherent engagement with a defined set of learning outcomes' (Anderson, 2013).

There are two main models of MOOCs – the connectivist or c-MOOCs and x-MOOCs (named after the edX consortium). The less common c-MOOCs model uses connectivist learning theory pedagogies and practices as the basis for modelling learner-led approaches to teaching and learning, including establishing outcomes and demonstrating competence or mastery of the chosen courses (and/or their associated topics and subjects).

In contrast, the dominant x model uses traditional delivery pedagogies. However, because of their scale, the x-MOOCs are being more innovative in some of their practices, especially assessment, where peer-led and automated approaches are being trialled.

Who are offering MOOCs?

New Zealand's Massey University has joined the Open Universities Australia Open2Study consortium. New Zealand's University of Auckland has joined the UK's Open University-led FutureLearn consortium, which also includes Australia's Monash University, the BBC, and the British Museum. New Zealand's University of Waikato, on the other hand, has developed its own MOOC independently of any existing MOOC consortia.

[26] For the purposes of this bibliography these learners are defined as those who are learning outside institutionally provided accredited courses and qualifications.

However, most MOOCs are offered by three large US-based consortia: Coursera, edX, and Udacity. These consortia were established by the elite institutions Stanford University (Coursera) and its faculty (Udacity), and Harvard University and the Massachusetts Institute of Technology, who co-founded edX. The scale of these three consortia in terms of student enrolments is unprecedented. Coursera is the largest. As at February 2014 it had about 6.5 million enrolments and 625 partners. In contrast, edX had 44 partners and two million enrolments. While Udacity is the only one of the three consortia without formal institutional partners, it has a similar number of enrolments as edX.

Apart from the scale in terms of partners and students, other key differences between the consortia include the fact that edX is the only one that is non-profit. There are also variations in provision, with Udacity initially only offering computer science courses. However, increasingly Udacity are focusing their efforts on workplace training and education. In contrast, edX primarily offers science and technology courses, while Coursera has the widest range of provision from computing to the humanities.

There are also variations in how these MOOCs are trying to attract revenue. For example, among other measures, Coursera offers student verification services, while Udacity on-sells learner data to employers and edX has introduced a licensing model for use of its MOOC platform.

The New Zealand, Australian, Canadian, and US federal governments are not supporting MOOCs. And neither Canada nor New Zealand, despite individual institutional involvement, has a sector-level MOOC consortium.

However, the UK government appears to be supporting the FutureLearn consortium. And some US state governments are partnering with edX and Coursera. For example, edX is working with the Texas state government and Coursera is working with the Tennessee, New York and Colorado state governments to offer degree-level provision.

Coursera is also working with the US Department of State to promote MOOCs as part of the Department's international education initiatives. In contrast, the Californian state government is planning to fund its own state-wide MOOC platform. US non-government organisations, especially the Bill and Melinda Gates Foundation, are also partnering with state governments and institutions to support MOOC initiatives.

Learners in MOOCs

MOOC learners in the large US consortia are often based outside the US. For example, many of Coursera's students are from Brazil, China and India. MOOC learners typically hold a degree-level qualification, are aged between 26 and 35, and are in full-time employment. Initial data suggests that many learners have no intention of completing their MOOC and do not even want formal accreditation. It appears that their primary motivation for participating in MOOCs is to gain specific knowledge and/or to extend their personal networks.

This is an important factor in why MOOCs have low completion rates. However, other factors also contribute to their low completion rates, including learners lacking the requisite skills and support, an absence of incentives for learners to complete, competing family or work priorities, and challenges arising from the large numbers of students involved and their much wider range of locations and languages.

Providers may also offer MOOCs for purposes other than an improvement in learner completion rates. For example, they might offer MOOCs to increase the uptake of their existing on-campus and/or e-learning provision.

Successful MOOC learners are atypical, because they tend to be more self-directed. However, all learners can benefit from MOOCs, because they are fees-free, which reduces their costs, provide just-enough and just-in-time learning, allow the provision of more customised learning environments, and support informal and lifelong learning.

Opportunities and benefits from participating in MOOCs

The initial start-up costs for MOOCs can be substantial. However, once they are operational, they can reduce costs, especially if they are complementing or supplementing existing provision and materials. MOOCs also provide an opportunity for institutions to disaggregate or 'unbundle' the teaching and learning process. This 'unbundling' allows institutions to charge for existing services such as assessment and accreditation.

'Unbundling' also allows institutions to offer additional services and develop new revenue streams through the appropriate use of learner data, including on-selling it to employers. This data can also be used to improve learner support, performance and outcomes. MOOCs can also increase the presence and reach of institutions and allow them to achieve economies of scale.

Challenges and risks from participating in MOOCs

The major risks and challenges associated with MOOCs are the absence of established revenue streams and business model(s) and the fact that in the vast majority of cases they are not recognised for credit towards existing qualifications or as an accredited qualification in their own right. Other risks and challenges associated with MOOCs include their potential competition with other institutional provision, additional costs, breaching of copyright restrictions, staff resistance, plagiarism, and quality assurance. Governments also need to consider whether or not they should fund learners' participation in MOOCs because they are typically fees-free.

What impacts will MOOCs have on tertiary education?

Some commentators look at the opportunities and benefits presented by MOOCs and note that some MOOCs are now being recognised for credit by US state governments (e.g. Wisconsin), official accrediting agencies (such as the American Council on Education), consortia (e.g. WGU), and individual institutions (including Georgia Tech). This combined with their potential to renew the emphasis on teaching and learning and their potential recognition by employers has led these commentators to believe that MOOCs will have a major impact on tertiary education.

Some commentators also think that MOOCs will have a major impact, but that this is likely to be adverse because they fear it could lead to widespread job losses, the increasing casualisation of the academic workforce, and the potential demise of smaller institutions. The critics also point out problems associated with the traditional delivery pedagogical approaches employed by the dominant x-MOOCs including a significant reduction in teacher-student interactions, a reliance on automated and/or peer assessments, and their inability to effectively support high needs learners or students not experienced in online learning environments

However, other commentators look at the risks and challenges associated with MOOCs and believe that they will have limited or no impact on tertiary education. For example, they note that trying to raise revenue from learner data may be problematic because it risks compromising their privacy and could lead to a strong reaction from students if they think their data has been handled inappropriately. And institutional involvement in MOOCs may be driven by a fear of being left behind rather than as an opportunity to disrupt their existing operations.

In contrast, other commentators think it is too early to predict the potential impacts of MOOCs with certainty. However, while they agree with those commentators who think that MOOCs will have no short-term impact, they do think that institutions could consider establishing an autonomous business unit to allow a timelier and more appropriate response to MOOCs.

Finally, some commentators think that governments should invest in MOOCs regardless of the challenges and risks or the benefits and opportunities they present, because the effort and expense necessary for effective experimentation are too great for individual institutions.

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5 SOME OBSERVATIONS ON THE LITERATURE

Strengths

The literature provides a good overview (and in many cases supporting detail) of government and sector-level tertiary e-learning initiatives, including OER and MOOCs. The literature also provides a good balance by noting the successes and failures of government and sector-level tertiary e-learning initiatives and their associated strengths and weaknesses.

Limitations

The major limitation with the literature is that it does not allow for a credible assessment of whether or not all the outcomes of government and sector-level tertiary e-learning initiatives have been met. This limitation is largely a result of the lack of publicly available evaluations.

This lack of literature relating to the outcomes of government and sector-level tertiary e-learning initiatives is likely in some cases to be because they are still in progress or have become business as usual. But for others it is unclear what their status is. For example, in some cases new initiatives have been implemented, such as Australia's new VET sector e-learning strategy, without it being clear why its predecessor (the Flexible Learning Framework) was replaced.

This difficulty in establishing the status of government and sector-level tertiary e-learning initiatives, and especially whether or not all the stated outcomes have been met, is compounded by the contradictory messages within the literature, including whether or not and to what extent the UK government is supporting the FutureLearn MOOC consortium.

Specific limitations were also identified within the MOOCs literature, such as an overrepresentation of media reporting and particular authors, and a relative lack of formal academic literature. There is also a tendency to focus on learners' perspectives. While good use has been made of Learning Management System data, social media data has been largely ignored. There is also a lack of literature on staff practices and experiences in MOOCs, their ethical aspects, and why learners are participating in them.

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7 NEW ZEALAND GOVERNMENT AND SECTOR-LEVEL TERTIARY E-LEARNING INITIATIVES

New Zealand: Is online education a highway to the future?

Author: Anderson, B.

Reference number: 3

Date of reference: 2005

Government rationale for tertiary e-learning
The government wanted to develop a local version of the 'knowledge society' to drive economic growth. E-learning was expected to play a critical role in assisting the education sector to achieve this objective.

The role of Government
Tertiary e-learning in New Zealand has occurred largely without direct government intervention. The government approach has been to increase infrastructural capability and provide strategic direction. However, key decisions such as the one to equalise funding between on-campus and distance education students had a considerable indirect effect.

Tertiary e-learning initiatives
The Highways and Pathways report (2002) was produced by a government-appointed E-learning Advisory Group. They advised the Ministry of Education on ways to achieve a strategic direction for tertiary e-learning. The report's eight recommendations included the importance of collaboration between government, institutions and other stakeholders, Māori participation in e-learning and quality assurance.

As a result of these recommendations, the government created the e-Learning Collaborative Development and the Innovation and Development contestable funds. These funds supported a range of projects that either demonstrated a collaborative approach to e-learning or increased the e-learning capability of institutions. Examples of projects from these funds included:

- Te Ako Hikohika Wānanga: this increased the ability of Māori communities to research what e-learning works best for them (undertaken by the three Wānanga)
- the Quality Standards, Frameworks and Guidelines Project, to develop guidelines and standards to ensure the quality of e-learning in New Zealand (which involved collaboration between six institutions).

Global picture, local lessons: E-learning policy and accessibility final report

Authors: Anderson, B., Brown, M., Murray, F., Simpson, M., and Mentis, M.

Reference number: 4

Date of reference: 2006

Government interventions in e-learning
These follow three distinct phases: where governments act to make e-learning possible; where they try and mainstream e-learning; and, finally, where governments allow e-learning a role in transforming the system, with an emphasis on teaching and learning and institutional culture and operations. New Zealand's e-learning policy at the time of writing had largely taken account of the many specific lessons provided by the experiences of overseas jurisdictions.

Following these distinct phases, policy-associated initiatives included:

- strategies to develop physical infrastructure
- providing support, information and guidance for learners, professional development and support for tertiary teachers, leadership development, and development of high-quality e-learning content to build and ensure quality in e-learning
- developing collaboration and cooperation between institutions; attempting to build awareness of e-learning's benefits; building demand for e-learning services; and supporting research and policy evaluation to ensure informed decision making to create a system-wide approach to e-learning
- embedding e-learning and aiming for sector efficiencies by making it integral to broader teaching and learning strategies. Sector efficiencies were sought through the integration of information systems and the development of synergies between institutional initiatives.

Key commonalities relating to e-learning policies include an emphasis on the supply side of e-learning at the expense of the demand side. E-learning strategies also purport to represent and assist disadvantaged and under-represented groups including indigenous peoples. There is general agreement that these policy efforts need to be supported by quality research. Quality assurance and the emergence of consortia, partnerships and alliances were also highlighted as areas of increasing importance.

The tertiary e-learning policy frameworks reviewed were relatively immature. Policies tended to fall into two broad categories: stand-alone or integrated into wider policy frameworks as well as centralised and decentralised policy initiatives. There is typically a lack of alignment between e-learning and the wider and/or relevant policy frameworks, and the question of what kind of education e-learning is required or expected to deliver is neither asked nor answered.

In federal systems in particular there is tension between federally directed policies and the requirement for states, provinces and territories to actually implement them. Australia has been most successful, but only at a sub-sector level.

Often e-learning is driven by economic rather than educational imperatives. Associated policies are often underpinned by significant changes to tertiary provision and how it is delivered. Government responses to this vary, but some jurisdictions have recognised this and have equalised funding between delivery modes.

E-learning policies tend to focus on formal, provider-based provision and institutions, not informal or workplace learning. Governments face challenges adopting appropriate localised responses in an e-learning context because of its increasingly global nature. Finally, it is notable that of all the jurisdictions surveyed none question the value of e-learning or discuss its investment risks.

New Zealand

In 2002 the E-Learning Advisory Group (set up by the government) released its report: *Highways and Pathways: Exploring New Zealand's E-Learning Opportunities*. One of its key recommendations was that the government develop a national e-learning strategy. In response, the Ministry of Education released the Interim Tertiary e-Learning Framework (2004), which stated that an associated action plan would be developed as a matter of priority. This framework also aligned with the government's first Digital Strategy (2004).

New Zealand has developed limited institutional collaborations via the e-Collaborative Development Fund (e-CDF). Like other jurisdictions, New Zealand also prioritised provision of support, information and guidance for learners, professional development and support for tertiary teachers, leadership development, and the creation of high-quality content. These priorities are reflected in the e-CDF projects and, in the case of learners, as a key action area in the framework.

Australia

Like Canada and the US, Australia has a federal system of government, in which the states/territories have responsibility for education. As a result, despite some federal initiatives,

such as Education Network Australia, e-learning efforts in Australia have largely been at a sub-sector level (although these sub-sector initiatives are national in scope).

The higher education sector did create an e-learning action plan, but this was not implemented and no follow-up document was publicly available. In contrast, the vocational education and training (VET) sector developed a comprehensive response under the auspices of its Flexible Learning Framework. The Australian National Training Authority was instrumental in its development. It is jointly funded and managed by the Commonwealth and States/Territories, something that has not been achieved in either the US or Canada.

AU$80 million was committed to the Framework from 2000 to 2004, with 41 percent for professional development, 42 percent for content, application and services development, and the remaining 17 percent for policy, research, and standards-based initiatives. While there were notable increases in student and practitioner uptake of e-learning, this was still a small proportion of total provision.

The revised flexible framework now explicitly links to the current national VET policy, which specifically refers to e-learning. This plan has much more emphasis on building demand rather than focusing mainly on the supply side as in the previous iteration. Its programmes and associated projects include resources and innovation, capability building, and support for the VET system.

Canada

Canada's provincial initiatives included establishment of specialist bodies such as Ontario's Contact North, and funds including Alberta's CA$20 million Learning Enhancement Envelope project to develop e-learning and innovation.

Saskatchewan's Technology Enhanced Action Plan had four goals emphasising the importance of indigenous peoples and rural and remote communities. The 'enablers' to meet these goals included the development of e-learning content and pedagogies and learner support and connectivity. The larger institutions set their own priorities and the rest of the sector would develop these within institutional groupings.

The evaluation of the Plan showed that, while it had relevance and was an important catalyst for sector e-learning activity, there was slow buy-in from some institutions and challenges around implementation within a collaborative framework. However, a sector virtual campus had been created and this reflected enhanced inter-institutional collaboration.

At a federal level the focus has been largely on infrastructure, for example the CANARIE project (which is the equivalent of New Zealand's KAREN network). The federal government has also been concerned with the development of workplace skills and has set up specialist bodies to help drive this, including the Advisory Committee for Online Learning (ACOL) (in collaboration with Industry Canada). But two attempts by ACOL and CANARIE to establish a Canadian pan-sector e-learning strategy were unsuccessful. This was partly because of jurisdictional conflicts between the federal and provincial governments.

UK

The UK's most recent e-learning strategy (Harnessing Technology: Transforming learning and children's services) adopted a cross-sector approach. This arose from preceding documents which recommended a cross-sector e-learning strategy be created. This strategy deliberately focused on the learner, to achieve a more personalised approach. Infrastructure was important, but less so. To support the strategy's implementation, several themes were developed: learner-centric knowledge; architecture; strategic technology provision; and personalised content and e-maturity.

The Higher Education Funding Council for England's (HEFCE) e-learning strategy for higher education was intended to complement this cross-sector strategy, as well as informing the UK government's overall teaching and learning strategy. It allowed institutions to determine how they would implement it and they were encouraged to position e-learning within wider teaching and learning strategies rather than creating stand-alone ones. A more sector-level strategy was

the *Get on with IT* report from the Post-16 e-learning Strategy Task Force. This report focused on the need for increasing the skills of learners rather than the amount of infrastructure.

Scotland developed a less prescriptive approach. They supported institutional groupings to implement 'transformational' e-learning projects. The e-learning policy and strategy would be determined by these groupings, rather than the funding councils. The Welsh strategy (which was in draft at the time of writing) had more emphasis on infrastructure.

US
There appear to be no federal initiatives relating to tertiary e-learning; rather it is left to each state to determine. The overarching policy documents are the National Technology Education Plans, the 2005 version of which specifically refers to the support of e-learning as being one of its key priorities.

A survey of 39 states commissioned by the National Governors Association (*The State of E-Learning in the States*, 2001) suggests that most of the states were developing delivery systems, promoting access to e-learning through infrastructure investments, undertaking quality assurance on e-learning and exploring governance issues to bring e-learning into a coherent system.

Pennsylvania and California have framed their e-learning priorities within a wider distance education-focused policy. They have a strong emphasis on access. Other priority areas include increased infrastructure and collaboration between key stakeholders and a reduction in costs, as well as adherence to recognised standards.

Reviewing the virtual campus phenomenon: The rise of large-scale e-learning initiatives worldwide

Authors: Bacsich, P., Bastiaens, T., Bristow, S. F., de Beeck, I. O., Reynolds, S., and Schreurs, B.

Reference number: 7

Date of reference: 2009

Definitions
The authors define a consortium as typically indicating 'an association of businesses, institutions and/or agencies formed for the purpose of engaging in a joint venture with a substantial e-learning aspect'. The authors note that governments and their agencies are generally supportive of these types of ventures.

New Zealand
In New Zealand the authors did not find any consortia-related e-learning initiatives. But they did note that the government had funded e-learning initiatives and they cited the New Zealand Consortium for e-Learning as an example.

US
The US has seen many consortia-related virtual campus initiatives, for example the virtual university for the state of Arizona (Arizona Universities Network). Colorado and California are also noted as having regional or state-wide initiatives run by consortia at the community college level.

Canada
In recent years many government-supported e-learning initiatives have been disestablished. These include Canada's main research programme and British Columbia's Open Learning Agency. But there is a national initiative: the Canadian Virtual University (CVU), which has 11 participating universities.

Canada also has a number of portal type environments such as British Columbia (BC) Campus, eCampus Alberta and Contact North (Ontario). These initiatives provide a one-stop shop for e-learning, including funding, course location, credit transfers, technical support, and staff online professional development.

Australia
Open Universities Australia (OUA) is a consortium of seven Australian universities. But it also acts as Australia's equivalent to the UK's Open University and offers courses from more than 16 universities and other tertiary education providers. At a national level, Australia also has its Flexible Learning Framework. But this only covers the vocational and technical education sector.

The e-CDF projects

Author: Barr, A.

Reference number: 10

Date of reference: 2008

Software and infrastructure
e-Collaborative Development Fund (e-CDF) projects in this category included intelligent software agents to assist staff and students, e-portfolios, various digital content and learning object repositories, and tools to assist teachers in developing courses and content.

Resources
Projects included specialist teaching qualifications, course modules for information literacy and industry training, and guidelines to help tertiary leaders and practitioners design and evaluate e-learning materials and provide them with information on good practice.

Collaboration
These projects included an inter-institutional online research repository, a collaborative teaching initiative to reduce duplication in e-learning professional development, and a common platform for open source technologies.

Māori
Projects were created to support Māori, including a research project to identify critical success factors for Māori students doing e-learning, the creation of a website to support Māori researchers and academics, and Te Reo teaching resources for an e-learning context.

Pasifika
A research project was undertaken to identify critical success factors for Pasifika students doing e-learning.

Leadership
An initiative was supported to develop and support institutional e-learning 'champions' and this included the creation of dedicated online and offline networks.

An historical overview of flexible learning in New Zealand from 1990 to the present

Author: Bewley, D.

Reference number: 17

Date of reference: 2004

Governments' role in flexible learning
Governments have in varying ways supported key features of flexible learning as well as their implementation. For example, in the early 2000s, in response to the rapidly changing ICT environment, the New Zealand government formed a commission on e-learning.

E-learning in tertiary education: Where do we stand?

Author: Centre for Educational Research and Innovation

Reference number: 29

Date of reference: 2005

E-learning definition
E-learning is defined in this book as 'the use of information and communications technology (ICT) to enhance and/or support learning in post-secondary education'.

Methodology
The book is based on results from a survey that had responses from 19 tertiary institutions from 11 countries. Because of the small number of respondents and qualitative focus of this survey, a larger-scale quantitative survey (a 2004 one conducted by the UK's Observatory on Borderless Higher Education) was used, where relevant, for comparative purposes.

Partnership and networking
While there were few examples of consortia, one prominent one that New Zealand, US, and UK institutions were involved in at the time of writing was U21 Global. This was established in 1999 to offer online courses and was backed by an international consortium of universities referred to as Universitas 21, which itself was in partnership with Thomson Corporation. Thomson was responsible for technological and administrative support, as well as contracting staff to create and teach the courses.

The institutions contributed their brand, some staff and US$25 million to the venture. The venture also established separate teaching and learning and awarding/accreditation branches. By 2004 they had 400 students enrolled, against projections of 5,000. They also only had one programme available. They branched out into on-selling course materials and support services to a large US conglomerate; this was likely to increase their revenues until their core venture became sustainable.

Virtual university networks noted here include British Columbia's Open University Consortium and Open Universities Australia (a national consortium). The book also notes BC Campus, which offers a single online portal that, among other things, markets higher education provision across British Columbia.

The Tertiary Accord of New Zealand (TANZ) (a grouping of polytechnics) jointly developed a Graduate Certificate in Applied eLearning, which was aimed at all teachers in the tertiary sector. Part of their efforts involved collaborative research into e-learning. And there is also the Wellington Education Cluster (which included the Open Polytechnic of New Zealand and two other institutions), which among other things jointly marketed online courses.

The Pew Foundation in the US established a US$8.8 million project to develop and trial methodologies to use forms of e-learning to reduce programme delivery costs and raise student attainment. Carnegie Mellon University was one of 30 institutions funded by this project. The US Alfred P. Sloan Foundation funds and supports a learning technology best practice network.

Funding, costing and pricing

External funding for e-learning was often for projects related to infrastructure and resource development. This funding did not entirely come from government, but also from consortia, associations, and supra-national bodies such as the United Nations or European Union. Outside the US, private sector funding was rarely used or available to support institutional e-learning initiatives.

Much of the government funding was made available through competitive tender. For example, the New Zealand government established the e-Collaborative Development Fund (e-CDF). One of the e-CDF projects cited here was the New Zealand Open Source Virtual Learning Environment. This project was supported by a consortium of eight institutions. At the time of writing, the membership of the consortium had grown to 20. But in the UK, non-competitive generic teaching and learning funding had been used to support e-learning. And in British Columbia, the provincial government had used generic 'innovation' funding to support e-learning.

Current government roles: funding and beyond

Overall, respondents thought that governments played the following key roles in relation to tertiary e-learning:

- Strategic development and provider of special funding for e-learning projects/research.
- Deregulation/regulatory reform to optimise the broader higher education context and its suitability for e-learning.
- Broker and funder of partnerships/collaboration and creator of a new e-learning entity.
- Investor in technology infrastructure and regulator of telecommunication services.
- Initiator and funder of staff development for e-learning.

New Zealand has made institutional cooperation a prerequisite and ensured the project outcomes are made available to the entire tertiary sector. The Canadian government has released guidelines to protect consumers. And the UK government has a specialist code of practice related to e-learning issued by their Quality Assurance Agency that providers are required to adhere to.

E-learning activities in Aotearoa/New Zealand Industry Training Organisations: Final report

Authors: Clayton, J., and Elliot, R.

Reference number: 32

Date of reference: 2007

Overview

E-learning is defined here as 'learning that is enabled or supported by the smart use of ICT'. The data to support the report was derived from a literature review, a survey and case studies. The survey split the Industry Training Organisations (ITOs) into three broad categories: large (over 5,000 enrolled students), medium (between 1,000 and 5,000 enrolled students), and small (fewer than 1,000 enrolled students). Most respondents to the survey were in the small ITO category.

The uptake of e-learning in industry training is inhibited somewhat by the fact that ITOs are not responsible for delivering training. At the time of writing, ITOs had limited operational

experience in the deployment and implementation of e-learning systems, applications, and content. E-learning conversations in the ITO sector tended to be theoretical rather than practical.

ITOs have the ICT infrastructure to support an expansion of e-learning. But at the time of writing, most digital resources were in 'hard' form such as CDs or DVDs or computer rather than web based. ITOs also lack the skills and knowledge to leverage their existing ICT infrastructure effectively to expand and support e-learning. Most ITOs use a Learning Management system to support their e-learning initiatives.

Key findings from survey

Most ITOs developed their own e-learning materials, but there was an observable trend for others to outsource content development or purchase 'off the shelf' resources. A small majority of ITOs did not offer e-learning. Larger ITOs were more likely to be involved in e-learning.

Most ITOs noted an increase in their use of e-learning and saw at least some benefit for their trainees in e-learning. These benefits included increased flexibility, more opportunities to provide 'just in time' learning, and meeting trainees' and employers' expectations. E-learning allowed ITOs to provide training at scale. E-learning could also reduce costs and provide more consistency in teaching delivery and increase trainees' ICT skills and competence. E-learning allowed for ITOs to monitor student performance and achievement more effectively.

Most respondents (except small ITOs) had undertaken a review on the educational value of introducing e-learning. In contrast, small ITOs did not have e-learning as part of their strategic planning. However, few ITOs had introduced formal policies or similar documentation to support their e-learning initiatives. The majority of ITOs had also not identified their infrastructure requirements to support e-learning, and they had not allocated funding to support e-learning.

Newer ICTs, including mobile and Web 2.0 technologies (e.g. wikis, blogs etc), were rarely used to support e-learning; instead, older technologies such as DVDs and CDs were employed. And most trainees were not using e-learning to support their training. Most ITOs were not actively supporting e-learning pedagogical approaches, and were not collaborating in sharing good e-learning practice. Larger ITOs were more likely to believe that their staff have sufficient capability and professional development support to successfully introduce e-learning.

The majority of ITOs had not considered how e-learning might impact on their organisational structure. Most were unaware of their trainees' information literacy levels and did not think trainees were receiving adequate online support. While an overall majority of ITOs had not discussed with their stakeholders the value of introducing e-learning, most small ITOs had done so. ITOs did not appear to have processes in place to monitor the effectiveness of e-learning on student achievement.

Interoperability and learning objects: An overview of e-learning standardization

Author: Friesen, N.

Reference number: 61

Date of reference: 2005

Introduction

Standards are defined here as 'documented agreements containing technical specifications or other precise criteria to be used as rules, guidelines, or definitions of characteristics, to ensure that materials, products, processes, and services are fit for their purpose' (Bryden, 2003, p. 3). Standards in an e-learning context typically apply to its supporting systems.

Specifications are important as they enable an emerging consensus to develop, which allows development to occur and manages short-term risk. In contrast, standards while largely complete and conclusive also evolve much more slowly as they need to serve regulatory purposes and manage long-term risk (Farance, 1999).

In an e-learning context, both specifications and standards are evidence that the field and industry are maturing. In the absence of specifications and standards, e-learning development has typically been applied in ad hoc and divergent forms. This independent approach has been expensive, and also means they are generally not interoperable. Standards and specifications address these shortcomings by ensuring the interoperability, portability and reusability of this content and these systems.

However, standards are not necessarily a panacea. As Slaton and Abbate (2001) note, 'some standards build flexibility to accommodate local conditions; others fail when confronted with resistant users'.

Standard-setting bodies

One of the major standard-setting bodies of which New Zealand is a member is the IMS Global Learning Consortium (IMS). It is dominated by the Anglophone countries, but its membership is expanding to include other sectors and nationalities. IMS is supported to a certain extent by the IEEE, which has a technology focus. However, the organisation that has the most official recognition is the International Organization for Standardization (ISO). In recent times the ISO has started to develop standards specifically for e-learning; and the IEEE has developed a metadata standard for learning objects.

Further research

More research is needed to gain a better understanding of the complex processes of e-learning standards development, and the potential and actual effects of these standards on common educational organisational practice need to be considered.

Evaluation of the e-learning Collaborative Development Fund: Final report

Authors: Ham, V., and Wenmoth, D.

Reference number: 74

Date of reference: 2007

Introduction

In May 2003 the New Zealand government established the e-Learning Collaborative Development Fund (e-CDF), whose purpose was to build the e-learning capability of the tertiary education system through a series of contestably funded collaborative projects. The fund provided about NZ$21 million for these projects. The first two rounds funded a total of 31 projects.

Building capability referred to the production and/or dissemination of knowledge and tools that would support institutions' ability to deliver e-learning. To avoid duplication of investment and effort, collaboration was the preferred approach. This collaborative approach would also allow benefits to be demonstrated to participants and potentially the entire sector.

Methodology

The data sources used in the evaluation included participant and stakeholder interviews, surveys of national samples of participants, teaching staff and institutions, and relevant Single Return Data for 2005 and 2006 on e-learning provision and performance across the tertiary sector (which was provided by the Tertiary Education Commission (TEC)). There was also a content analysis of relevant documents (e.g. project proposals) from the TEC and institutions.

Key findings

While the e-CDF's round one outputs were all achieved, there was considerable variation in how these were disseminated to the wider sector. The most visible and sustainable outcomes of the round one projects were: the raising of the profile of e-learning as a significant issue for participating institutions' strategic management and planning processes; and the development of an active community of practice among e-learning experts and leading practitioners across the university and polytechnic sectors.

But these benefits did not accrue to the wider sector and polytechnics were the most likely to leverage the round one outputs for their e-learning operations. In particular, the outputs are not well known in the private training establishment (PTE) sector nor were they widely used by institutions who were not involved in e-learning. The e-CDF was more successful in assisting early-adopter institutions to extend their range of existing e-learning capabilities than in creating new or widespread capability in institutions with little or no e-learning experience.

Capability building was greatest with regard to development in strategic policy, operational systems and ICT infrastructure. The weakest area in this context was staff development. No participating institution rated their teaching staff's e-learning capabilities as high overall. The area of greatest need identified was developing a better understanding of effective e-learning pedagogy. Larger institutions were more likely to experience an increase in capability than smaller ones.

The e-CDF consolidated existing partnerships rather than create new collaborative ventures. Participants interpreted collaboration to mean information sharing and agreeing to share the post-implementation benefits, rather than as a method for developing projects from scratch. But at an individual level the e-CDF has played a major role in building collaboration on a national scale, as well as developing the professional capability of the e-learning managers and experts in the participating institutions.

Projects in the categories of professional and policy development, and the open source platform projects, were noted as being of particular value in achieving these individual benefits. The challenges around collaboration were also demonstrated by the fact that most of the systems-related projects did not produce interoperable products.

The sustainability of the projects varied greatly. The projects most likely to be sustainable were those that had a product development focus or had secured post-project funding from other sources. The projects that were the least likely to be sustainable were those with a professional development focus, because there was insufficient time or resources to achieve a critical mass of capable staff, alternative sources of funding were not available, or planning or resourcing for expanding the project beyond a small group of beneficiaries was inadequate.

Most projects did not have post-implementation initiatives and funding built into their project unless the contract with TEC specified otherwise. This also applied to any evaluation of the project.

A number of key success factors for the e-CDF projects were identified by the evaluation including:

- how committed senior management were to the project
- whether or not there was an e-learning champion or champions in place and if they had leadership abilities
- the robustness and clarity of the supporting thinking, planning, and formal procedures
- the extent to which genuine collaboration occurred among key institutional stakeholders.

E-learning presents several challenges for governments, including where is the line drawn between what governments should invest in and when institutions should fund initiatives as a logical extension of their operations?

An overview of virtual learning environments in the Asia-Pacific: Provisos, issues, and tensions

Authors: Hung, D., Chen, D-R., and Wong, A. F. L.

Reference number: 81

Date of reference: 2006

New Zealand
New Zealand has a more cautious and conservative approach than Australia, which may reflect its lower availability of resources. For example, in New Zealand there is a concern that flexible learning is often positioned as an end rather than a means. But despite these concerns and limited resources, VLEs became a strategic developmental direction. The E-Learning Advisory Group (2002) made a number of recommendations to the Ministry of Education in this context.

Based on these recommendations, the e-CDF was set up in 2003 with a budget of NZ$47 million, which was intended to fund collaborative projects to develop New Zealand's e-learning capability. A national e-learning portal was also introduced in 2003.

Underpinning New Zealand's e-learning initiatives was the Open Standard and Open Source movement. For example, there was heavy emphasis on reusable learning objects (conforming to IMS open standards) which could be shared widely across the sector. This strategy, which leverages a distributed community to develop, maintain, and update ICT projects, is particularly well suited for New Zealand because of its limited resources.

Australia
A commonly accepted emphasis in Australia in recent years is flexible learning. In Australia this is defined as flexible access in at least one of the following contexts: time, place, pace, learning style, content, assessment, and pathways (Browne, 1999; Ling P., Arger, G., Smallwood, H., Toomey, R., Kirkpatrick, D., and Barnard, I., 2001; Macquarie University, 2001).

Flexible learning in Australia has been implemented in different ways. For example, in some instances it focuses on delivery which ranges from blended to fully online (University of Wollongong, 2000). It can also refer to course design and content. However, flexible styles that accommodate different kinds of learners appear to be relatively unexplored.

Towards borderless virtual learning in higher education

Author: Latchem, C.

Reference number: 108

Date of reference: 2004

Consortia examples
The Global University Alliance (GUA) is an international company partly owned by universities in New Zealand, Australia, the UK and the US. GUA is not an accrediting body, but its courses are available online globally and these are accredited by institutions in the Anglophone higher education jurisdictions and recognised as contributing towards degrees from these institutions.

Each GUA member has its own quality assurance and student support measures in place. But the GUA also provides student advisors to help students select pathways and apply for study, and to provide more general academic support. GUA's technical platform is developed and maintained by NextEd Limited on a fee-for-service basis.

Led by the University of Melbourne in Australia, Universitas 21 Global is a consortium based on a joint venture between universities from (among other places) Australia, New Zealand,

Canada, the US and the UK and Thomson Learning. It planned to operate mainly in the Asia-Pacific region and offer courses at about one-third of the cost of their on-campus equivalents.

Thomson was responsible for the course design and development, assessments and student database management. But the project was slow to develop, its benefits were difficult to quantify, and there were no current or projected short-term revenues.

Understanding global activity in higher education and research: Report of findings

Author: Mindset research ltd

Reference number: 126

Date of reference: 2009

Approach

The reviews consist of interviews with leading experts in several countries and a desk-top review of their publicly available (online) information. E-infrastructure is defined in this report in very broad terms to mean the technologies and organisations that support e-research.

E-learning is also defined in broad terms to refer to learning that is facilitated and supported through the use of ICT. The review notes when individual countries have a significantly different definition for this or similar terms like online learning.

Australia

The main focus of Australia's e-learning efforts has been in the vocational training and education sector through the Australian Flexible Learning Framework, which receives AU$20 million annually. A 2008 report by Franklin Consulting noted that for universities there was no sector-wide strategic approach; rather, initiatives were institution or discipline specific.

Some of the key e-learning initiatives in Australia at the time of writing were the Learning Object Repository Network (LORN), which is a portal that allows teachers to access relevant resources, and ALTCEXCHANGE, which allows academics to share learning materials.

Canada

Attempts to develop a pan-Canadian e-learning strategy have been unsuccessful and have been overtaken by provincial initiatives. These unsuccessful attempts included an Advisory Committee on Online Learning, which produced a report looking at the evolution of e-learning from an institutional perspective. The Canadian Advanced Network and Research for Industry and Education produced a discussion paper that looked to develop a pan-Canadian e-learning strategy. But Canada has developed a 'virtual university', which is a consortium of 12 of Canada's leading universities in distance and e-learning.

Each of the provinces varies in their approach towards e-learning. Some provinces, like Saskatchewan, have significant policy involvement, while others, like Ontario, have little. In British Columbia their 'BC Campus' appears to take a more integrated approach. BC Campus is a collaboration of all tertiary institutions in British Columbia and provides an online centralised access point to tertiary distance learning resources, and support services for students, staff, and administrators. Apart from BC Campus, other major e-learning initiatives noted were Network BC and the Saskatchewan Technology Enhanced Learning Action Plan.

New Zealand

New Zealand's approach to e-learning was coordinated by a single body, the ICT Standing Committee on Education,[27] which oversees the collaborative development and use of ICT across

[27] This committee had representatives from all of the education sector agencies plus Careers New Zealand, the National Library, the Correspondence School, and the Ministry of Research, Science and Technology.

the education sector to ensure duplication of effort is minimised. Government initiatives included the Digital Strategy, an Education ICT Strategy, and the Interim Tertiary e-Learning Framework (2004) and associated work programme.

The Interim Framework followed on from the government-commissioned Highways and Pathways report (2002) and was intended to act as a blueprint for priority, future e-learning activity. In 2006 an education sector strategy for e-learning was developed; however, this also included e-administration and e-research. Therefore, at the time of writing, New Zealand lacked a discrete e-learning strategy.

Other initiatives noted are the e-Collaborative Development Fund, which involves a number of collaborative projects that are intended to increase tertiary sector e-learning capability. It was allocated NZ$28 million from 2003 to 2007. The Ministry of Education spent about NZ$300,000 per annum on research and reports, and funded the development of resources for staff, students, and institutional senior management in partnership with the sector, the Tertiary Education Commission, and Ako Aotearoa (the National Centre for Tertiary Teaching Excellence). These resources included a benchmarking tool and guidelines for teachers and institutional senior management.

A portal was available that had access to relevant e-learning information and resources, including what e-learning courses were available, and it was also intended to support the Interim Framework's work programme. The Virtual Learning Network made tertiary courses available to school and tertiary students via video-conferencing. And in an infrastructure context there were also national initiatives under the Education Sector Architecture Framework, such as authentication, federated searches, systems interoperability, data sharing, and metadata.

UK

The UK government provides strong support for e-learning. Evidence suggests that the UK has more government/nationally formulated e-learning-related policies than New Zealand, Australia, Canada, and the US. Its current phase of initiatives is largely based on a blended approach which connects technology with pedagogy and puts the learner at the centre of e-learning strategies.

Unlike the other jurisdictions, the UK has a dedicated agency for tertiary e-learning implementation – the Joint Information Services Committee – which contributes significant monies, resources, and expertise to the advancement of e-learning in the tertiary sector. The UK has a more systemic approach to the adoption of Web 2.0 technologies and e-portfolios than the other jurisdictions.

US

E-learning is in most states' tertiary education plans, but unlike the UK there is no nationally coordinated approach. Non-government organisations are much more prominent in the e-learning context in the US than the other jurisdictions. For example, EDUCAUSE is responsible for many important e-learning initiatives including the EDUCAUSE Learning Initiative, which is a community of institutions, organisations, and corporations committed to e-learning. The other initiative noted here is the Massachusetts Institute of Technology's OpenCourseWare, which provides a range of Open Educational Resources.

The Digital Strategy 2.0

Author: Ministry of Economic Development

Reference number: 128

Date of reference: 2008

Introduction
This updates the 2005 Digital Strategy and was the then government's attempt to provide a unifying framework for all ICT-related activity in New Zealand. One of the core roles of government was to provide a high-speed, end-to-end broadband connection for tertiary institutions and they aimed to have all institutions connected by 2012. The strategy also proposed creating a Digital Content Innovation Cluster to boost local production of broadband applications, including e-learning-related ones.

The strategy was also committed to digital literacy. The Connected New Zealand initiative (led by the Digital Development Council) would work with a number of key stakeholders including tertiary institutions to create local-level plans for using broadband and digital technology to improve productivity.

The strategy also listed a series of actions including:

- by 2012 embedding the ICT Strategic Framework for Education to ensure seamless transfer of information and integration of streamlined processes across educational agencies and providers to improve educational services and outcomes
- by 2012 ensuring all education organisations have access to high-speed, reliable broadband. A National Education Network would be developed and implemented to give all education organisations access to a range of digital services and resources in a safe, secure and integrated environment.

Interim Tertiary e-Learning Framework

Author: Ministry of Education

Reference number: 129

Date of reference: 2004

Introduction
The Interim Tertiary e-Learning Framework was co-developed by the Ministry of Education, agencies, and the sector. The National Library co-sponsored the Interim Framework. It was intended to provide high-level direction for the development of New Zealand's tertiary sector e-learning capability. It identified seven key action areas where centrally coordinated initiatives were required.

Definition of e-learning and rationale for the framework
The Interim Framework defined e-learning as 'learning that is enabled or supported by the use of digital tools and content' (p. 4). It was intended to support the tertiary education strategy through having students and staff making innovative use of new learning technologies, and prioritising continued investment in technology and teaching/research capability.

Achievements to date
The Interim Framework noted the e-Collaborative Development Fund and a dedicated online portal for tertiary e-learning.

Interim Framework vision and principles
The Interim Framework's vision was that 'the development of New Zealand's e-learning capabilities (would) contribute to a networked, flexible tertiary education system offering increasingly **accessible, relevant, high quality** learning opportunities for all New Zealanders'

(p. 10). It also established guiding principles: learner-centred, good practice, collaboration, innovation, and affordability/sustainability.

Key action areas
The Interim Framework's seven key action areas were: a community of practice, e-learning research, professional development, standards, electronic rights management, recognition of flexible learning pathways, and marginalised learners.

Next steps
A reference group was established to implement action areas for the Interim Framework through a sector-level action plan. It was also to contribute to the development of a pan-sector e-learning strategy that would replace this framework.

ICT Strategic Framework for Education 2006/07

Author: Ministry of Education

Reference number: 131

Date of reference: 2006

Rationale for the ICT Strategic Framework
The integration of teaching, learning, research and administrative practices with ICT will support the implementation and achievement of various government strategies, including the tertiary education, e-government, and national digital education strategies. To achieve improved educational outcomes, institutions and agencies need to work in partnership. Effective and integrated use of ICT is critical in accomplishing this.

ICT expenditure across the education sector and agencies is significant. The purpose of the Framework is to provide the mechanism to guide and coordinate ICT investment towards the government's vision of improved education outcomes.

Vision
The Framework's vision was 'to improve learner achievement in an innovative education sector, fully connected and supported by the smart use of ICT' (p. 4).

Goals
The Framework's goals included: a more learner-centred education system that transcended organisational boundaries, more informed decision making by key stakeholders, increased ease and opportunity of access and reduced compliance costs for all participants, increased confidence, capability and capacity from the use of ICT by all education sector participants, and more effective and efficient investment in ICT by agencies.

These goals would be achieved by:
- developing outcomes-focused organisational cultures
- recognising that people were as important as technology
- having interoperable and easily accessible systems supported by open standards
- balancing local choice and national direction
- adopting a user-focused approach
- establishing communities and a cooperative culture
- recognising and accommodating the significant investment in ICT resources and capability that has already been made.

National digital strategy
The Framework would contribute to the national digital strategy goals of connectivity, content, confidence and capability.

Targets
All Framework goals were intended to be met by 2010. For its connectivity goals the Framework aimed to have in place: a reliable, high-speed internet connection for all education institutions and every education institution having the ability to share information and resources electronically.

For its content goals the target was to have key users being easily able to locate, access and share relevant content that would be hosted in national and international repositories underpinned by open licensing schemes, and all education organisations and agencies having effective information and knowledge management practices.

Lifelong learning would be achieved by enabling all learners to acquire and update their abilities, interests, knowledge and qualifications from pre-school to post-retirement. Key stakeholders would have access to effective and efficient systems. These systems would be underpinned by minimum usability standards and would be expected to meet national and international best practice. And learners, teachers, researchers and administrators would establish online communities of practice, collaborative workspaces, and effective information sharing within and between organisations.

Agencies' annual ICT investment would be measured against agreed standards for value-for-money and this would be achieved by agreed, coordinated planning and monitoring processes among and by agencies.

E-learning research

Author: Ministry of Education

Reference number: 131

Dates of reference: 2009 and 2013

Introduction
Since 2004 the Ministry has supported tertiary e-learning research. From 2004 to 2009 this was achieved through contestable funding. From 2010 until the time of writing, it has been achieved through research being conducted internally.

Research reports from contestable funding
These are grouped into four broad themes: learners, professional development and capability of staff, sector and organisational e-learning capability, and industry and workplace e-learning.

Ministry research reports
In addition to this contestably funded research, the Ministry has produced reports on e-learning provision and participation, achievement, and extramural provision, participation and achievement. And this bibliography is the third in a series which also contains one on learners' participation, retention and outcomes in e-learning and organisational approaches to e-learning.

Knowledge resources

Author: Ministry of Education

Reference number: 132

Date of reference: 2009

Introduction
These resources were jointly developed by the Ministry and Ako Aotearoa (the National Centre for Tertiary Teaching Excellence) and targeted at organisations, teaching staff, and students. For students a video was produced that features learners and their tutors talking about their views and experiences of e-learning.

For educational leaders a set of guidelines poses key questions they should consider when introducing e-learning to their organisation. Finally, a set of 'bulletins' based on Ministry, agency and other key pieces of research was developed for educators on how to support learners and professional development.

Education Agencies' ICT Investment Framework: Strategy 2011-2014

Author: Ministry of Education

Reference number: 133

Date of reference: 2012

Introduction
The ICT Standing Committee established in 2003 comprises the chief executives of the education agencies, with participation from the Correspondence School, the Ministry of Science and Innovation, and Learning Media Limited. The Standing Committee is supported by the ICT Management Committee, whose membership consists of a group of agency Chief Information Officers and senior business managers.

This framework builds on the work of its predecessor (see reference number 129 above) and provides the mechanism to guide and coordinate education agency ICT investment towards the government's vision of improved education outcomes through the free flow of quality information. This vision will be achieved through the delivery of three goals: direction, execution, and evaluation. The Management Committee is responsible for delivering on the framework's outcomes and outputs.

Once the target state and roadmap are established, the Management Committee will measure its success by whether or not key sector projects are delivered within scope, on time, and within budget. An annual work programme based on the roadmap will be developed.

In respect of evaluation, the Management Committee will know it has been successful if within three years 95 percent of initiatives realise their benefits within planned time frames and there is a 20 percent increase from now in dollar value of annual efficiency savings from connecting sector ICT. Individual initiatives will continue to be the responsibility of the lead agency except where an initiative is deemed to be sector wide, in which case the responsibility lies with the Management Committee. Initiatives required to use the framework will fall into one or more of four categories: software, infrastructure, operations, and data.

How are they prioritised?
Initiatives will be prioritised based on two factors: their contribution to achieving the framework's vision (or value) and the estimated cost (or money). To assess if they are meeting the vision, the framework provides a set of criteria with weightings of 1, 5 and 10, where 1 is the lowest.

Report on the distance and flexible education capability assessment of the New Zealand ITP sector

Authors: Neal, T., and Marshall, S.

Reference number: 139

Date of reference: 2008

Methodology
The e-Learning Maturity Model (eMM) has five dimensions: delivery, planning, definition, management, and optimisation. These are supported by a number of process areas, including

learning, development, evaluation and organisation, which are further broken down into more detailed practices.

The courses selected for the assessments had to meet a number of criteria including that they had to use e-learning and would demonstrate the institution's e-learning capability. Examples of evidence used were materials from enrolment packs and courses, websites, evaluations, budgets, strategic plans, business cases, policies and procedures. But collecting this evidence relied on key informants so the quality and quantity collected varied between polytechnics.

Key findings

Delivery was the strongest area for the polytechnic sector. Weaker assessments for the other areas show that e-learning initiatives are often not supported by institution-wide changes. The weak capability in the Management dimension shows that the polytechnic sector does not typically collect information on the performance of their current e-learning initiatives.

And the even weaker assessment in the Optimisation dimension suggests that the sector is not engaging in formalised self-reflection on e-learning or the systematic improvement of the use of technology. This is most likely because institutions do not have data to inform reflection and systematic, continuous improvement.

The weakness in the Definition dimension reflects the lack of clear guidelines, policies and other resources. The capability observed tends to rely on informal or undocumented initiatives that are reliant on individual staff. This led to significant disruption to institutional e-learning initiatives if these key staff left or were unavailable.

E-learning requires quality information. There is limited evidence of institutions checking whether their investment in e-learning has achieved the intended outcomes. Staff are typically not formally asked for their views on e-learning and programme reviews do not incorporate an e-learning focus. And e-learning initiatives are generally not reviewed.

Pedagogy, not technology, needs to be the focus. Isolated investment in key systems such as Learning Management Systems does not produce a comprehensive and sustainable e-learning capability. Relevant eMM data shows that the focus of institutions is typically on the technology, rather than learning. This data also shows that staff are inconsistent in how formally they link specific technologies with a course's learning objectives, pedagogical initiatives undertaken, or the particular needs of students.

There was a lack of communication to students before enrolment in e-learning about what it will mean for them. Students need to be able to use the technology well and may need to invest in personal equipment or services. If this information is not clearly communicated to students at the appropriate time, they will not be able to make informed decisions and will not be adequately prepared for the course before it starts.

International comparisons

Overall, UK institutions had stronger e-learning capability, but they also had similar weaknesses identified above in the key findings section to the New Zealand polytechnic sector. The report notes that the stronger half of the polytechnics compared favourably with UK institutions. But no New Zealand or UK institution had strength in all of the eMM's process areas.

Policy brief: E-learning in tertiary education

Author: OECD

Reference number: 140

Date of reference: 2005

Introduction
The policy brief is based on two surveys, undertaken by the UK-based Observatory on Borderless Higher Education in conjunction with the OECD and Commonwealth of Learning, which looked at institutional e-learning in 13 countries, including New Zealand. The paper defines e-learning as 'the use of ICT to enhance and/or support learning in tertiary education' (p. 2).

How fast is e-learning growing?
Despite the difficulties of accurately measuring e-learning provision, the paper estimates that fully online delivery accounted for well under five percent of total enrolments. And despite the strong growth of e-learning, at the time of writing, traditional delivery continued to dominate. Distance learning and cross-border e-learning in particular had not at the time of writing emerged as significant initiatives.

Most institutions had, or were developing, a dedicated central strategy for e-learning. The Commonwealth survey of 122 institutions revealed only nine percent did not have an institution-wide e-learning strategy or plans to develop one. Institutions generally had no plans to increase their international presence, attract new students, or cut costs through e-learning. And fewer were planning to offer distance education via the fully online delivery mode.

Most institutions did not use their Learning Management Systems for teaching purposes. Institutions may be over-focusing their efforts on the technological infrastructure rather than innovatively using e-learning to improve teaching and learning.

Partnerships can help institutions realise many of the benefits associated with e-learning, such as advanced technology, educational quality, market presence, and lower costs. Some institutions are already involved in partnerships in areas ranging from infrastructure, systems, materials, and programme development to joint marketing, and sharing of software and hardware costs.

But partnerships also raise issues, such as whether or not e-learning materials should be available to third parties for free or on a fee-paying basis. Another is the lack of value institutions place on outsourcing. Despite these challenges, institutions could still use partnerships and networks more effectively to enhance the diffusion of knowledge and good practices at the sector level.

State, provincial or national governments play a significant role in the strategic direction and funding of e-learning in all OECD countries. Even in countries with significant institutional autonomy, governments influence organisational behaviour through strategic funding and policy.

Virtual learning environments in higher education "Down Under"

Author: Pauling, B.

Reference number: 154

Date of reference: 2006

HE's engagement with digital
There is no virtual university in New Zealand, but a number of institutions were participating in international e-learning consortia. For example, the Global University Alliance (GUA) involved

institutions from New Zealand, Australia, the UK and the US, working with NextEd, a Hong Kong-based company. They provided a common platform that allowed students in multiple locations to access tertiary education.

The University of Auckland, along with three Australian and four UK universities, were members of an international consortium called Universitas 21. They formed a joint venture with Thomson Corporation to create an online university (Universitas Global). These transnational consortia collectively enrol about 500,000 students annually, and have a combined operating budget of almost US$9 billion. But while these consortia had lots of potential, they had limited success.

The government supported e-learning with several initiatives, driven by a belief that e-learning capability would help achieve national educational goals. As a result, the Ministry of Education developed an e-learning strategy, the Interim Tertiary e-Learning Framework (2004), and a portal for tertiary e-learning (eLearn, 2004).

The vision

Governments have also been interested in e-learning because it provides potential to widen access at the same time as reducing costs. And it is viewed as a key contributor to a 'knowledge economy'. Governments and the sector also value e-learning because of the flexibility it provides, but to date there have been no real successes (Williams, 2003). This is largely because student demand for e-learning has not met expectations and the costs associated with e-learning are larger than anticipated.

Economic issues

There are also concerns about costly failed e-learning ventures. For example, the UK's e-University venture failed after attracting fewer than 1,000 students. The UK government had invested UK£32 million into this venture. Brabazon (2003) believes that institutional failures can be attributed to treating e-learning as an opportunity to make fast profits and reduce costs. But this was at the expense of investment in appropriate systems and good content and course design (Beaumont, cited in Williams, 2003). These failures have made New Zealand more cautious.

Effective delivery of distance and flexible learning: The research evidence

Author: Prebble, T.

Reference number: 159

Date of reference: 2009

The relative costs and economics of distance education

Distance education has always offered the potential for lower costs, at least to the governments and others funding it. In theory, it is more capable of achieving economies of scale than traditional delivery. This belief in the 1990s led to the creation of several profit-based e-learning ventures that relied on large-scale enrolments to generate a return on their investment.

Bates (2008) notes the failure of many of these ventures, including Fathom and the US Open University. Their failure can be attributed to several factors, such as failing to overcome the challenge of building and maintaining a consortium of providers; failing to overcome the brand disadvantage of distance education; and failing to identify and target the genuine market for distance education.

In contrast, the Tertiary Accord of New Zealand is a consortium of half a dozen of New Zealand's largest polytechnics that develops and offers e-learning programmes at certificate level. These tend to be hosted by one member but supported by teaching staff from other member institutions. This collaboration has enabled member institutions to develop shared learning materials and shared platforms for managing that learning.

Statement of intent 2012-2015

Author: Research and Education Advanced Network New Zealand Limited (REANNZ)

Reference number: 160

Date of reference: 2012

Introduction
The statement of intent sets out REANNZ's strategic direction from 2012 to 2015. REANNZ is a Crown-owned company that is responsible for further development and maintenance of the Kiwi Advanced Research Network (KAREN). KAREN's funding will be split between membership subscriptions (67 percent) and government (33 percent). Its core membership is the universities and Crown Research Institutes, with some polytechnics and wānanga also participating.

Objectives and evaluation
One of REANNZ's key goals is to stimulate economic growth through increased research, collaboration and innovation. There are several success measures outlined here including collaboration between the science, innovative business, and education sectors being enhanced, which in part will be measured by the extent of video-conferencing use. In this context REANNZ can aggregate demand to drive down costs for key services for members such as video-conferencing.

What will REANNZ do to achieve these results?
REANNZ intends to engage with and facilitate higher performance from the research, innovation and education sectors, and provide a network platform that supports production of quality advanced services, networking research and development. Specific actions include enabling and supporting key initiatives such as the Cyber Security initiative, the New Zealand e-Science Infrastructure, and the Crown Fibre Holdings Broadband Usage and Innovation Centre.

Quality of e-learning in tertiary education: Managing a balance between divergence and convergence

Author: Taguma, M.

Reference number: 177

Date of reference: 2006

Methodology
The two main data sources used for this project were the OECD project international case studies (outlined in reference 29 above) and desk-top research to obtain more details on relevant national or government-led initiatives. The relevant countries were given a chance to respond to the findings from this desk-top research.

Government-led or national initiatives
Typically tertiary e-learning policies are not stand-alone documents; rather they are part of a larger policy framework such as generic ICT policies (including New Zealand and Canada); generic education policies as contributors to the information society (including Australia, England and the US); higher education strategies (e.g. New Zealand and England); distance learning policies (e.g. the US); and e-learning strategies at all levels of education (e.g. the UK).

The quality-related issues are embedded either implicitly or explicitly in the policy objectives in these integrated objectives under infrastructure, access, content, and the digital divide issue. The only exceptions to this rule are New Zealand and Canada. New Zealand produced the *Highways*

and Pathways Report (2002), which set out four specific objectives: 1) improve quality; 2) increase participation; 3) change cost structures; and 4) change distribution/delivery methods.

In Canada a specialist committee produced the *E-learning Evolution in Colleges and Universities: a Pan-Canadian Challenge* (2002). This paper laid out five key determinants to accelerate the use of e-learning in tertiary education: 1) accessibility; 2) flexibility; 3) quality; 4) pan-Canadian synergy; and 5) critical mass.

In alignment with these policies, various government agencies (typically but not always the country's Ministry of Education or equivalent) have implemented e-learning programmes and projects. The objectives of these cover a wide range of areas including infrastructure, course materials development, products and services, standards, quality assurance, and international initiatives (OECD, 2005). While quality is important, it generally receives lower priority than access, especially in countries with underdeveloped infrastructures.

Quality is generally addressed from one of two different perspectives: quality enhancement; or quality assurance and consumer protection. Quality enhancement is concerned with how to enhance the quality of teaching and/or learning generally through the use of e-learning. Quality assurance and consumer protection is concerned with how to assure the quality of e-learning practices.

Australia has adopted the quality enhancement approach. In contrast, Canada and New Zealand have adopted the quality assurance approach; and England and the US have adopted both. The quality assurance and consumer approach is characterised by the development of codes of practice, guidelines, standards and accreditation. However, irrespective of approach, growing attention is being paid to learner/customer orientation, faculty development, and evaluation/assessment. And some jurisdictions such as the UK are focusing on particular aspects of e-learning.

In the table below are some of the associated projects from New Zealand, Australia, Canada, the UK and the US.

Country	Type	Programme/Project details
Australia	Quality Enhancement	One of the projects undertaken as part of the Australian Flexible Learning Framework focuses on quality in e-learning resources through flexibility and innovation.
Canada	Quality Assurance	A specialist Canadian agency,[28] in collaboration with the Canadian Association of Community Education, produced a *Consumer's Guide to E-learning*. It also produced a complementary guide for e-learning service/product providers (the *Canadian Recommended E-learning Guidelines*).
England	Quality Enhancement	The Higher Education Academy (HEA) and Joint Information Services Committee (JISC) have launched the Distributed e-Learning Programme. HEA also has e-learning thematic projects that aim to enhance quality by providing opportunities to share resources and good practice as well as investigate pedagogic and sustainability issues.
	Quality Assurance	The Quality Assurance Agency has developed a specific code of practice to address e-learning. But this code states that, while there are some specific quality assurance issues/requirements unique to e-learning, the academic and management issues should be the same as other delivery mechanisms used to support flexible and distributed learning. The Code focuses in particular on delivery,

[28] The Office of Learning Technologies of Human Resources Development Canada.

		learner support, and assessment.
New Zealand	Quality Assurance	The e-Collaborative Development Fund (e-CDF – refer to reference number 74 above for further details) funded projects to develop guidelines and standards to ensure the quality of e-learning.
United States	Quality Enhancement	The US Department of Education's Office of Educational Technology supports the Regional Technology in Education Consortia to provide professional development, technical assistance, and information about the use of technologies to enhance teaching and learning to institutions.
	Quality Assurance	The American Council on Education has produced the *Distance Learning Evaluation Guide* (2001) to provide evaluation criteria for distance learning. The guide comprises seven categories: learning design, learning objectives and outcomes, learning materials, technology, learner support, organisational commitment, and course subject matter/content.

Divergence versus convergence

Through their various policies, strategies and initiatives, New Zealand, Australia, Canada, the UK and the US have promoted a range of teaching and learning practices and innovations to enhance the quality of e-learning. But they have also adopted a quality assurance approach to convert these practices into standards by generating benchmarks, guidelines, accreditation processes, and indicators.

Universitas 21 Global comprised institutions from New Zealand, Australia, Canada, the UK and the US. Its aim was to offer quality undergraduate e-learning business programmes. They established their own accreditation body, U21 Pedagogica, which not only set standards but also assisted members that adopted its pedagogical approach. And they also offered consultation services to non-member institutions.

In the US the federal and state governments are not responsible for higher education quality issues (including those related to e-learning). These are addressed by a range of non-governmental organisations as outlined in the table above. These different initiatives all include learner support as one of the core categories (Weimer, 2002; Fink, 2003; Taylor, 2004) as well as a market-oriented approach,[29] manifesting the US approach to quality assurance.

There are various government initiatives to try and develop system interoperability standards because of their importance in supporting effective e-learning. The two main sets of standards are those developed by the IMS and SCORM.[30] But despite the importance attached to these by governments, institutions very rarely use them, although this was expected to change in the future.

Governments and consortia can also support systems development, particularly when this is open source, for example the Learning Activity Management System in Australia, the Sakai in the US, and the Open Source Virtual Learning Environment in New Zealand. Institutional groupings implement Open Educational Resource type initiatives such as MERLOT, which is a portal that links to online learning materials free of charge for staff and students to share.

[29] Where quality is developed not by government intervention but by market expectations which push for high-quality provision through the competitive process.
[30] Shareable Content Object Reference Model.

Innovation and Development Fund (IDF): Successful applicants

Author: Tertiary Education Commission

Reference number: 178

Date of reference: 2013

Successful applicants who were implementing e-learning projects
From about 2003 to 2009 the Tertiary Education Commission administered several specialist funds including the Innovation and Development Fund, which funded the e-learning projects outlined below:

- The Radi Centre: to incorporate e-learning into its new diploma and degree-level provision.
- Industry Training Works: a virtual campus to (among other things) align Carter Holt Harvey qualifications with the National Qualifications Framework.
- The University of Auckland: using e-learning to support specialised medical training. It was also funded to develop a digital infrastructure to support New Zealand's scientific community.

A guide to quality in online learning

Authors: Uvalić-Trumbić, S., and Daniel, J.

Reference number: 193

Date of reference: 2013

Introduction
Online learning can be offered via institutional consortia or institutional/commercial partnerships. An example of the latter is many of the MOOC consortia such as Coursera or Udacity. An example of the former is U21 Global, founded in 2001, which focuses on global management education and now has more than 9,000 students and alumni from 72 countries.[31]

E-learning initiatives
The US Quality Matters Programme positions its national benchmarks for online provision around key areas working together to achieve desired learning outcomes. It defines eight standards (with associated criteria and weightings) so that institutions can derive a score and do internal and external comparisons.

The Australasian Council on Open and Distance e-Learning comprises all of the New Zealand and Australian universities. The Council has developed benchmarks for e-learning and has created performance indicators for institutional policy and governance for online learning, which include:

1. Institution strategic and operational plans recognise and support the use of technologies to facilitate teaching and learning.
2. Planning for teaching and learning technologies is aligned with the budget process.
3. The institution has established governance mechanisms for teaching and learning with technologies that include representation from key stakeholders.
4. Decisions regarding new technology adoption are made within current policy frameworks.

The Ontario Online Learning Portal for Faculty and Instructors provides a list of the top 10 cost drivers (resource needs) for online learning. Washington Online is an online learning website for the Washington State Board for Community and Technical Colleges.

[31] Its founding members include the University of Auckland, the Universities of Melbourne and New South Wales from Australia, McGill and the University of British Columbia from Canada, the Universities of Birmingham, Edinburgh, Glasgow and Nottingham from the UK, and the University of Virginia from the US.

8 AUSTRALIAN GOVERNMENT AND SECTOR-LEVEL TERTIARY E-LEARNING INITIATIVES

Benefits of e-learning benchmarks: Australian case studies

Author: Choy, S.

Reference number: 31

Date of reference: 2006

Introduction
From the late 1990s to 2006 the Australian government invested over AU$95 million to improve e-learning in the vocational education and training (VET) sector. This investment was based on the stated benefits of e-learning (Roffe, 2002; Young, 2002; Dublin, 2004; Ettinger, Holton, and Blass, 2005). While there is formal and informal evidence to support this view (Block and Dobell, 1999; European Commission, 2000; Phillip, J., Phillip, P., and Zuniga, 2000; Roffe, 2002), there is variance in how such benefits are measured.

In 2004 the Australian Flexible Learning Framework developed benchmarks for the uptake and use of e-learning in the VET sector because previously there was no way for organisations or the government to measure return on e-learning investment. But these benchmarks were intended to be customisable by organisations and were not to be used for comparative purposes; rather, it would inform their own e-learning efforts.

The benchmarking project defined e-learning as using 'electronic media to deliver flexible vocational education and training'. It did not include email and was differentiated from e-business.

Indicators for benchmarking e-learning
The Framework developed and trialled a set of 12 indicators grouped in three categories: Category 1 – uptake and outcome of e-learning in the VET system, Category 2 – uptake and impact of e-business, and Category 3 – uptake, use and outcomes of e-learning for VET teachers and trainers.

Interactive distance e-learning for isolated communities: Starting and finishing the jigsaw

Authors: Crump, S., and Boylan, C.

Reference number: 37

Date of reference: 2008

The NSW Outback Satellite Education System
This initiative is a joint effort between the NSW state government and Telstra (Australia's largest telecommunications company). The satellite technology was essentially a computer-mediated conferencing system that allowed video and audio interactions as well as data transactions.

Crump, Tuovinen and Simons' study methodology
The study included 16 adult education students and teachers. Data was collected by survey, interview, site visits, and school and departmental documentation. T-test and cross-tabulations that highlight significant differences as well as similarities were supported and extended by qualitative and documentary data including written comments from the survey groups.

Results
The Interactive Distance e-Learning Service (IDeL) project has significantly improved access to higher-quality teaching and learning, which was largely the result of allowing students to see teachers, peers and key aspects of the lessons. IDeL had a huge motivational effect on students. The study found that most students could use IDeL's supporting tools and technologies effectively. While most teachers had to change their teaching practice to use IDeL effectively, they generally enjoyed using it in teaching and were able to design learning experiences more suited to their students' needs.

'Opening our eyes': Project report Interactive Distance eLearning for isolated communities

Authors: Crump, S., Twyford, K., Anderson, A., Towers, L., Devlin, B., and Hutchinson, A.

Reference number: 38

Date of reference: 2010

Findings for Vocational and Further Education students
Between 2003 and 2009 nearly 600 of New South Wales' most isolated adults became TAFE students by leveraging the infrastructure supplied to support their child's learning. The satellite technology allowed students to balance study with their family and work commitments. In addition the courses were customised for their target audiences and had higher-quality content than the previous paper-based provision.

Students displayed higher levels of engagement, were better prepared for employment and/or further study, and increased their digital literacy levels compared to the previous paper-based courses. The authors also note that there was 'a remarkable synergy between the espoused policy rhetoric and the real-life practices of the participants'. This is despite extensive changes of policy direction, technology and software obsolescence, turn-over of personnel and the ongoing struggle for new or continued funding.

Victorian state government tertiary e-learning initiatives

Author: Department of Education and Early Childhood Development (Victoria, Australia)

Reference number: 42

Date of reference: 2013

Victorian state government tertiary e-learning initiatives
The Victorian state government has several initiatives to support tertiary e-learning including:

- an e-learning grant that provides funds to all Victoria's TAFEs.[32] The funds support projects that focus on staff development, research, or developing teaching resources to support flexible delivery. Funds are also made available to Victoria's equivalent of New Zealand's Private Training Establishments, to help these institutions increase their flexible delivery options
- the TAFE Virtual Campus, a state-funded virtual learning platform that offers a range of e-learning products and services.

In its Adult and Further Education Sector the Victorian state government has a dedicated fund for e-learning initiatives. The fund has four distinct streams, including the quality teaching stream, and allocates grants from under AU$10,000 to AU$50,000. Grants of up to AU$150,000 are available to consortia, which must consist of at least three organisations.

[32] TAFEs are Australia's equivalent of polytechnics.

National VET e-Learning Strategy 2012-2015

Author: Department of Education, Employment and Workplace Relations

Reference number: 43

Date of reference: 2011

Executive summary

The Strategy will be supported by a series of ongoing business initiatives including support for:

- research and systems for the technical and educational aspects of using broadband-enabled and emerging technologies
- peak bodies and support groups to coordinate plans for e-learning approaches for disadvantaged individuals
- practitioners to share and develop e-learning content
- learner pathways through the development of a national e-portfolio-based approach to recognition of learning.

The Strategy's vision is 'a globally competitive Australian training system underpinned by world-class e-learning infrastructure and capability'. This vision is supported by three goals: developing and utilising e-learning strategies to maximise the benefits of the national investment in broadband; supporting workforce development in industry through innovative training solutions; and expanding participation and access for individuals through targeted e-learning approaches.

These goals are supported by high-level objectives that include sponsorship, research, and a content services centre. The centre encourages VET practitioners to develop and share e-learning materials, e-portfolios, e-learning programmes in foundation skills and e-literacy to help disadvantaged learners prepare for further training and employment, and e-learning initiatives that allow individuals to develop skills reflecting their local business and industry requirements.

Earlier initiatives

There will be an expansion of the New Generation Technologies for Learning, Learner Pathways, and Industry System Change initiatives. In contrast the Broadband Content Services and Supporting E-learning Take-up initiatives will be curtailed.

Evaluation measures

The Strategy's evaluation measures include:

- for the new generation technologies for learning activity: the extent of use of broadband-enabled and emerging technologies by providers and practitioners, and the maintenance of the national agreement between jurisdictions and national agencies on e-learning infrastructure standards
- for the learner pathways initiative: uptake of the national e-portfolio approach by the VET system and its providers and learners; and the sustainability of e-portfolio use by providers and community organisations
- for broadband content services: the number of users accessing the e-learning content services centre, and the range of content that is available
- for industry system change: improved access to training, and reduced time lost through staff release for training
- for the supporting e-learning take-up initiative: the number of users accessing the website; and numbers of providers and professionals that are using the e-learning outputs and resources of the Strategy
- for the governance and coordination activity: review processes and planning are used to facilitate evolutionary change according to changed circumstances; the stakeholders are satisfied with the associated accountability and reporting; and the stakeholders and wider public are aware of e-learning outcomes.

Australia's future using education technology

Author: Department of Education, Science and Training

Reference number: 44

Date of reference: 2004

Executive summary

The largest difference in the views of those consulted for the review were between the high aspirations of central government and the reality in the field, particularly in remote areas and in indigenous communities. But the review also showed that the Australian Government's initiatives, especially those from 2000 to 2003, had made e-learning a permanent part of Australia's education landscape. These included the Australian Flexible Learning Framework, the Australian Research and Education Network, and common technical standards for online education.

E-learning needs to be mainstreamed and fully integrated into education and training policies to avoid the ad hoc and one-off initiatives of the past, where not all components have been adequately addressed (for example, infrastructure projects that have not included institutions).

Harnessing the power of technologies to manage collaborative e-learning projects in dispersed environments

Authors: Gosper, M. V., McNeill, M. A., and Woo, K.

Reference number: 70

Date of reference: 2010

Introduction

This paper reports on a cross-institutional project funded by the Australian Learning and Teaching Council which involved Macquarie, Murdoch and Flinders Universities and the University of Newcastle. The costs and time constraints of managing a large collaborative project were overcome by the effective use of e-learning tools.

One of the challenges typically faced by projects of this nature is the need to disseminate their outputs and outcomes effectively. This is problematic where these initiatives are treated as an add-on to the end of the project and rely solely on conferences and journal articles (McKenzie, Alexander, Harper, and Anderson, 2005; Southwell, Gannaway, Orell, Chalmers, and Abraham, 2005). To boost the likelihood of effective dissemination, Southwell et al. recommend the integration of dissemination strategies into the project development cycle.

Evaluation of the Australian Flexible Learning Framework 2000-2004

Author: I and J Management Services

Reference number: 83

Date of reference: 2004

Executive summary

Phase two of the Framework had five goals: 1) creative, capable people; 2) supportive technological infrastructure; 3) world-class online content development, applications and services; 4) enabling policies; and 5) problem-solving regulations.

The Framework's most visible success and the area where the greatest focus and effort have been made are in Goal 1, which attracted 41 percent of the total investment (AU$26.5 million).

Outputs from this investment include over 20,000 teachers, trainers and managers from both public and private providers participating in professional development initiatives.

In terms of the second goal, by 2004 about AU$80 million had been invested in vocational education and training (VET) e-learning infrastructure, under the auspices of the Australian Flexible Learning Framework. In contrast, AU$28.3 million or 43 percent of the total budget was dedicated to Goal 3. Most of this money went into the development of 'toolboxes'. In developing these toolboxes and their associated resources staff have also increased their e-learning knowledge and capability, and use of the toolboxes has been high by both students and staff.

Only a fraction of the overall investment (two percent) was spent on Goal 4. Much of this investment has been dedicated to developing appropriate supporting policies and standards. However, the Flexible Advisory Group set up as part of Goal 4 to support the Framework had a direct influence on wider strategies, including the national VET 2004-2010 one. Criticisms that no direct policies have been developed do not recognise this wider influence and also ignore that this goal only had two percent of the overall Framework budget.

This budget allocation and lack of visible outputs is also the case for Goal 5. But the Group has addressed issues including access to bandwidth, interoperability, learning object repositories, copyright and legal issues, and the associated findings disseminated through national and state forums.

But despite these efforts, a critical mass of e-learning capable practitioners has not been developed and most VET staff have not participated in or benefited from this investment and its associated initiatives. E-learning remains a minority activity overall in the VET sector. In the absence of definitive data, the authors estimate less than 10 percent of VET activity is supported by technology.

However, the evaluation found that the Framework and its associated model of national collaborative investment have been effective as a catalyst and support for the uptake of e-learning across the VET sector. The Framework has also: legitimised investment in flexible learning; enabled a consistent and efficient approach to be taken to the adoption of e-learning in the VET sector; and delivered significant returns on the investment of Australian, state and territory governments.

2011 e-learning benchmarking survey

Author: I and J Management Services

Reference number: 84

Date of reference: 2011

Scope of survey
More than 6,000 students from 250 different registered training organisations (RTOs) participated in the survey. This represents a 76 percent response rate, but to avoid sample biases only 59 percent of respondents were used for this report.

Major findings
South Australia and the Australian Capital Territory had the highest proportion of students with e-learning in their courses, and New South Wales[33] and Victoria had the lowest. Private providers and workplace/industry training were also less likely to offer e-learning.

Ninety-one percent of students reported that technologies were used to support their course. But only 40 percent had used Web 2.0 technologies, attended web-based seminars and presentations, or participated in virtual classrooms. And only a quarter to a third had used voice or mobile

[33] This was still a majority of students (77 percent).

technologies, e-portfolios or social media. Fifty percent of the businesses surveyed used e-learning to support their formal and informal training. Only six percent of RTOs had a dedicated e-learning strategy but 34 percent had incorporated this into their overall business strategy.

Reshaping distance and online education around a national university in regional Australia

Author: King, B.

Reference number: 100

Date of reference: 2010

The Open Universities Australia initiative
An exception to individual institutional provision of distance education is the Open Universities Australia (OUA) initiative started in the early 1990s. This is a brokering company that offers enrolment in existing distance education provision from its partner universities. These partner universities also typically provide the infrastructure and OUA provides additional student support.

OUA generally has more flexible entry requirements and programme structures than its individual partner institutions. But it does have academic parity and equivalence in terms of its enrolments with conventional institutions. While not funded at the same levels as universities, OUA has developed a profitable distance education business model. These measures, along with building on extant institutional provision and infrastructure, have meant that OUA has been successful.

Bridging the digital divide

Authors: Lester, D., and Rickert, M.

Reference number: 111

Date of reference: 2005

Summary
The New South Wales (NSW) Department of Education and Training, TAFE NSW, Optus, and the Commonwealth Department of Communications, Information Technology and the Arts are involved in a joint venture that includes the extension of TAFE online provision to rurally remote and isolated communities via the use of satellite technology. The name of the project is Interactive Distance Learning (IDL).

The IDL project has focused on delivering interactive vocational distance education and training to Aboriginal people in rural or remote NSW communities. Students have embraced this opportunity and informal observations note their engagement with the learning and content. Students also noted the increased opportunities, both cultural and employment/study related, that the project provided.

In developing and adapting locally appropriate training programmes, teachers have been trained in the technology and tools, and students have been given computers and training in how to use them before they participate in the IDL courses. TAFE NSW staff worked in close consultation with the communities, and the staff's professionalism and commitment was a major contributor to the project's success.

Emerging technologies: A framework for thinking

Authors: Millea, J., Green, I., and Putland, G.

Reference number: 125

Date of reference: 2005

Introduction
The Australian Capital Territory Department of Education (ACT DET) commissioned education.au.limited to report on emerging technologies that are pertinent to ACT's vocational education and training (VET) sector.[34] As well as reviewing educational technologies, this report looks at the impacts of educational policy developments, and points to the likely associated high-level business requirements.

While technology is used in a broad sense in the report, its focus is on those technologies that relate directly to the delivery and enhancement of teaching and learning. Emerging technologies are those that were at the time of writing not a 'must have' for institutions. The report is based primarily on desk-top research supplemented by workshops and interviews with stakeholders.

Main findings
There are several supporting policies for VET including the ACT VET Strategic Plan 2005-2009, the National Strategy for VET 2004-2010, and the 2005 Australian Flexible Learning Framework. ACT's VET sector could leverage existing forums such as the Australian Flexible Learning Framework's Networks Community and Education Services Australia forums.

National Broadband Network

Author: NBN Co Limited

Reference number: 137

Date of reference: 2012

Summary of relevant NBN tertiary e-learning initiatives
The National Broadband Network (NBN), run by NBN Co (a government-owned company), is a high-speed broadband network that is intended to reach 100 percent of Australian premises. It is envisaged that it will deliver benefits to education and many other key sectors of the Australian society and economy.

The NBN is expected to take a decade to complete at a cost of about AU$36 billion. The NBN could potentially allow universities to deliver applications and services to people's homes so that education opportunities will be less restricted by proximity to the nearest institution.

[34] They also looked at the schooling sector, but for the purposes of this annotation only the VET sector will be examined.

International effective practice for distance and flexible education: An investigation of 22 network examples from Australia, North America and Europe

Author: Neal, T.

Reference number: 138

Date of reference: 2008

Background
While this report was commissioned by the Tertiary Education Commission, its network examples do not include any from New Zealand. It is included in the Australian section, rather than the Canadian, UK or US sections because more of the reports network examples are from Australia.

Network is defined as 'an interconnected system of people, groups or organisations' (p. 5), and distance and flexible education (DFE) is defined as 'education approaches that increase choice for learners' (p. 5). The purpose of the report was to understand how New Zealand's polytechnic sector might work together to implement DFE approaches.

Most of the examples are institutional or agency consortia (or less formal groupings), often working with their respective governments or sectors. Others are single institutions with multiple delivery sites. Some examples build on existing networks, while others are new developments often resulting from government policy.

Models
The report's networked examples can be classified into the following models:

- **Centrally managed single network.** Examples of this model include the UK's Millennium Institute and University for Industry, the Australian New South Wales and South Australian TAFE systems, and the University of Phoenix from the US.
- **Single network with autonomous members (can be either government or member owned).** The size of these networks range from four to 60 members. Examples of this model include Canada's BC Campus and Campus Saskatchewan, Australia's Queensland and Western Australian TAFE systems, and the New Jersey Virtual Community College Consortium from the US.
- **Network of formal networks.** The Australian Flexible Learning Framework and the work of the Joint Information Services Committee in the UK are two examples of this type of model.

Working together for DFE
Across the 22 examples, a range of areas were tackled. All network examples worked together on leadership, and in particular strategy, quality assurance, capability, and in particular staff professional development, technology, and sharing knowledge, curriculum design and course development, marketing and sales, delivery of academic, library, learning, and technical support, and credentialing.

Critical success factors
A number of critical success factors were identified. These included: providing leadership, having government involvement, a shared purpose, and making a long-term commitment. While it takes time for these initiatives to realise their outcomes, networks should not be of indefinite duration.

Issues to consider
There is no ideal size or composition for networks or consortia. Other issues noted were: how to leverage distance education capability; who should determine programme content and whether

this should be centrally developed; whether to build demand **and** supply; and how to work within a connected system, particularly given their increasingly global nature.

The Australian Flexible Learning Framework

Author: Palmieri, P.

Reference number: 147

Date of reference: 2004

Introduction
Australia's vocational education and training (VET) peak body (the Australian National Training Authority (ANTA)) is the result of an agreement between the federal and state/territory governments. Its main responsibilities are setting policy and allocating funding for the VET sector.

The Australian Flexible Learning Framework
The Australian Flexible Learning Framework was developed by the Flexible Learning Advisory Group and introduced by ANTA in 1999, with the aim of accelerating the uptake of e-learning in the VET sector. Its five objectives were to: address professional development needs of staff; create an appropriate infrastructure; develop appropriate content, applications and services; and develop a supportive policy and regulatory environment.

Its initial funding was AU$20.46 million, which funded the programme infrastructure and 26 individual projects. Following a review, the funding was reduced to AU$15 million by 2003. From the outset, it had regular evaluations as part of its operating environment.

Initial achievements
By 2001 there was already substantive progress towards achieving a critical mass of VET staff who could use e-learning approaches. For example, nearly 1,000 related projects had been funded under the Framework's LearnScope initiative. This was successful in part because it effectively linked organisational goals to staff professional development needs. As part of the LearnScope initiative a virtual community was created for staff to network, share ideas and gain knowledge. For management staff they developed the Flexible Learning Fellows and Leaders programmes. Supporting tools were also created, including a staff capability review model.

A variety of online resources have been developed through the Framework's Toolboxes project. While these can be easily customised, many staff and/or institutions still prefer to develop their own resources. There are also challenges around the sustainability of these ventures, particularly their long-term funding and ongoing updating and maintenance. Doubts were also raised about the need for initiatives of this nature, as there is no international market for these resources and there are increasing moves towards blended learning, which also negates the need for substantial digitally based resources (Zariski and Styles, 2000; Cashion and Palmieri, 2002; Ryan, 2002).

However, the Framework's efforts to develop a comprehensive ICT infrastructure were less successful. This is largely due to the difficulties of achieving consensus between the federal and state/territory governments and between the state/territory governments themselves. The Framework was unable to develop any appropriate strategies or policies at the national level partly because the issues that need to be addressed (such as the lack of suitable data, data collection and ICT infrastructure) are much wider than e-learning (Stewart-Rattray, J., Moran, L., and Schueler, J., 2001). This also contributed to the relative failure of the goal to develop appropriate legal and regulatory environments.

In the early years of the Framework there were excessive overlaps and duplication. More coordination to reduce these overlaps and improve linkages between the projects has been initiated (KPMG Consulting Australia and Lifelong Learning Associates, 2001, 2002). The Framework has also spawned several formal and informal networks and communities of

practice. They also in effect have a content repository of all their project outputs on their main website.

Other challenges identified included the lack of involvement of industry because they appear to have little awareness of or interest in the Framework. Private providers and the adult and community education sectors are also under-represented. Despite the presence of dedicated programmes for managerial staff, the majority of participants have been teaching or teaching-related staff. And e-learning is still not a mainstream activity in the VET sector.

World class business: Growing Victoria's e-learning industry

Author: State Government of Victoria

Reference number: 175

Date of reference: 2004

Background
The Victorian e-learning industry primarily comprises small and medium enterprises that do about a third of their business with the education sector. It has three action areas to support the objective of growing the e-learning industry in Victoria: building scale through collaboration; stimulating local demand by raising awareness; and improving the infrastructure that supports e-learning.

The key government initiative to support these action areas is the development of the Victorian e-learning network, which brings all the key stakeholders together. It is intended to stimulate the exchange of ideas and information, encourage collaboration between suppliers, and promote contact between suppliers and potential customers, including tertiary institutions.

9 CANADIAN GOVERNMENT AND SECTOR-LEVEL TERTIARY E-LEARNING INITIATIVES

2011 outlook for online learning and distance education

Author: Bates, A. W.

Reference number: 13

Date of reference: 2011

Barriers
Canada is hampered in its e-learning efforts by the absence of a national data set (even from surveys) and there are few provincial efforts in this context. This means that there are no reliable figures on whether or not e-learning is growing, declining or remaining stable in Canada.

Opportunities
Although Open Educational Resources (OER) are widely available, they are seldom used in formal tertiary education. This could be because their format is not appropriate or teachers want to create and develop their own content. However, whole courses are now available, which are likely to be more useful.

Governments are also increasingly supporting institutions to share software services because the cost of developing and maintaining these is too expensive for small and medium-sized institutions. For example, the Alberta government was developing a plan to encourage sharing of services between its tertiary education providers.

Managing technology in higher education: Strategies for transforming teaching and learning

Authors: Bates, A. W., and Sangra, A.

Reference number: 14

Date of reference: 2011

Roles for government
The US state of Washington has developed a policy document to increase access through more flexible programming, achieve better learning outcomes related to e-learning, and increase collaboration between institutions. And the Canadian province of Alberta has gone further by also incorporating safeguards for security and privacy. Funding can also be used. For example, the Canadian province of British Columbia supports its e-learning initiatives by withholding a small percentage of institutional operating grants for an innovation fund.

Strategic plan 2012-2015

Author: BC Campus

Reference number: 15

Date of reference: 2011

Background
BC Campus is funded by the British Columbia government's Ministry for Advanced Education to provide an online platform for all their institutions. It also provides services and infrastructure for British Columbia's tertiary students and institutions.

Strategic Plan 2012-2015
The key strategies are:

1. Federate common online services and facilitate open data exchange and reporting.
2. Gain system benefits, support institutional needs, and reduce costs through online collaborative programmes and shared educational services.
3. Develop and share educational resources and expertise by promoting open and accessible networks and educational practice models.

Implementation of the key strategies
For the first key strategy, BC Campus is intending by 2015 to explore and define a single federated identity for all British Columbian tertiary students, and create a search capability for all tertiary courses regardless of delivery mode. For the second strategy it is planning by 2015 to increase the number of online tools and resources for teachers at reduced cost, and offer new services, including user-generated video hosting and streaming and curriculum management and tutoring systems.

For the third strategy, as well as supporting various appropriate collaborations, it will also provide funding for e-learning programme development and prototype a programme to create free, open or low-cost textbooks for high-enrolment tertiary programmes.

Long-promised Ontario online institute still far from launch

Author: Brown, L.

Reference number: 20

Date of reference: 2012

Summary
The Ontario government's plan to develop a new online institute that would help students mix and match their online course credits and provide e-learning-related professional development appears to have stalled. Originally announced by the Ontario government in 2010, there was a follow-up government website announcement noting it would be completed by the fourth quarter of 2011.

This is despite the Ontario government receiving a 150-page feasibility report in the second quarter of 2011. The feasibility study noted the increased online provision and recommended that the institute target underserved student groups. The report recommended an annual operating budget of CA$7 million to be supplied by the government. It also noted that its absence was leading many Ontario students to do their online study via Athabasca University in Alberta.

However, neither students nor the government want an online university; they would prefer a portal that would act as a one-stop shop for students seeking information on online courses. And currently the Ontario government has no firm commitment about whether or not the proposed institute would continue.

Campus Saskatchewan

Reference number: 23

Date of reference: 2013

What is Campus Saskatchewan?
Campus Saskatchewan is a collaborative venture between the province's higher education institutions. The overarching goals for Campus Saskatchewan laid out in its Memorandum of Understanding (MoU) include developing and retaining students, graduates and faculty for a knowledge-based society, and advancing education and training for people in Saskatchewan's rural and northern communities and indigenous learners.

The MoU also outlines the underlying principles that govern their collaborative arrangements:
- Cooperation in planning and setting priorities to ensure complementary programming, while respecting each partner's separate mandate, roles and responsibilities.
- Optimal sharing of knowledge, expertise and resources for the benefit of the whole province.
- Regular measuring and reporting of results by each institution and at the sector level, to build on the benefits and findings.

State of e-learning in Canada

Author: Canadian Council on Learning

Reference number: 24

Date of reference: 2009

Executive summary and key findings
For the purposes of this report e-learning is defined as 'the development of knowledge and skills through the use of information and communication technologies (ICTs), particularly to support

interactions for learning, (and) interactions with content, with learning activities and tools, and with other people'.

According to the authors, Canada is falling behind other countries. They note that the UK and Australia have more supportive national policy frameworks that encourage and support collaboration. For example, by 2003 the Australian Government's Education Network Australia had over 165,000 quality-evaluated resources and 323,000 linked resources. This network also provides funding for internet access and professional development opportunities for teachers.

The US does not have government-level initiatives but has many sector-level ones, including EDUCAUSE, which was set up to advance higher education through e-learning. EDUCAUSE supports professional development, teaching and learning initiatives, research, policy, information services, and awards for leadership and exemplary practice.

The UK has established a national e-learning strategy (Harnessing Technology: Transforming Learning and Children's Services). Responsibility for the implementation of its tertiary components was given to a dedicated agency: the Joint Information Services Committee (JISC). JISC centralises and coordinates the development of infrastructure and initiatives, including JANET, a dedicated high-speed research network, and tools and services for higher education institutions and further education colleges.

There have been some Canadian government attempts to support e-learning. These include the establishment of the Canadian Network for the Advancement of Research, Industry and Education (CANARIE). In 1998 this became a national fibre-optic infrastructure which included not only institutions but also their staff and students. CANARIE also funded 32 e-learning projects which attracted 265 public and private sector organisations.

The provinces have also launched various initiatives, including Ontario's Contact North programme, which is a comprehensive online network. There is also Ontario's Cooperative Learning Object Exchange (CLOE), which is 25 Ontario universities working collaboratively to develop infrastructure for the joint development of multimedia-rich learning resources. CLOE's key innovation is the creation of a virtual market for the exchange of multimedia content to support e-learning. In short, as long as each partner contributes resources, they are free to use those created by others.

Prince Edward Island and Nova Scotia focused their efforts on supporting infrastructure as well as specific e-learning initiatives. Alberta also developed a specialist strategy (the *Distributed Learning Strategy*) that was supported by a province-wide infrastructure (SuperNet).

British Columbia has created a one-stop shop known as BC Campus, which by 2006 had facilitated over 15,000 enrolments in tertiary e-learning courses. They also established a province-wide infrastructure (Provincial Learning Network) which services 1800 public institutions including tertiary education providers.

The Canadian Virtual University (CVU), a consortium of Canadian universities, offers more than 300 degree, diploma or certificate-level qualifications and 2,500 courses. By 2006 CVU had about 150,000 enrolments.

But despite these provincial and collaborative initiatives, Canada still does not have a comprehensive or coherent approach to e-learning. E-learning in Canada consists of loosely connected provincial, territorial and federal e-learning networks, education providers (both public and private), and targeted initiatives. This has led to duplication of efforts, fragmented goals and objectives, and sporadic and short-term initiatives.

There is also a lack of Canadian data related to e-learning – in particular, relevant empirical and longitudinal research on e-learning that would shed light on the effectiveness of Canada's current e-learning initiatives. Much of the existing evidence is contradictory (with some showing positive benefits for students involved in e-learning while others show none).

Canadian Virtual University

Reference number: 25

Date of reference: 2013

What is the Canadian Virtual University?
The Canadian Virtual University (CVU) is an association of public Canadian universities specialising in online and distance education. Students can mix and match courses from several institutions, transfer courses between universities, and undertake degree-level study while still at secondary school. CVU also makes available a range of study-related information relating to enrolment, support in course selection and access to financial assistance.

Ontario online learning portal for students

Author: Contact North

Reference number: 35

Date of reference: 2013

Online Learning Portal
Ontario's online learning portal was launched in 2008 and provides up-to-date information (in English and French) on the more than 18,000 courses and 1,000 programmes that are available online from Ontario's tertiary sector organisations. It also features access to resources and student support services for learners wanting to study online or through distance delivery in Ontario. It was developed in cooperation with Ontario's student leaders and representatives from their peak bodies.

What is Contact North?
Contact North was established in 1986 to act as the network for Ontario's distance education and training. It works with a number of public providers and has numerous online learning centres that provide support services and resources for students.

eCampus Alberta 2011-2012 annual report

Author: eCampus Alberta

Reference number: 50

Date of reference: 2012

Vision, mission and guiding objectives
eCampus Alberta's vision is to create a province-wide, technology-supported lifelong learning environment that increases access to high-quality online learning. Its guiding objectives include increasing access to online learning, and building capacity by increasing the quantity and workforce applicability of online courses, qualifications, and student services.

Highlights
It has been in existence for 10 years (2002-2012), had an 11 percent increase in enrolments from 2010/11 (to 18,451), and 15 out of the 16 member institutions[35] had students participating via eCampus Alberta. eCampus Alberta establishes communities of practice for staff and administrators in its member institutions, and provides a set of quality assurance tools and standards. It also provides more generic toolkits to support e-learning, including for adult learners.

[35] The member institutions are: Athabasca University, Bow Valley College, Grande Prairie Regional College, Grant MacEwan University, Keyano College, Lakeland College, Lethbridge College, Medicine Hat College, Mount Royal University, NAIT, NorQuest College, Northern Lakes College, Olds College, Portage College, Red Deer College, and SAIT Polytechnic.

It received a one-off grant of CA$1 million from the Ministry of Enterprise and Advanced Education to support core operations and professional development for community access facilitators. eCampus Alberta invested just over CA$500,000 of this in developing 38 new online courses.

eCampus Alberta works with member institutions to develop supporting policies for online learning. It also supports collaborative research projects and is partnering with Alberta's Community Learning Network to develop resources for community access facilitators.

Review of the technology enhanced learning (TEL) action plan final report

Author: Ekos Research Associates Inc.

Reference number: 53

Date of reference: 2005

Executive summary

The key findings from the review included a broad level of support for another province-wide tertiary sector e-learning strategy. But greater focus for some of its goals and increased prominence for some of its principles and enablers would be beneficial, and it will need updating so it can align with emerging provincial and institutional plans and priorities.

The plan was an important contributor to increased institutional collaboration. However, the plan has not been implemented as quickly as intended largely because of a lack of institutional experience in e-learning; slow buy-in from some institutions to support the pace and extent necessary to support the planned changes; and challenges in implementing the plan's collaborative model.

One of the plan's significant achievements was the establishment of Campus Saskatchewan (see reference number 20 above for further details). The number of courses developed has exceeded the plan's objective. There has also been significant activity in staff professional development and learner support. Indigenous institutions' learners still lack basic internet access and the institutional priorities continue to focus on traditional delivery. But despite these challenges, the plan has enabled indigenous institutions to make solid progress in their e-learning-related initiatives.

Despite some solid gains, the number of staff involved in e-learning is a small proportion of the overall teaching staff. Overcoming staff resistance and barriers requires not only additional support but also specific incentives and recognition for staff who participate in e-learning.

Institutions are providing significant funding to complement the plan's contributions (approximately CA$17 million over the five-year term of the plan). A further CA$7.2 million was provided to institutions to develop and deliver televised courses and to operate 'receive sites', where students could participate in these opportunities.

It was noted that this funding had been valuable in supporting institutions to develop the necessary infrastructure to support their e-learning initiatives more effectively. However, funding should be more closely linked to objectives, and maximum contribution levels need to be established. Institutions needed to have better accountabilities in place to ensure the funds were allocated and spent appropriately. Compliance with the plan's reporting requirements were seen as being too costly relative to the actual expenditure of developing an e-learning course.

While monitoring systems are in place, detailed and consistent data is typically not available, which means it is difficult to assess if all of the plan's objectives have been met. And research into the effectiveness of the plan and impacts, particularly for students, has not been undertaken in an extensive way.

Review of cross-jurisdictional and promising practices on delivery of adult basic education final report

Author: Ekos Research Associates Inc.

Reference number: 54

Date of reference: 2010

Background
Adult basic education in this context refers to core literacy skills. The scope of this literature review included: examining provincial/territorial government websites; evaluation or other evidence-based research conducted by the provincial/territorial governments on programme effectiveness of promising practices; and review of the Canadian and international literature on adult basic education and approaches to it.

Technology-enhanced learning
British Columbia, Alberta and Ontario have all supported province-wide e-learning initiatives to support adult basic education. British Columbia offers online support direct to students, while Alberta has established specialist learning centres. In contrast, Ontario's Ministry of Training, Colleges and Universities has funded a province-wide initiative which involves (in consultation with key stakeholders) developing a strategy to accelerate the online delivery of academic upgrading courses (Ontario College Sector Committee for Adult Upgrading, 2006).

A strategy for the expansion of flexible learning in the trades in British Columbia

Author: Industry Training Authority

Reference number: 85

Date of reference: 2007

Executive summary
This strategy was created to develop alternative delivery modes for trades training in order to increase students' access, completion rates, and success. E-learning was seen as a critical component of achieving flexible delivery in trades training in British Columbia.

They defined flexible learning as 'the provision of learning in a flexible manner, built around the geographical, social, and time constraints of individual learners… (It) may include distance education (as well as traditional delivery) in the workplace, opening the campus longer hours, or organising weekend or summer schools' (Bates, 2005, p. 5).

They conducted interviews with institutions from Alberta, Nova Scotia and Ontario, as well as Australia, New Zealand, the UK, the US and Europe and conducted desk-top research in developing this strategy. Nova Scotia was the only province that had a province-wide strategy. In contrast, Alberta and Ontario left it up to individual providers as to whether or not they had flexible delivery options.

However the Alberta and Ontario governments have supported local/small-scale e-learning initiatives in trades training. For example, Ontario has OntarioLearn, which is a consortium of 22 of Ontario's 24 community colleges. This consortium acts as a broker for all online courses developed by its members. At the time of writing, it offered over 850 courses that enrolled approximately 45,000 students. And in Alberta the provincial government funded the development of course modules for institutional use and several institutions use these as the basis for their curriculum.

In Australia, flexible delivery of trades training is managed under the Flexible Learning Framework, which provides about AU$15 million in funding for projects that will help achieve its goals. Each state has a share of this funding and runs a contestable process to allocate it.

New Zealand, in contrast, does not have a national strategy for flexible delivery of trades training. E-learning in trades training delivery in New Zealand is limited and, where it is used, it typically supports or complements traditional delivery. These e-learning initiatives are industry, not government, funded, and there is also limited collaboration between and among tertiary sector organisations and ITOs.

In the UK their Learning and Skills Council[36] partnered in 2006 with Learn Direct to accomplish its goal of expanding the use of e-learning in trades training. Learn Direct is one of the largest government-supported e-learning organisations in the world and offers over 800 different learning packages online.

Learn Direct also has an extensive supporting physical infrastructure with over 2,000 learning centres in varied locations, including libraries, community centres, homes and workplaces. In addition, it has 900 centres, also non-institution based, for staff development and support.

In the US the Speciality Asynchronous Industry Learning project is a collaborative venture involving 28 colleges. Funded by the Alfred P. Sloan Foundation, the project is governed by a Memorandum of Understanding which determines things like fee-splitting and standards.

Final report, engagement process for an Ontario online institute

Author: Jean-Louis, M.

Reference number: 87

Date of reference: 2011

Introduction
Ontario's Minister of Training, Colleges and Universities wanted to establish a province-wide online institution as part of the Ontario Government's efforts to achieve a target of 70 percent of Ontario's adult population having a tertiary qualification. The consultation process for establishing this institution involved extensive liaison with key stakeholders.

Key actions
The four key actions to establish the institute's success were: 1) improving learning opportunities for students; 2) developing best and next practice; 3) tracking online learning and its trends and identifying gaps in current provision; and 4) developing benchmarking metrics that would also contribute to improved planning and accountability, more efficient use of resources, and enable standards-based reporting.

Roadmap and budget
A number of initiatives were recommended to help set up the institution including: redeveloping their province-wide portal; assessing the demand for online learning; setting up a contestable funding process for new online provision development; creating an online repository for course materials; and identifying seamless pathways for secondary students entering the tertiary sector through online programmes.

In Year Two the new initiatives recommended included: significant collaborative online developments for apprentice training, developing a mobile learning strategy, and working with providers to ensure e-learning is a core feature of their future plans and current work. The third year provides more intensive and detailed support for the key initiatives undertaken in the first two years.

[36] This is a government body that administers apprenticeship training in England.

The establishment and operational costs for the institute were just over CA$2 million over three years. About CA$3.5 million was allocated over three years for redeveloping the portal, and this was split almost evenly between enhancing access to resources and building an online student service resource.

Improving student access and choice had just over CA$13.75 million allocated over three years, with the major components being a call for proposals for college and university programmes (CA$3.25 million), staff development (CA$2.25 million), supporting innovation (CA$2 million), and developing performance and outcome measures (CA$1 million).

Accountability
The key metrics proposed to ensure the accountability of the institute included the number of students enrolled in and completing tertiary online courses, with an emphasis on matching the US for growth and ensuring access and success for key learner groups such as disabled, indigenous, older workers, at-risk youth, and geographically isolated students.

Canadian e-learning policy and vocational education

Author: Lewis, I.

Reference number: 113

Date of reference: 2004

Federal initiatives
Canadian federal governments have introduced a variety of initiatives to support e-learning. Industry Canada established CANARIE Inc. (the Canadian Network for the Advancement of Research, Industry and Education). Its goals are to encourage projects that will reduce barriers and make best use of their broadband networks.

The Council of Ministers of Education, in conjunction with Industry Canada, established an Advisory Committee for Online Learning. One of the committee's key objectives was to create a tertiary e-learning action plan and to provide advice to Industry Canada and the Council of Ministers on e-learning.

Provincial initiative
The Ministry of Learning in Alberta developed a comprehensive website (LearnAlberta), which gave teachers, students and parents' access to a variety of online learning resources. The Ministry also introduced an initiative to create a province-wide broadband network that included tertiary providers alongside schools and libraries.

Saskatchewan designation policy manual

Author: Ministry of Advanced Education

Reference number: 127

Date of reference: 2011

Introduction
Designation is the process by which tertiary institutions are deemed eligible to receive students who qualify for federal and provincial/territorial student financial assistance. However, each provincial/territorial government is then responsible for developing and implementing designation policies to support this framework. This manual sets out Saskatchewan's designation policies.

E-learning institutional criteria
For e-learning institutions, specific criteria include:

- They must have an equivalent on-campus offering of the course or programme or demonstrate that any credits obtained via e-learning-delivered programmes or courses are transferable to other designated Saskatchewan institutions. However, this is only one of several criteria and only one of them must be met.
- International institutions must be approved by the US Department of Education, or Canadian or UK quality assurance bodies.

State of the field review in e-learning final report

Author: Rossiter Consulting

Reference number: 165

Date of reference: 2006

Introduction
In 2005 the Canadian Council on Learning (CCL) undertook a series of reviews of e-learning across the education sector. This review defines e-learning as 'the development of knowledge and skills through the use of [ICTs] to support interactions for learning – interactions with content, with learning activities and tools, and with other people'.

Methodology
The reviews were conducted through a review of available information from educational websites, a review of the literature through established databases, both national and international, and structured interviews with Canadian experts.

Key findings
While the adoption of e-learning is uneven, almost all institutions are offering it. And much of institutional e-learning provision is being done by on-campus students. But at both an institutional and jurisdictional level, e-learning strategies are not often developed, despite the widespread adoption of institution-wide Learning Management Systems.

While e-learning does allow greater sharing of resources across institutions, structural inter-institutional collaboration is not common. But there are some emerging initiatives in this context, particularly at a disciplinary level.

Status report for Canada
Institution-to-institution connectivity is excellent in Canada and the e-learning infrastructure, while not comprehensive at the time of writing, was of sufficient quality and there were plans underway to extend it further. And the Economist Intelligence Unit (2003) ranked Canada second only to Sweden in terms of e-learning readiness based on connectivity, capability, content and culture (i.e. the behaviours, beliefs and institutions that support e-learning development).

Further research
Relevant empirical and longitudinal research on e-learning is required. This should focus on key areas such as how learners can best take advantage of e-learning opportunities, in what situations e-learning is most effective, what delivery modes work best under differing conditions, and where simulations and games can be most effective.

2012-13 guide to: Provincial education networks and services

Author: Saskatchewan Ministry of Education

Reference number: 169

Date of reference: 2012

Introduction
Saskatchewan's government-supported educational technology infrastructure is managed by its Ministry of Education. The two main infrastructures are the Live Interactive Video Education (LIVE) Network and CommunityNet (CNet). However, the Ministry also provides sector-specific systems and applications on a province-wide basis.

LIVE Network
This network supports live programming for tertiary credit and non-credit courses for all regional colleges through three dedicated television channels. They are also supplemented by online materials from Learning Management Systems. Finally, the broadcasts are supported by web-, audio-, and video-conferencing. The Ministry supports this network with a dedicated help desk.

CNet
This is a dedicated network for a range of participants including tertiary institutions. Within this wider network, education has a dedicated virtual private network (VPN). Access to the VPN and internet content is largely unrestricted. CNet also provides video streaming to complement the LIVE Network.

Software
The Ministry provides a province-wide license for Adobe Connect (a web-conferencing system) for institutions.

Researching virtual initiatives in education: Major e-learning initiatives in Canada

Author: VISCED

Reference number: 194

Date of reference: 2012

Summary
There have been some false starts in major Canadian government-funded e-learning projects. For example, the main federally funded research programme (TeleLearning) has been disestablished, and a specialist university established by the British Columbia government was also discontinued. The main reasons cited for the closure of this university were technological over-reach and a limited student market where it was situated.

But the same government that disestablished this university was also responsible for the development of BC Campus, which provides a coordinating service for all online learning programmes, funds to institutions for the development of e-learning materials, training and support for smaller institutions, and a one-stop portal for students for online programmes. A similar institution, eCampus Alberta, has been created in the adjacent province.

The Open Learning Agency was a Crown agency in British Columbia. Before 2004 it played a substantive role including acting as British Columbia's Open University, but has since being scaled back and has largely focused on managing a public educational television channel.

In general, provincial governments have integrated distance education initiatives into broader learning and technology initiatives. At the same time, they have been fostering within

institutions the development of e-learning materials, and cooperation and coordination in e-learning initiatives.

CANARIE is a not-for-profit organisation that is supported by the federal government through Industry Canada. Its mission is to accelerate the development of a comprehensive high-speed network that offers appropriate services and products. The closest equivalent to CANARIE is the UK's Janet and New Zealand's KAREN network. Up until 2004 CANARIE provided CA$360 million for a variety of e-learning projects and for developing this high-speed infrastructure. But the current status is unclear, as desk-top research reveals no recent funding being offered or projects being implemented.

10 UNITED KINGDOM GOVERNMENT AND SECTOR-LEVEL TERTIARY E-LEARNING INITIATIVES

ICTs for higher education

Authors: Balasubramanian, K., Clarke-Okah, W., Daniel, J., Ferreira, F., Kanwar, A., Kwan, A., Lesperance, J., Mallet, J., Umar, A., and West, P.

Reference number: 8

Date of reference: 2009

Government initiatives
JISC is an example of a government agency that promotes e-learning partnerships and network services in tertiary education. The introduction of e-learning in tertiary education engendered high expectations that it would transform its delivery and organisation. As a result, significant monies were invested in establishing virtual universities, including the UK's e-University and the US Open University. But most e-learning initiatives have not achieved the desired levels of sustainability and would not survive without substantial government support.

A 2001 OECD report concluded that, despite a collective investment of US$16 billion in e-learning, there was no evidence that this investment contributed to any significant improvement in teachers' performance and/or students' learning outcomes nor had it enhanced quality and access to education on the scale predicted initially. Another OCED report (2005) found that ICTs had more impact on administration than on teaching. The reports attributed this failure to e-learning's inability to be relevant to local needs and cultures.

Open Educational Resources (OER)
OER have great potential to improve the cost effectiveness of e-learning. But institutions should develop appropriate policies and train their staff about the related technical, pedagogical and copyright issues if they are to take full advantage of OER. The Massachusetts Institute of Technology's OpenCourseWare project and the UK Open University's OpenLearn site are two OER initiatives noted here.

Institutional approaches to curriculum design final synthesis report

Author: Beetham, H.

Reference number: 16

Date of reference: 2012

Introduction
This report synthesises the findings, deliverables and outcomes from the Joint Information Services Committee (JISC) Institutional Approaches to Curriculum Design Programme.

Executive summary
JISC funded 12 universities to transform their approach to curriculum design through a combined focus on organisational, technical and educational issues. The ultimate goal was to make the curriculum more responsive and flexible, be delivered more sustainably and more attuned to the capabilities required by 21st century graduates. But achieving this goal was challenging for the institutions.

JISC did not enforce a one-size-fits-all approach as to how institutions would change their curriculum and supporting processes and practices. But most projects focused on the quality of educational decision making by curriculum teams and on reforming key business processes and systems.

The use of technology to support this process was not a specific objective of the programme but was undertaken by a number of participants. Some focused on specific technologies to support their curriculum development, such as e-portfolios, or to improve their Learning Management Systems functionality and use by staff and students. Others have used this process to undertake a wholesale review of their e-learning initiatives.

Some participants undertook an institution-wide review of their information systems. They created new data models or improved interoperability to make information more accessible. Benefits of this included greater parity of student experience across the curriculum; institutions improving their internal and external reporting; and course information being clearer and more accessible to students.

Sharing e-learning content – a synthesis and commentary: Final report

Authors: Charlesworth, A., and Ferguson, N.

Reference number: 30

Date of reference: 2007

Introduction
This report is a synthesis and commentary based on an examination of over 30 projects funded by the Joint Information Services Committee (JISC).

Methodology
The projects examined in this report were selected by JISC programme managers. As well as reviewing relevant documentation and websites they also used data from a questionnaire released to selected project stakeholders. The questionnaire respondents also provided other material used in the report. The authors used their own knowledge and experience to assess the projects' value.

Key findings
There was much concern across the projects over cultural, legal and organisational issues. There is a majority view that sharing e-learning content effectively will not occur without addressing

these issues. However, addressing these issues has been hindered by an overemphasis on technical solutions when they often relate to copyright and intellectual property.

There is very little formal, large-scale sharing via repositories underpinned by appropriate licensing regimes. This is not sustainable as it does not lead to the benefits arising from large-scale sharing such as improving the quality and cost effectiveness of teaching. And it also increases the risk of institutions or their staff inadvertently breaching copyright and intellectual property legislation. However, there is a lot of informal sharing and people were also comfortable with restricting access. This reflects a lack of knowledge about copyright and intellectual property requirements and a lack of trust in institutions.

Managing differences in stakeholder relationships and organizational cultures in e-learning development: Lessons from the UK eUniversity experience

Authors: Conole, G., Carusi, A., de Laat, M., Wilcox, P., and Darby, J.

Reference number: 34

Date of reference: 2006

Introduction

The main rationale for creating UK e-University (UKeU) was the belief that without this type of institution the UK would lose out to its international competitors. And it would create economies of scale that individual higher education institutions could not match. It was also based on an assumption that because of the size of the e-learning 'market' it would be self-funding within at least six years.

It was thought that this market would be significantly boosted by lifelong learners and those in the workforce as part of their continuous professional development (Department of Further Education and Skills, 2004; Higher Education Funding Council for England, 2004). And UKeU would allow access to student groups previously excluded from tertiary education. UKeU would also allow UK higher education to gain a competitive advantage and would rely heavily on its brand to be successful.

The UKeU business model was predicated on an assumption that there would be a critical mass of high-quality learning materials available online. These materials would have extensive associated learner support and administrative processes to allow institutions to contribute easily. In its initial stages its provision was likely to be supply driven. To create the necessary quality and amount of materials UKeU would provide massive investment in both content and tools.

Objectives

The UKeU stated that its provision would be better than current offerings and would also be proactive in addressing future requirements (Bacsich, 2004). It would capitalise on the UK's existing strengths, knowledge, reputation and experience, as well as exploiting the opportunities provided by new and emerging ICTs and rapidly expanding markets.

And it would need to be innovative, which entailed risk. As an example of innovation (and risk) UKeU was set up as an independent company to act as a broker for existing institutions in terms of marketing online UK degrees. It would also forge partnerships with the private sector, although this was much less successful than anticipated.

The UKeU would expand, not substitute, the UK's existing global share of higher education provision by acting as a flagship for excellence, which was interpreted as not only quality but also being fit for purpose for the target market(s). Institutions would incur costs through their contribution of resources to UKeU, but would benefit from the increased provision it would generate. While it was known that production of quality e-learning materials was a costly

exercise, this would be compensated for because the materials would be ‘high quality, interactive, flexible, and exciting’.

Methodology
The authors relied on UKeU establishment documents and interviews with key stakeholders including Sun Microsystems, their main private sector partner. NVIVO (a specialist software programme) was used to analyse the interviews.

Findings
Because the UKeU was set up as a company and was also expected to have significant partnerships with the private sector, it had more of a business than an academic focus, which led to an increasing division between its academic and corporate arms. No processes were established to reconcile the differences between these sectors. This tension is further demonstrated in formal documentation, where UKeU was expected to have an educational and social focus but at the same time ensure that it maximised profits.

And the UKeU would be on a much larger scale than previous institutional initiatives. Its larger number of participants were not only from diverse backgrounds but were also expected to collaborate within non-traditional working arrangements. But none of the formal documentation explicitly acknowledged the difficulties that could be expected in this context (Bacsich, 2004).

At its inception the UKeU did not develop transition-related processes; rather its initial processes were based on a ‘steady-state’ assumption. And none of the initial processes addressed the learning side of the operation.

Interviews revealed that, despite senior-level support within higher education institutions, the disruption to their modus operandi, which working with the UKeU entailed, engendered significant resistance. As a result UKeU struggled to form an effective relationship with the higher education sector.

New patterns of power and participation? Designing ICT for informal and community learning

Authors: Cook, J., and Light, A.

Reference number: 36

Date of reference: 2006

Summary
The UK government has funded several initiatives including Learn Direct and UK online to achieve its objective of a participative and inclusive society. It has also provided 7,000 online centres, which allow e-learning opportunities (Cook and Smith, 2004) so that a much wider section of the population can access formal learning and employment (Department for Education and Skills, 2005). These initiatives are explicitly targeted at student groups who are traditionally underrepresented in adult learning.

A small-scale study of two UK online centres found that they played a critical transition role in getting people into formal education and employment. OER were particularly useful in supporting informal learning and are increasingly being used to support formal learning as well.

Harnessing technology: Transforming learning and children's services: Summary version

Author: Department for Education and Skills

Reference number: 45

Date of reference: 2005

Introduction

All universities and further education colleges in the UK have broadband access. Teachers increasingly use ICT to improve their practice, and adults use online resources to improve their skills. The evidence is that where ICT is used effectively, lessons are taught better and students have improved results. These developments reflect government investment and local innovation.

But growth has been uneven because systems often do not interoperate, and institutions have the freedom to purchase their own systems and services. The result is not only that they are more expensive than they should be but also that few economies of scale are being realised. That is why a more strategic approach to ICT is required. In doing so, the Department believed that they could transform teaching and learning, but would not impose this view on stakeholders; they wanted to ensure ICT met their needs.

Priorities

Six priorities were identified including integrated online personal support for learners, a good quality ICT training and support package for practitioners, and a leadership and development package for organisational capability in ICT. These priorities would leverage an existing government portal. In addition providers would be expected to collaborate in providing easy integration of their information, in support of users' needs.

The Department would also encourage all institutions to provide a personal online learning space to store coursework, course resources, results and achievements. The required infrastructure would be enabled by an integrated education network for teaching, research and administration.

This strategy would be supported by the post-16 e-learning strategy and the Higher Education Funding Council for England's e-learning strategy. ICT would not only support more options for learners and improved teaching and organisational practice but also allow a new relationship between education and employers. For example, employees would have easy access to online learning where and when they need it, and industry could connect better to institutional research.

Specific actions to support the priorities

For the government and its agencies, actions included reviewing and updating the curriculum and qualifications to reflect the impact of e-learning, providing initial training and professional development, recognising good e-learning practice through professional recognition and accreditation, and developing and maintaining an integrated, high-speed network for teaching and learning.

For tertiary sector organisations, actions included developing a workforce web portal for information, advice and guidance on e-learning, providing a personalised online learning space that could host a personal portfolio, establishing a national e-learning advisory and support centre for higher education, incorporating the use of online learning into staff development programmes, and trialling a state-of-the-art network for next generation internet to support higher education research and teaching

Implementation and evaluation
The coordination of the delivery of the tertiary sector components as well as some of its specific elements would be the responsibility of the Joint Information Services Committee.

CAMEL Tangible Benefits of e-Learning project - Final report

Authors: Ferrell, G., Kelly, J., MacMahon, C., Probert, S., Quentin-Baxter, M., and Riachi, R.

Reference number: 56

Date of reference: 2007

Executive summary
This project aimed to collate and share the tangible and real benefits of e-learning with staff, learners and institutions through a departmental and disciplinary focus. This would be done through case studies and the project set itself a target of 16 of these to be produced, as well as evaluations of the project's workshops that were held as a forum for improving on practice.

Institutional e-learning initiatives fall across a wide spectrum. Nonetheless they can be broadly categorised as those where the benefits are clear and demonstrable and those that are intended to address 'soft' and complex areas like student engagement. The project produced 37 case studies from 16 institutions, which focused on tangible benefits in the following main areas: effect on learning, examination results, and resources.

Participants noted that their perceptions about what the tangible benefits associated with e-learning were had been altered. The main benefit for participants from the project (apart from the case studies) was its ability to support critical reflection and cross-disciplinary interactions.

While they also valued the relatively informal approach adopted by the Collaborative Approaches to the Management of e-Learning (CAMEL) for staff development, the associated time frames were too restrictive to gain the full potential value of it. Other benefits noted deriving from e-learning included cost savings and resource efficiencies, student recruitment and retention, better supporting special needs students, the quality of UK higher education, staff professional development, and improved pedagogical approaches.

Completion rates supplied by participants suggest improvements of around 10 percent through using e-learning. This is supported by the case studies. And e-learning is allowing larger numbers of more diverse students to be taught without a corresponding increase in staff or institutional physical infrastructure.

There were communication issues and the much larger number of case studies produced also meant logistical and budgetary challenges. It is unlikely that these would have been easily resolved even if the project time frames had been extended. This is because they are the result of organisations with very different cultures and approaches to project management working together for the first time.

E-learning in further education: The impact on student intermediate and end-point outcomes

Authors: Finlayson, H., Maxwell, B., Caillau, I., and Tomalin, J.

Reference number: 59

Date of reference: 2006

Introduction
The (then) UK's Department for Education and Skills (DfES) was interested in e-learning in the sector because of significant investment in its e-learning infrastructure as well as content

development and national training initiatives. These initiatives included the National Learning Network (NLN) and Further Education Resources for Learning. An earlier study commissioned by the Department found that only 11 percent of the sector had successfully embedded e-learning within their curriculum (PricewaterhouseCoopers, 2004).

Methodology
The data for this study was collected from interviews, teacher diaries and formal classroom observations, a student focus group and questionnaire, a survey, participants in NLN workshops, and six institutional case studies. A representative sample of institutions was included based on sector expert input and pre-determined criteria.

Key findings
The most effective e-learning occurred when the main focus of institutions' e-learning vision was on integrating it into their wider teaching and learning environment. This influenced priorities for the structural organisation of e-learning, workforce development, equipment purchase, and expectations placed on tutors. More effective institutions were also more likely to have strong internal linkages at institutional and team levels.

Less effective institutions tended to focus only on the management of learning, which had less impact on student outcomes. But the sector typically did not undertake rigorous evaluations of e-learning use and effectiveness. More focused evaluations may have avoided both policy and operational errors.

The real story behind the failure of UK e-University

Author: Garrett, R.

Reference number: 65

Date of reference: 2004

Background
In February 2000, the UK government announced funding of UK£62 million for a national, commercial e-university called United Kingdom e-University (UKeU). The initiative was promoted as an innovative response to the perceived opportunities and threats of online education. Competition from international providers, and those in the US in particular, was seen as the major threat.

While UKeU was a private company, it was majority owned by the UK's public higher education institutions. It did not award its own degrees, instead contracting with UK universities to offer theirs. The company's main areas of focus were: infrastructure development, course development support, quality assurance, and marketing. Its target audiences were international graduate students who wanted to study through a UK institution, but from their own country, and workplace trainees.

By 2004 provision had expanded to around 40 programmes from 20 UK universities and other organisations. The only publicly available recruitment figures date from November 2003 and show that at that time UKeU had 900 students (as opposed to the projected 5,600).

Why did it fail?
UKeU's first problem was timing. The underlying assumptions from the dot.com era had drastically overstated the transformative potential of technology, and the threat of international competition, particularly from the US, on which the UKeU was largely based, was founded on fear, not fact.

The second problem was focus. UKeU's business model was centred on wholly online provision, which remains very much a small minority of overall provision, apart from in the US. This is partly because online delivery outside the US (with notable exceptions) has yet to attain sufficient status, scale and sophistication to succeed.

A third problem arose from platform investment. There was a conscious decision not to invest in existing platforms and systems because they did not meet UKeU's requirements. As a result, between 2002 and 2004 UKeU spent millions on developing a new platform in partnership with Sun Microsystems. However, using existing platforms would have enabled programmes to be launched much more quickly and freed up substantial funds for marketing and recruitment purposes.

Other initiatives

The residual funding from UKeU was used for (among other things) a national research centre specialising in e-learning. It also needs to be noted that UKeU joins other well-publicised ventures that had failed (or were close to failing at the time of writing) including NYU Online, Scottish Knowledge, Universitas 21 Global, and the Global University Alliance.

Review of the 2005 HEFCE strategy for e-learning

Author: Glenaffric Ltd

Reference number: 68

Date of reference: 2008

Introduction

In March 2005 the Higher Education Funding Council for England (HEFCE) published its strategy and implementation plan for supporting e-learning in the higher education sector. This review of it was not intended nor scoped as a full-scale evaluation of the strategy's effectiveness.

Two main events informed the development and publication of the strategy in 2005: the demise of the UK e-University and the parallel development of a pan-sector e-learning strategy (refer to reference 44 above for further details). Other relevant policy developments included the establishment of regional lifelong learning networks and Centres for Excellence in Teaching and Learning, and the government's priorities for higher education. However, there is limited reference to e-learning within these documents so the review provided an opportunity to embed it more deeply within the core business of higher education.

Methodology

The review's data sources were the documentation relating to the development, implementation and monitoring of the strategy, interviews, and discussions with key agency and sector informants.

Key findings

The key informants were broadly supportive of the aims and objectives of the 2005 strategy but also appreciated the opportunity to refocus and refresh it. But they were dubious about the extent to which the strategy had impacted on the 'consciousness of the sector'.

In their view, the structure of the strategy did not highlight how its different parts fitted together. The main issues for the sector did not lie with the strategy itself, but with the number of initiatives instigated under the broad heading of e-learning, because the impact and benefit of the implementation plan initiatives were not clear.

One of the main successes of the strategy is its function as a reference document for the implementation of changes to institutional policy. It also helped institutional middle managers who were attempting to implement policy change or initiatives in their organisations.

But the role of the strategy in promoting tools and approaches for benchmarking e-learning in the sector is an ongoing challenge. Benchmarking efforts to date have not produced the critical mass necessary to provide a comprehensive overview of the state of e-learning provision in the sector. Concerns were also raised that the implementation plan was driven more by technological innovation than by institutional need.

The strategy's very existence tends to support the segregation of e-learning from wider institutional strategies. This is important because there are still challenges in mainstreaming e-learning into daily teaching practice.

There needs to be a more specific relationship between the success measures and the implementation plan actions. A fundamental challenge for the review was the absence of any achievement indicators against which the implementation plan objectives could be measured.

A robust evidence base is critical as are specific actions for dissemination of examples of good practice and approaches that improve learning in a range of representative institutional contexts. This evidence base was important because it was unclear if the agencies had effectively monitored the strategy. And concerns were raised about an apparent lack of evidence underpinning the funding of e-learning initiatives.

The role of the agencies in providing and managing the funding opportunities arising from the strategy was acknowledged. But there seemed to be a lack of coherence between the availability of funding, the scope of development programmes, and the strategy's objectives. There was also a concern with the perceived misalignment between the funding schedules and programme scope with institutional plans and priorities. And this concern was most acute in respect of the apparent imbalance between funding for technological development on the one hand, and consolidating changes in practice on the other.

Weaknesses were identified in student support, including the development of information-searching skills, flexible provision, and work and community-based learning. Leadership and staff professional development continue to be important areas of the strategy.

E-learning in Scottish further and higher education

Authors: Harvey, B., and Beards, D.

Reference number: 75

Date of reference: 2004

E-learning initiatives in Scottish higher education
Scottish higher education institutions have been very active in e-learning supported by UK-wide agencies such as the Joint Information Services Committee (JISC) and by direct funding from the Scottish Higher Education Funding Council (SHEFC). Major initiatives have included connecting institutions to JANET (refer to reference 85 below for more details); providing video-conferencing facilities at each institution, supported by a range of associated projects so these tools would be used more effectively; staff development resources (e.g. web-based training packs and electronic networks); and online content.

E-learning initiatives in Scottish further education
There is an equivalent funding council for Scottish further education. At the time of writing, they had invested UK£30 million in e-learning-related initiatives. These included: providing computers to reduce the computer to student ratio; online content; installing Learning Management Systems; support for college management (e.g. development of e-learning and e-procurement strategies); online assessment; and supporting collaborative ventures.

What actions are the councils taking now?
They have committed to support the next iteration of JANET, and are revising their quality assurance approach to include more specific consideration of e-learning in the further education sector. In partnership with higher education institutions, the SHEFCE will conduct a national training needs analysis to provide more strategic information about staff development priorities in the sector.

The councils will each provide UK£3 million to support transformative e-learning projects. They have also asked JISC and other agencies to develop a 'toolkit' to help institutions make investment appraisal decisions about e-learning initiatives.

Heads of eLearning Forum

Reference number: 76

Date of reference: 2013

What is the Heads of eLearning Forum?
The Forum is a network of senior staff from higher education institutions who are engaged in promoting, supporting and developing e-learning. It takes part in formal agency stakeholder reference groups including the Higher Education Academy, the Joint Information Services Committee, and the Higher Education Funding Council for England.

The Forum's core role, apart from being on these reference groups, is to share knowledge and support the processes on developing e-learning strategies and their implications. It is also responsible for administering and producing appropriate outputs from two surveys: the UK electronic management of assessment survey, and the e-submission survey.

HEFCE strategy for e-learning

Author: Higher Education Funding Council for England (HEFCE)

Reference number: 78

Date of reference: 2005

Aims, objectives and principles of the strategy
The strategy's aims included supporting the higher education sector as it moves to embed e-learning and use technology to transform higher education into a more student-focused and flexible system. The highest priority objective was to enable institutions to meet the needs of learners and their own aspirations for development.

Institutions would not be required to develop specific e-learning strategies in response to this objective because it was expected that they would eventually have e-learning as part of their wider teaching and learning strategies. But HEFCE would support institutions in their strategic planning, change management, and process development to underpin their development and embedding of e-learning.

The strategy's underlying principles included a partnership approach and a commitment not to create new organisations to support the strategy. They would work closely with the Higher Education Academy (HEA) and the Joint Information Services Committee (JISC) and build on existing investments and use additional funds to enhance these, rather than setting up separate programmes. And they would review the success of this strategy (see reference 69 above for further details) in the context of their wider teaching and learning strategy, which includes flexible and workplace learning.

Implementation
The implementation plan devised jointly with the HEA and JISC was underpinned by seven strands: 1) pedagogy, curriculum design and development; 2) learning resources and networked learning; 3) student support, progression, and collaboration; 4) strategic management, human resources, and capacity development; 5) quality; 6) research and evaluation; and 7) infrastructure and technical standards.

Initiatives under these strands included:

- Strand 1: funding 74 centres for excellence in teaching and learning

- Strand 2: JISC and the HEA to provide copyright, intellectual property rights and licensing advice
- Strand 3: JISC and the HEA to investigate the use of e-portfolios and provide information and guidance on the development of specifications and standards for interoperable systems
- Strand 4: HEFCE to investigate costing methodologies/models for developing and delivering e-learning in the context of the review of its teaching funding method
- Strand 5: the HEA and the Quality Assurance Agency to promote good practice to support quality and standards in e-learning, with specific reference to key issues such as quality models, evaluation frameworks, metrics, and embedding
- Strand 6: HEFCE has established an e-learning research centre at the HEA, and the HEA and JISC will assemble international evidence and resources, evaluate national and international good practice, and disseminate programme outputs to the higher education sector
- Strand 7: JISC to develop a flexible technical framework, and encourage and support the development of appropriate open source software.

The HEA and JISC would establish a 'virtual' national e-learning advisory and support centre to coordinate initiatives and provide leadership, with the overall objective of embedding e-learning in the higher education sector. This centre would also include other appropriate partners, including peak bodies such as the Leadership Foundation and the Association for Learning Technology. The centre's initiatives would include managing a national dissemination programme involving institutionally nominated e-learning 'champions' and the creation and supply of online resources for staff development.

How would they know they have achieved their goal?
JISC and the HEA would identify an appropriate benchmarking tool for institutional use. HEFCE would evaluate the strategy every three years in conjunction with JISC and the HEA. This review would be informed by the benchmarking data, the research and evaluation strand of the implementation plan, and their reviews of the investments to enhance learning. They would not set 'hard' targets, as this would require a level of prescription that was thought to be inappropriate.

The success measures set for the strategy included: e-learning is part of mainstream learning; technical issues have been addressed; and institutions are able to build appropriate infrastructure and resources to support the integration of registration and learning functions.

Enhancing learning and teaching through the use of technology: A revised approach to HEFCE's strategy for e-learning

Author: Higher Education Funding Council for England

Reference number: 79

Date of reference: 2009

Introduction
This builds on the previous strategy (see reference 75 above) and acknowledges the revised wider government e-learning strategy and review of the previous strategy (see reference 66 above).

Revised HEFCE strategy
HEFCE will continue to provide dedicated funding (via JISC and the HEA) to support e-learning initiatives in the higher education sector. However institutions also need to consider making e-learning a strategic priority when making investment decisions.

JISC and HEA will continue to support institutions, and the data from their benchmarking initiatives can help inform non-participants' e-learning initiatives. Targeted investment will

focus on projects that effectively exploit technology and provide benefits for the wider higher education sector.

JISC and HEA will provide UK£5.7 million to run a series of pilots in 2009/10 that will investigate the impact of open educational content on the higher education sector. The Quality Assurance Agency is also supporting this strategy through its promulgation of a specialist code of practice to support e-learning.[37] JISC is also working with the Leadership Foundation to investigate the extent of the integration of e-learning into institutional strategic planning and raise the awareness of the role of technology in delivering strategic outcomes.

A framework for institutions

HEFCE has developed a framework to assist institutions in maximising the strategic benefits of technology by helping them map those benefits to specific institutional goals, strategic plans, or internal documents. Using the information and support from JISC, the HEA and others, institutions are expected to translate the framework into specific goals, development pathways, and success measures in order to plan effectively for enhancement.

The strategy's seven action areas remain unchanged from the previous strategy. What has changed is that HEFCE recommended a series of initiatives that institutions themselves could carry out to progress and implement these action areas.

UK e-University: Third report of session 2004-05 together with formal minutes, oral and written evidence

Author: House of Commons Education and Skills Committee

Reference number: 80

Date of reference: 2005

Executive summary

The UK e-University (UKeU) project was effectively terminated in 2004. Despite an investment of UK£50 million (out of a total projected allocation of UK£62 million) of public monies, it only attracted 900 students. The House of Commons Education and Skills Committee found that UKeU failed primarily because it took a supply-driven approach, combined with the very ambitious nature of the venture, and an inability to form an effective partnership with the private sector.

This was partly because the original concept was developed during the height of the dot.com era, when there seemed to be no limits to the potential of the internet. This era also lent a sense of urgency to the initiative, because many similar large-scale ventures were being launched in the US. The fear was that if the UK did not effectively respond it would lose its international and domestic market share.

The heavy emphasis on private sector involvement arose from the recommendations of PricewaterhouseCoopers, to the extent that UKeU was established as a private company. The main source of funding for UKeU was from HEFCE, but it had no say in UKeU's operations. As a result, UKeU had considerable latitude in its day-to-day operations. UKeU's senior management lacked e-learning expertise, and although significant expertise was available to assist them they did not use it.

As a result, UKeU did not meet its aims, objectives or targets. For example, it did not launch its first course until September 2003 (after being established in 2001), and only attracted 900 students (against a target of 5,600). But the break-even point was not expected until 2007/2008. This was predicated on an investment of UK£30 million which was additional to the UK£27 million already invested. Revised enrolment and revenue targets removed the requirement for

[37] Details of this code of practice are available in our annotated bibliography *Organisational Approaches to e-learning in the Tertiary Sector*.

private sector investment; however, a revised business plan was rejected as representing too much risk and being insufficiently robust to justify additional investment, which was when the decision was made to disestablish UKeU.

Because they took a supply-driven, rather than a demand led, approach, they did not undertake any formal market research to assess either the level or nature of demand and the type of e-learning required, despite allocating UK£4.2 million to sales and marketing. Marketing was deliberately given a low priority relative to UKeU's other core initiatives.

UKeU also put too much emphasis on providing an integrated e-learning platform which was responsible for more than one-third of total project expenditure (with significant amounts also allocated to materials development and operating costs). Leveraging an existing platform would have been much cheaper and less complex, but because of the overly ambitious nature of the project it was thought that only a new platform could meet its objectives.

They allowed the development of this platform to drive their strategy and programme development. This emphasis was based on an assumption that, once the platform was in place, it would be easy to meet the student enrolment targets. However, this assumption was based not on research evidence, but on an over-confident presumption about the scale of demand for wholly online learning.

This lack of research meant that UKeU did not adjust to reflect the actual dominance of blended approaches. UKeU also did not consider research into the pedagogy of e-learning and student needs. UKeU took this approach because of the way they interpreted e-learning (wholly online). The decision to have their provision delivered wholly online meant that it could not be modelled on existing e-learning programmes. The wholly online approach is more suitable for training than for the types of graduate outcomes typically associated with UK higher education.

This overly ambitious approach is seen in UKeU's attempt (unlike its competitors) to provide a comprehensive, end-to-end service, rather than focusing on specific aspects first, such as materials development. This end-to-end approach not only meant that UKeU required much more expertise than typical online learning ventures but also resulted in a high fixed cost infrastructure.

UKeU could also have targeted its provision to domestic, postgraduate learner markets that were more likely to participate in online learning, rather than trying to capture the global market. This also meant they did not meet one of the key government objectives for UKeU, which was that it would provide opportunities for domestic students who were unable to easily access campus-based higher education.

The venture to attract private sector investment and this was compounded by the lack of commitment and interest over time from the higher education institutions in the UKeU venture. The UKeU's structures and systems were set up on the basis that private sector investment would be forthcoming. Its systems and structures were inappropriate for a venture that was almost entirely publicly funded.

UKeU had too much latitude and should have been more accountable either through controls appropriate for a public sector company or through carrying some risk as a private company. HEFCE needed to be able to play a much more active monitoring role, but was restricted because of legislative constraints and perceived conflicts of interest.

HEFCE also needed much more support from experts to assess whether or not UKeU was doing well, comment on the directions it was taking, and be able to hold it more effectively to account. But despite these numerous problems, the Committee believed that UKeU could have been successful if its main focus had been on clearly identifying its markets and knowing the demands of its customers.

Synthesis of evaluation approaches from the Transforming Curriculum Delivery Through Technology Programme

Author: Inspire Research Ltd

Reference number: 86

Date of reference: 2011

Introduction
Through its Transforming Curriculum Delivery through Technology Programme, JISC funded a total of 15 projects.

Evaluation approaches
Programme participants used several different evaluation approaches, including appreciative inquiry, action research, time motion studies, cognitive mapping, social network analysis, and more traditional formative evaluation methods. Students were also used as researchers as a means to increase their involvement in and engagement with the programme.

Baseline studies
The projects employed baseline studies, which involves gathering data before any changes are implemented. Data used to inform these baseline studies included questionnaires, focus groups, dedicated brainstorming sessions, mapping of existing practice, semi-structured interviews, and analysis of student progression data.

Analytical approaches
The approaches used in the projects included: qualitative analytical approaches; case studies; a cost/benefit analysis which modified an existing JISC tool to more clearly ascribe current and potential future benefits against key areas such as license costs and staff administrative time; a cost impact matrix; and social networking analysis.

Lessons learned
These included the realisation that obtaining student feedback is difficult. Some methods used included providing incentives for students to participate and using students to interview their peers. There were variations in the rigour and approach of these evaluations; but there were many examples of them being used effectively. The programme's approach of supporting self-evaluation has the potential both to provide evidence of what does and what does not work, and also to raise evaluation capacity within the sector, thereby improving future evidence generation.

Janet website

Author: Joint Information Services Committee (JISC)

Reference number: 88

Date of reference: 2013

Who owns Janet and what does it do?
Janet is managed by JISC, but owned by the UK's higher and further education funding bodies (who also fund it), the higher education institutions and research councils, the further education sector, and individual members.

As well as providing the core infrastructure to support the UK's tertiary sector, Janet provides services such as video-conferencing and streaming for lecture delivery; training to use their services more effectively; and 'middleware'.[38] On behalf of JISC, Janet also manages the UK's Access Management Federation. Janet currently has 18 million users.

[38] Middleware is software that acts as an intermediary between network applications.

Effective practice with e-portfolios: Supporting 21st century learning

Author: Joint Information Services Committee (JISC)

Reference number: 89

Date of reference: 2008

Introduction
This effective practice guide uses the outcomes of recent significant projects, as well as examples of current practice, in order to explore how e-portfolios can add value to personalised and reflective models of learning. Selected case studies illustrate a wide variety of e-portfolio use across further, higher and continuing education.

What is an e-portfolio?
JISC defines an e-portfolio as a 'product, created by the learner, a collection of digital artefacts articulating experiences, achievements and learning'.

Key points for effective practice
Based on the guide's case studies, a number of key points were identified to support effective practice including the need to:

- promote learners' ownership of the purpose as well as the processes behind e-portfolios
- establish a shared understanding of the value of e-portfolios between all involved: learners, teaching staff, and workplace mentors
- have teaching staff encourage the personalisation of e-portfolios to motivate and engage learners
- develop learners' skills so they can make appropriate selections and reuse of content in e-portfolio repositories
- fully embed systems before they are used by learners and teaching staff.

The e-Framework briefing paper

Author: Joint Information Services Committee (JISC)

Reference number: 90

Date of reference: 2008

Introduction
Institutions need a flexible information technology infrastructure that supports seamless flows of intra- and inter-institutional information. To achieve this objective, the international e-framework (which included not only JISC, but also Australia's Department of Education, Employment and Workforce Relations[39] and New Zealand's Ministry of Education) adopted a service-oriented approach to system development. A service-oriented approach is a software design method that identifies functions common to a number of applications and separates them out as reusable service modules that can talk to each other.

Benefits
Benefits from adopting a service-oriented approach include reducing costs, improving system performance, and taking a more customised approach within existing infrastructure.

The e-Framework
The international e-Framework provides information about services, available open specifications and standards, and Service Usage Models (SUMs). The framework also links to background information on good practices, embedding process models, design and implementation.

[39] This has subsequently being replaced by the Department of Education

JISC created a website that allowed institutions to reuse, rather than create new, software. Decision makers could access relevant reviews and presentations as well as find out what has worked and use the documented service descriptions; and a community could be hosted that contributes to the development of the framework by submitting reusable services as well as collaborating in developing new services and SUMs.

The JISC Capital programme: Progress to November 2007

Author: Joint Information Services Committee (JISC)

Reference number: 91

Date of reference: 2008

Number and type of projects and budget allocations
Over the three years up until November 2007, JISC had allocated UK£89 million for ICT developments in higher education institutions. For e-learning, 48 projects were funded at a cost of UK£11.76 million. A substantial number of institutions were impacted by the entire programme because, while only 152 projects were funded, some of these were large consortiums with one project alone involving more than 50 institutions.

These projects focused on helping institutions to meet the diverse needs of students on a lifelong basis and facilitating their transition into higher education. They build on previous initiatives with the intention of providing a flexible personalised learning experience through the use of e-portfolios and technologies to support assessment and collaboration. These projects also involve mobile learning and social media as a means of teaching and learning.

Student experiences of technology and e-learning: An overview of JISC activities

Author: Joint Information Services Committee (JISC)

Reference number: 92

Date of reference: 2008

Overview of projects
Innovative Practice with e-Learning is a good practice guide to embedding mobile and wireless technologies into institutional practices. Tools associated with this guide include a CD-ROM containing all its case studies and planning tools for using mobile and wireless technologies. JISC has also funded some projects to explore the use of games in supporting teaching and learning.

The three main research studies JISC has funded relating to student experiences of technology and e-learning are described. Firstly, a student expectations study looked at what prospective students who were technology ‘fluent’ anticipated from university life in terms of ICT. The second study examined the improved use of Web 2.0 technologies to support institutions and staff e-learning efforts. And the final study examined how effectively younger students are using technology to support their learning.

Effective practice in a digital age: A guide to technology-enhanced learning and teaching

Author: Joint Information Services Committee (JISC)

Reference number: 93

Date of reference: 2009

Key points for effective practice
These are derived from the guide's case studies and include:

- Learners' confidence in and access to IT can vary, so the choice a tutor makes from available technologies should take into account learners' lifestyles and learning preferences.
- Assessed blogging can help to engage students in more challenging academic topics.
- Providing feedback in different media reinforces the message and gives students a more personal learning experience.
- Skilful combination of online resources and face-to-face activities can promote independent, self-directed learning.

JISC strategy 2010-2012

Author: Joint Information Services Committee (JISC)

Reference number: 94

Date of reference: 2009

JISC's priorities
These include a significantly enhanced e-learning culture; increasing the capability of all institutional staff directly or indirectly involved in e-learning; including practitioners and senior management; and providing investment for the ongoing development and upgrades to Janet (see reference 85 above).

JISC's investment strategy
JISC will provide funding of about UK£120 million per annum across the following broad areas:

i. Shared infrastructure and resources – nearly UK£80 million.
ii. Efficient and effective institutions – UK£22.98 million.
iii. Effective, creative approaches to teaching and an enhanced learning experience – UK£5.9 million.
iv. Increased research quality, impact and productivity, and innovative approaches to supporting the research process – UK£6.75 million.

JISC typically funds radical innovation projects, as these are initiatives that individual institutions or even consortia cannot undertake themselves.

E-learning programme

Joint Information Services Committee (JISC)

Reference number: 96

Date of reference: 2012

Programmes
JISC has six sub-programmes under the umbrella e-learning programme: institutional approaches to curriculum design; transforming curriculum delivery through technology; open educational resources; teaching and learning innovation; lifelong learning and workforce development; and course data.

These programmes have each produced publications that share their findings, explore case studies, and give advice on best practice. The e-learning programme also has a set of key activity areas that cut across its individual programmes, and these are: e-administration for teaching and learning; technology-enhanced assessment and feedback; e-portfolios; learning resources and activities; and technology-enhanced learning environments.

Broadband: A solution for rural e-learning?

Authors: Mason, R., and Rennie, F.

Reference number: 119

Date of reference: 2004

Literature review
The most notable aspect of the studies reviewed (including extensive reports from the US and Canada) was how similar the results, recommendations and issues were across a wide range of implementations. These can be summarised as follows:

- E-learning take-up is based on the greater speed, reliability, and constant availability of broadband, rather than its capacity to deliver high-bandwidth material including real-time video applications.
- The main use of broadband will be for e-commerce and entertainment, not e-learning.
- Informal learning is as big a component of broadband-enabled e-learning as formal, accredited online courses.

Methodology
A survey was used that was based on one from a similar US initiative which focused on specific kinds of educational use: developing computer skills, obtaining educational materials, and studying through distance education courses.

Findings
Most respondents used the internet for informal learning and knowledge acquisition on a variety of topics. And a vast majority of respondents were expecting this use to increase. The current and anticipated use of the internet to obtain educational materials is higher than for formal distance education courses.

Most respondents would like to have some sort of training provided in using web-based educational materials, and specific tools, and more advanced training in such things as web-design and multimedia. However, in terms of desired broadband services, online education was one of the least requested (only above community television and radio and employment) and well below local information and online shopping.

It is likely, based on the data, that the high-speed broadband network will be used more frequently for informal learning opportunities. However, it will equalise rural and remote learners' access to formal education.

Higher education in a Web 2.0 world: Report of an independent committee of inquiry into the impact on higher education of students' widespread use of Web 2.0 technologies

Authors: Melville, D., Allan, C., Crampton, J., Fothergill, J., Godfrey, A., Harloe, M., Lydon, J., Machell, J., Morss, K., Russell, E., Stanton, K., Stone J., Strang, S., and Wiggins, C.

Reference number: 124

Date of reference: 2009

Introduction

The principal bodies and agencies in UK tertiary education set up a committee in 2008 to conduct an independent inquiry into the strategic and policy implications for higher education of the experience and expectations of learners given the increasing use of Web 2.0 or social web technologies.

Key findings

The digital divide has not been entirely overcome and persists in several key areas, notably access to, and engagement with, technology, the capability of the technology, and individual competence. But despite this, the use of Web 2.0 technologies is high and pervasive, irrespective of learners' age. Use of Web 2.0 technologies has led to a new sense of communities of interest and networks.

However, learners noted clear boundaries on the web, with some spaces being for personal use, some for groups, and some for publishing. Within the group space an area could be developed to support teaching and learning. By engaging with Web 2.0 technologies, learners obtain both 21st century learning and employability skills, that is, communication, collaboration, creativity, leadership, and technology proficiency. In contrast, skills associated with information literacies, including searching, retrieving, critically evaluating information from a range of appropriate sources, and attributing it, represent a significant and growing deficit area.

Students still want and value face-to-face contact with staff. They find it hard to imagine that technology they primarily use for entertainment can also be used to support learning. This also challenges their notions of space. Students need demonstration, persuasion, and room to experiment in this context.

In respect of the nature and extent of Web 2.0 deployment in higher education, the committee found that the UK's institutions are as advanced as any internationally. Web 2.0 technologies are being deployed across a broad spectrum of university activities and in similar ways both in the UK and overseas.

Implementation tends to be 'bottom up' and is driven by the professional interest and enthusiasm of individual staff. While Web 2.0 use in teaching and learning is inconsistent, a considerable working base exists. But there is no implementation blueprint for Web 2.0 technologies, and each institution is currently determining their own path.

A study on the effective use of social software by further and higher education in the UK to support student learning and engagement

Author: Minocha, S.

Reference number: 134

Date of reference: 2009

Executive summary

This was the final report from a six-month study funded by the Joint Information Services Committee into the appropriate and effective use of social software in further and higher education. While social software covers a number of web-based tools, its key feature is that it involves wider participation in the creation of information that is shared (Franklin and van Harmelen, 2007; Leslie and Landon, 2008).

The study used a case study methodology and collected data from 26 initiatives. Staff and students were interviewed to find out what they had done, how well it had worked, and what they had learned from the experiences.

The study's findings show that social software tools support a variety of ways of learning, including resource sharing, collaborative, problem-based, inquiry-based, and peer-to-peer learning. Students gained transferable skills such as team working, negotiation, online collaboration, and managing digital identities.

However, sharing and collaboration added responsibility and workload for students which some found inflexible and somewhat 'forced'. Students also had concerns about privacy and the public nature of the tools for their academic activities, as well as unequal participation in group activities and negative comments or non-constructive feedback from peers. Students could be hindered by a lack of institutional support for these types of initiatives as well as an absence of support for many of the tools.

Institutions face the dilemma of adopting and recommending publicly available tools over which they have no control. But they need to balance this with the fact that their virtual learning environment may not provide tools with as rich functionality as the publicly available ones.

Decisions about whether or not to adopt social software tools in some cases was determined by institutional directives and strategies and the availability and suitability of the institutionally available tool set. Previous successful initiatives and a 'champion' were also important determinants of whether or not social software tools were adopted.

Some of the educational benefits identified by using social software included increased retention and engagement of students, and a better understanding of students' needs. These tools tended not to be used for formal assessments because teachers are unwilling to rely on externally hosted software, in case technical problems arise at a critical point for the assessment. This reluctance could also stem from a belief that individual assessment does not align well with the collaborative nature of social software.

Nine in search of computer solutions

Author: Mourant, A.

Reference number: 135

Date of reference: 2004

National Learning Network

The UK government, via its educational technology agency Becta, spent more than UK£150 million on the National Learning Network to improve infrastructure and develop e-learning

materials, as well as offering support for teaching staff in further education, sixth form, workplace learning, and specialist colleges. The initiative's successes included a 100 percent improvement in student access to computers and significant progress towards each staff member having their own internet-linked machine. And 550 hours of e-learning materials were developed.

As well as Becta, other agency stakeholders included the Learning and Skills Council and the Standards Unit. Each stakeholder had its own areas of expertise that complemented the other participants. For example, Becta's e-learning materials included 30-40 minute modules that were designed for embedding in larger programmes. The Standards Unit tackled difficult subject areas by producing materials for teachers and students in business studies for mixed-ability groups.

Enhancing learning and teaching through technology: A strategy for higher education in Wales

Author: O'Neill, C.

Reference number: 143

Date of reference: 2008

Role of the Higher Education Funding Council for Wales (HEFCW)
To achieve the strategy's objectives, HEFCW will provide capital funding, core teaching grants, and funding for teaching and learning strategies. Funding, particularly for collaborative ventures, may be available through HEFCW's Strategic Development and Reconfiguration and Collaboration Funds.

HEFCW will also provide a one-off allocation of UK£1 million for the initial three-year period of the strategy. This funding is intended to help institutions increase their capacity and capability to support and enhance teaching and learning using technology.

Higher education institutions will be expected to collaborate with other tertiary providers, schools, businesses, and the adult and community learning sectors. As well as aligning with their own relevant institutional strategies, it is also expected that other relevant Welsh and UK strategies will be taken into account.

Success indicators
Institutions were asked to provide targets in the Annual Monitoring Statement for their 2008/09 and 2009/10 teaching and learning strategies. Short-term success indicators (2010/11) included:

- Senior management support for the use of technology to enhance teaching and learning is evident.
- Benchmarking has been completed and follow-up projects identified.
- The experience of students has been enhanced through the use of new technologies where appropriate.

Long-term (2016/17) success indicators included:

- Ongoing evaluation of technology-enhanced teaching and learning results in evidence of change being recorded.
- Use of technology is integral to an institution's effective operation.
- Research is being carried out on technology-enhanced learning, particularly where it supports institutional missions.
- Institutions are working collaboratively and sharing research results to identify how the student experience may be enhanced.
- Capacity and capability to support technology-enhanced learning have been re-analysed periodically through benchmarking.

The quality dilemma in online education revisited

Author: Parker, N. K.

Reference number: 149

Date of reference: 2008

Introduction
While this annotation covers the UK, Australia, Canada and the US, it is included in the UK section because the e-learning quality assurance initiatives in the UK are more clearly the responsibility of central government than in the other jurisdictions.

Paradigm shift
The most important shift in higher education in recent times has been the move from a provider to a learner focus. However, the traditional quality measures associated with accreditation or government-administered quality assurance frameworks do not match this environment of teaching and learning because they lack measures to address the fundamental integrity of the e-learning environment. And many of their inputs and outputs are irrelevant to establishing the quality of e-learning. This reflects the fact that the traditional quality assurance frameworks and measures are provider/staff, rather than learner, focused (Pond, 2002).

Standards from four jurisdictions
Responses from national and local quality assurance interests to e-learning have varied. The UK's Quality Assurance Agency (QAA) developed a code of practice for flexible and distributed learning that incorporated e-learning (QAA, no date advised). They have also developed distance learning guidelines. These guidelines drew on standards established by the Open and Distance Learning Quality Council. These standards have an associated guide to assist students considering undertaking distance study.

The Canadian Recommended e-Learning Guidelines contain 138 recommendations organised into three sections: Quality Outcomes from e-Learning Products and Services; Quality Processes and Practices; and Quality Inputs and Resources.

In the US the eight regional accrediting commissions developed the 'Statement of Commitment for the Evaluation of Electronically Offered Degree and Certificate Programmes'. This statement is designed more for traditional delivery institutions introducing distance education programmes than for distance education providers updating their mode of delivery. The statements also retain a strong provider focus and, unlike the UK's accreditation efforts, do not address the importance of encouraging students to take responsibility for their own learning.

And the US Department of Education offers a College Opportunities Online Locator. For institutions that offer at least 50 percent of their degree programmes online, this web tool allows users access to data on acceptance rates, financial aid, and retention and graduation rates.

Benchmarking
Some jurisdictions have used benchmarking as a preferable method of quality assurance. For example, the Australasian Council for Open and Distance Education (ACODE), which is open to all New Zealand and Australian universities, has developed a set of e-learning-specific benchmarks.

The ACODE benchmarks cover eight areas: 1) institutional policy and governance for technology-supported teaching and learning; 2) planning for, and quality improvement of, the integration of technologies for teaching and learning; 3) IT infrastructure to support teaching and learning; 4) pedagogical application of ICT; 5) professional/staff development for the effective use of technologies for teaching and learning; 6) staff support for the use of technologies for teaching and learning; 7) student training for the use of technologies for teaching and learning; and 8) student support for the use of technologies for learning (ACODE, 2007).

An analysis of European mega providers of e-learning: Recommendations for robustness and sustainability

Author: Paulsen, M. F.

Reference number: 155

Date of reference: 2009

Learn Direct
Set up by the UK government in 1998 as the University for Industry, Learn Direct is the largest of the mega providers in this study, with over 400,000 enrolments and 500 courses. It has an extensive offline support structure administered by several external stakeholders including businesses, voluntary organisations and community centres. They also work alongside further education colleges.

Future research
Specific and higher-profile e-learning initiatives could be investigated further. The study's preliminary results suggest that substantive amounts of public money have been wasted on dubious e-learning initiatives. Further research should therefore be conducted to investigate the cost effectiveness of e-learning mega providers.

Vocational education and training initiatives through open and distance learning in the United Kingdom, 1970-2003

Author: Sargant, N. E.

Reference number: 168

Date of reference: 2004

The Open University
Created in 1969 by the Labour Government, it was intended to provide degree-level study in a wide range of subject areas. But a large proportion of its provision is vocational and work related, which reflects the fact that most of their students are in employment. It has been largely successful but other similar initiatives have been less so.

The Open Tech Programme
Established by the Conservative Government in the early 1980s, the Open Tech was not intended to be a new institution but rather a 'funding mechanism' to develop a 'planned and coordinated range of commissioned projects. Its funding was to focus mainly on the development of localised learning materials. Its total budget for four years was UK£45 million allocated to projects related to adult technical training (80 percent) and supervisory and management training (20 percent).

However, no accreditation or qualifications resulted from this initiative. The absence of accreditation and standards meant that the course materials were typically not transferable. This lack of national applicability also appears to have been a deliberate decision. Few of its projects targeted the unemployed and no sustainability plans or requirements were put in place to ensure the initiatives could survive post-funding (Ainley and Corney, 1990). While many of the projects focused on materials development, most had little or no idea how materials would be delivered to learners.

Yates (1986) noted that the project suffered from its short programme life and that the initiatives were heavily biased towards providers, with little collaboration between them and industry. Industry had additional challenges to confront including the cost effectiveness of e-learning, the difficulties of collaborating with competitors, and the extent to which non-employees could participate. Furthermore, materials development was largely in favour of print not digital.

Technology tended to be used because it was available rather than to support better teaching and learning (Yates, 1986).

While larger numbers of people gained the skills to develop course materials, their outputs did not endure. This was probably because the project did not focus adequately on delivery to learners and the need for accreditation. Its relative failure could be because the initiative was ahead of its time but is more likely due to the lack of sustainability inherent at the outset.

The Open College

The development of the Open College initiative coincided with the disestablishment of the Open Tech programme (1987). It was intended that the Open College would be financially self-sufficient by 1992. This would have required them to generate about UK£1.5 to UK£2 million annually to invest in new and replacement courses. The target student group was young school leavers who needed bridging education to enable them to participate in further study or work.

In contrast to Open Tech, the unemployed were excluded as this would have required additional funding. This decision made it difficult for Open College to reach its projected enrolment numbers. In addition, the main qualification that would have been of use to this group was excluded from Open College's provision. Finally, it had to reduce its course fees substantially, so its target group could participate.

The College entered into a partnership with Channel 4 to set up an educational TV type service. This was successful in attracting students (40,000 of Open College's learners were attributed to this route). While it provided course materials to support other institutional course offerings, like its predecessor the Open College did not have accreditation powers. To meet its revenue targets the Open College targeted workplace learners and at the same time reduced the scope of its provision.

Like its predecessor, this focus also saw a move towards concentrating on commissioning and developing high-quality e-learning materials. As a result, by the mid-1990s it had become a major provider of training materials to 'blue-chip' companies. Furthermore, nearly all these materials led to national accreditation, and publishing revenue was nearly a quarter of its total of UK£4 to UK£5 million budget. It had by this point achieved one of its key goals of being financially self-sufficient.

However, the College was less successful in reaching the small and medium enterprises market or independent learners. Its 'brand' was also not as well recognised and its qualifications were not seen as being as valuable as the OU. Furthermore, it was sold off to the private sector, partly because there was a belief that the government would not provide sufficient funding to support the development of 'second generation' materials. Unfortunately, due to the timing of this, these materials were not available for future initiatives to build on.

The Open Learning Foundation

The Open Polytechnic Foundation was a consortium of 21 polytechnics that agreed to pool their existing resources and make them available to 'very large numbers of students'. Funding was derived from member subscriptions. The materials developed were to focus on supporting teacher practice rather than as learning aids for independent students.

The company changed its name to the Open Learning Foundation and extended its membership to the entire higher education sector and further education institutions offering higher education courses. At the time of writing, it had 30 members, while the trading company had over 40 commercial partners.

It has in effect become a publishing house/provider of degree-level independent learning resources. It has been successful enough to allow for a substantial reduction in subscription rates and its course materials are transferable. But despite its successes, like its predecessors it has struggled to build a sufficiently large student market to enable funding of new materials. And like them its materials are largely print-based, not digital.

Learn Direct
A more recent Labour Government initiative (2001) led to the development of the Learn Direct website. It describes itself as the 'largest government-supported e-learning organisation in the world'. It has an exclusive focus on workplace learners. It has a vast array of learning packages and offline learning centres and works collaboratively with a large range of stakeholders from government, business and the community. Scotland has set up a similar organisation.

Learn Direct's areas of focus align closely with government priorities such as literacy, numeracy and ICT skills, skills for learning and skills for work (employability, productivity and competitiveness). Over 300,000 learners have participated in its ICT courses, and both local and sector hubs have been established.

Learn Direct has been successful in reaching previously inaccessible students. For example, 16 percent of its cohort is unemployed or returning to work after an absence and 900 prisoners are also enrolled. It has mitigated the absence of the internet for many students by its extensive offline support infrastructure.

Overall evaluation
The majority of the initiatives were government funded so were vulnerable to its changing priorities and more direct control or interference, as well as being dependent on it for funding. This meant that the prime drivers for these initiatives have been economic, not teaching and learning. There are still unresolved tensions between economic and social goals, especially how to reach people more effectively and access those who cannot be reached in any other way.

Challenges specific to e-learning specific include overcoming the 'not invented here' syndrome, the need for staff development in materials production, the management of e-learning operations, and individualised learner support. The appropriateness, cost and availability of new technologies are still unresolved and print-based materials continue to dominate.

Stakeholder acceptance of the usefulness and effectiveness of e-learning and understanding of the use, cost and value of e-learning have increased. A large number of high-quality e-learning materials have been created and staff expertise in this context has substantially increased although these need to be more readily transferable.

E-learning, democracy, and social exclusion: Issues of access and retention in the United Kingdom

Author: Simpson, O.

Reference number: 172

Date of reference: 2005

E-learning in the UK
The UK's e-University venture collapsed despite UK£60 million of public money being invested, in part because it only attracted 900 students. In contrast, the UK's largest e-learning provider, Learn Direct, which is also government sponsored, offers over 400 courses and claims to have had over one million enrolments from 2000 to about 2004. But it has far fewer assessments and completions, which suggests limited learner engagement.

In its consultation document 'Towards a Unified E-learning Strategy' (2003), the UK government stated that e-learning had the 'potential to revolutionize the way we teach and learn' and that it could meet other key government objectives, including improving quality and removing barriers to learning and participation. To facilitate wider internet access, the UK government has established a comprehensive offline support structure through the development of learning centres and 'people's networks' in libraries.

Evaluation of the effectiveness and impact of communications and dissemination activities of the JISC e-learning programme

Author: Stamp Consulting Ltd

Reference number: 174

Date of reference: 2010

Methodology
The study collected quantitative data from JISC and various partner organisations including details about e-learning programme resources, workshop and conference attendees, and numbers of hard copy publications distributed. They also surveyed the key audiences, and followed up some survey respondents with telephone interviews and to inform case studies.

Effectiveness of initiatives
Since 2004, over 100,000 printed publications have been sent directly to users via the e-learning programme. All institutions have received at least one JISC publication and most of these have gone to managerial staff. Materials have also been distributed at conferences and other events, and digital versions have been made available through the JISC website. While this is much smaller, with only about 54,500 publications being downloaded compared with their other publications, the number of downloads for these e-learning publications was high.

Overall, levels of reach for the range of e-learning programme initiatives have been high. This has been assisted by making these widely available through a range of channels and forums. And staff in key roles have also been successfully targeted.

Evaluation of initiatives: Compare and assess the impact of initiatives
Among the survey respondents, publications were the most utilised materials, with multimedia resources being used less frequently. Recipients thought that communications were both relevant and successful at raising awareness. And institutional managers agreed that the e-learning programme initiatives had impacted on practice and planning.

However, while 91 percent of staff developers agreed that the e-learning programme materials were good resources for feeding into staff development, only 42 percent of lecturers/tutors agreed that the materials were useful for their personal development. And only 51 percent of e-learning and information learning technology staff thought the initiatives were relevant.

Evaluation of publications and briefing papers
Typically, awareness levels of publications and case studies among participants were high. They were aware of the breadth of the e-learning programme publications, but did not distinguish between them. Generally, they held the perception that they could access ‘valuable’ information through JISC. Participants did feel that the publications design was high quality, and most were positive about the content of the publications, and their supporting online resources. In particular, it was noted that key information was easy to locate and understand.

Most respondents found case studies very valuable in informing their practice, and particularly appreciated their breadth. But a minority view was that they lacked value because they were not generalisable. And their lack of quantitative data and an evidence-based approach meant that they could not be used to convince sceptics of the value of e-learning.

Overall, the resources were seen by most participants as a valuable and relevant source of information, in terms of their specific roles and institutions. The publications were also used as a catalyst for follow-up communications with colleagues from other institutions. These were useful for obtaining further background information about specific initiatives, including insights into the real challenges of project development and implementation.

More tailored information is needed to reflect different requirements depending on role and level of competence with e-learning. For example, there is a need to make a wider, less

specialised audience understand how technology can enhance learning, rather than relying too heavily on enthusiastic individuals.

Workshops and online conferences
Participants' knowledge of workshops and online conferences varied significantly. Most did not distinguish between individual workshops, which illustrates that the target audiences tend not to focus on individual publications or themes, but, rather, appreciate the breadth of information and opportunities that the e-learning programme provides. Workshops were seen as particularly useful at providing networking opportunities. Online conferences were liked both for their convenience and for the availability of the content afterwards.

The main reason that people did not attend the workshops or conferences was lack of time. They would be more likely to attend if there were tangible benefits and outcomes, solution-led approaches, and subject areas and topics that reflect current challenges in the sector.

Feedback from JISC services and partners
All feedback from the partner organisations on the e-learning programme's publications was positive. As a result of the partner organisations' efforts, the publications have reached a much wider audience, including schools and work-based learning organisations. The partner organisations believed that one of the most valuable outcomes from distributing case studies is when they initiate contact between institutions, for example to discuss e-learning implementation and learn from the experiences of others.

As was the case with institutional stakeholders, the partner organisations noted that JISC needed to do more to repackage its information for different audiences, particularly those who are non-technical, and within wider society.

Have the initiatives made an impact?
As noted above, the initiatives have made a positive impact on large parts of the sector and individuals as well as institutions. They have been less successful in reaching those who are not involved or not interested in e-learning. But this does not mean that the target audiences can be divided into two broad categories; rather, it reflects two different attitudes to e-learning.

11 UNITED STATES GOVERNMENT AND SECTOR-LEVEL TERTIARY E-LEARNING INITIATIVES

Learning on demand: Online education in the United States, 2009

Authors: Allen, I. E., and Seaman, J.

Reference number: 1

Date of reference: 2010

Methodology
All degree-granting institutions open to the public were invited to take part in this survey and there was a 57.7 percent response rate. These responses were merged with the data from the previous survey years for examination of changes over time. Institutional descriptive data came from the College Board Annual Survey of Colleges and from the National Center for Education Statistics' IPEDS database.

The responses were compared with 35 unique categories based on the 2005 Carnegie Classification of Institutions of Higher Education. These weights provide a small adjustment to the results allowing for inferences to be made about the entire population of active, degree-granting institutions of higher education in the US.

Executive summary
Online enrolments continued to grow at substantially higher rates than the increases in the total US higher education student population (17 percent versus a 1.2 percent increase respectively). More than 25 percent of US higher education students were taking at least one e-learning course in 2008.

Despite this, the proportion of institutions that see e-learning as a critical component of their long-term strategy appears to have reached a plateau over the past several years. But public institutions are more likely (74 percent) to believe that e-learning is critical for their long-term strategy than either private for-profit (51 percent) or private non-profit (50 percent) institutions.

Institutions that have more experience in e-learning are more likely to report that student retention in these courses is more challenging. But they are also more likely to view e-learning as being at least as good as, if not better than, traditional delivery courses.

Distance learning in Florida's community colleges

Author: Armstrong, D.

Reference number: 6

Date of reference: 2006

Strategic focus
This includes '(enhancing) learning and student services through expanded use of emerging technologies by faculty, staff, and students in classrooms, labs, libraries, and offices' (Priority Goal 5 in the Division of Community Colleges and Workforce Education Strategic Plan). And to 'build capacity (by maximising) the use of technology (and) distance learning options' (Recommendation 4a in the *Florida Education Access Task Force Report*).

Enrolments and provision details
Distance education enrolments and courses are rapidly increasing rapidly and e-learning makes up 13 percent of sector distance education provision. But most e-learning students are also enrolled in traditional delivery courses. Demand has been strong enough to strain local resources. Florida's Department of Education want to increase e-learning provision and opportunities for workplace learners and reduce costs through state-wide negotiations and purchasing.

Florida Distance Learning Consortium
All of Florida's community colleges and 11 of its higher education institutions are members of the Florida Distance Learning Consortium. The Consortium operates an online catalogue of e-learning courses, leverages bulk licensing of products and services, and oversees Florida's tertiary sector digital repository, which has both content and tools, as well as professional development resources. So far the Consortium has saved US$6 million over three years through bulk licensing.

Technology, e-learning and distance education

Author: Bates, A. W.

Reference number: 12

Date of reference: 2005

Government rationales for e-learning
Governments typically support e-learning because it will make them more economically competitive, it supports lifelong learning agendas, it can allow those excluded from tertiary education the chance to participate, and it is seen as being cost effective.

State of national consortia

In some jurisdictions, distance education is centrally coordinated to avoid duplication among institutions. For example, British Columbia's government set up a dedicated agency (the Open Learning Agency), which in turn set up and administered their Open University. The Open University actively collaborated with three other institutions to provide degree-level provision.

Virtual universities are often consortia. For example the Michigan Virtual University (MVU) was established in 1998 to deliver e-learning education and training opportunities for Michigan's workforce. MVU contracted for the delivery of its programmes through Michigan's universities, colleges and private providers. Likewise, the Kentucky Virtual University is in effect a clearing house for courses and programmes offered online by 27 accredited Kentucky colleges and universities. Like MVU, it does not grant degrees; these are awarded by the institution at which the student enrols and pays their fees.

The Canadian Virtual University is a consortium of 13 Canadian universities. Most of its qualifications are awarded by British Columbia's Open and Royal Roads Universities and Alberta's Athabasca University. The National Technological University in the US is a consortium of 26 leading universities that offers nationwide e-learning courses in engineering and management.

However, other consortia like the Clyde Virtual University in Scotland are primarily just a common website listing all the e-learning courses from the partner institutions. In addition to this course listing function, California Virtual University also licenses software and provides professional development for the state's community colleges. The UK's e-University funded as well as coordinated and marketed courses from Britain's conventional universities. Its funding was derived from government and UK£62 million was provided before its closure due to spiralling costs, lack of revenue from sales, and insufficient student enrolments.

For-profit consortia

Universitas 21 (a network of 17 public universities including institutions from the UK, Australia, Canada and New Zealand) partnered with Thomson Learning to provide online learning. Thomson was responsible for course development and delivery, but did not issue formal awards; rather, students were given a diploma containing the seals of the participating universities. Thomson also provided about 30 percent of the start-up funding for these ventures.

Cardean University is a for-profit private university that is an academic consortium of five elite institutions.[40] However, at the time of writing, it had few enrolments and only a limited range of course offerings. This is despite an initial investment of US$120 million.

Fathom was an educational consortium that comprised leading educational and other partners who had education as part of their organisational focus.[41] Through their website they offered non-credit e-courses for which students had to pay a fee to enrol. But despite the illustrious members and significant investment (Columbia University alone invested US$20 million), it was disestablished in 2002. Ryan and Steadman (2002) concluded that its failure could be attributed to the fact that it was not a well-established or well-known brand and its content was readily available elsewhere on the internet.

Evaluation of the consortia and government involvement

These consortia had far fewer enrolments than stand-alone institutions regardless of provision type and delivery mode. They also had substantially fewer students than workplace training organisations often referred to as corporate universities. And substantial sums of money were lost in failed e-learning ventures, both public and private. In Bates' view this is because they had an insufficient understanding of the business of e-learning and its underlying cost structures. Most institutions that lost money were inexperienced in distance education.

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[40] These institutions were: Carnegie Mellon, the University of Chicago, Columbia Business School, the London School of Economics and Stanford University.

[41] Members included the American Film Institute, the British Library, New York Public Library, the British, Victoria and Albert, Natural History and Science Museums, Cambridge University Press, Columbia University, the London School of Economics, RAND Corporation, the University of Chicago, the University of Michigan and Woods Hole Oceanographic Institution.

There was also a common misunderstanding that e-learning was mainly about commodification of content. But in Bates' opinion the content is probably less than 50 percent of the operational costs. Most costs accrued relate to learner support. Furthermore, many of these ventures were stand-alone companies isolated from the organisation. Most consortia added little value for learners other than a common website that lists courses.

At the time of writing, unlike in the 1970s and 1980s, governments were generally reluctant to create fully online tertiary institutions. Instead, they have encouraged consortia of existing traditional institutions to move into e-learning for the first time.

Revenues and e-learning: Do universities need an online presence?

Authors: Byrd, J., and Mixon, P.

Reference number: 21

Date of reference: 2013

Literature review

In the southern states the one with the most e-learning (from 2006 to 2009) was Maryland, with Delaware having the least. Arkansas had the strongest growth and Oklahoma had the largest decline (Allen and Seaman, 2010). But state funding is falling (Toutkoushian, 2001; Marks and Diaz, 2009).

With this decline in state funding, and no adequate differentiation between e-learning and traditional delivery, securing appropriate funding for both delivery modes becomes problematic. However, Levin (2000) argues that the most financially viable delivery mode is a combination of the two delivery modes rather than separate funding for each.

Institutions are concerned that the additional costs associated with increasing their e-learning provision will not be covered by additional revenue gains (Boettcher, 2000; Weller, 2004). Achieving economies of scale in e-learning is more difficult because it tends to have smaller enrolments to reduce costs and facilitate academic staff involvement. This leads to higher average costs for e-learning courses (Farmer, 2006).

Methodology

The authors used data from state-wide databases and focused solely on four-year universities in the south-eastern US. To more accurately determine revenues and costs the authors used a fixed effects panel regression for the years 2006-2008. With e-learning they made an assumption that because it comprises new and existing students there will be an expansion in total enrolments and revenues. E-learning can also lead to capital improvements with the upgrading of facilities and construction of new ones. This in turn will attract more government funding.

Results

Contrary to the authors' assumptions, an increase in e-learning credit hours leads to a decrease in both core revenues and government funding. This could be because governments are deliberately reducing funding (which in turn has an adverse impact on core revenues) in the expectation that e-learning revenues will cover the shortfall.

It might also reflect the fact that e-learning courses require less overall academic staff development, which means less government funding, is required to finance these courses over time. While these results did not support their original hypothesis that e-learning would increase revenues across all outlets, they do suggest that e-learning can provide a new source of revenue for universities facing shortfalls in government funding.

California Virtual Campus

Reference number: 22

Date of reference: 2013

What is the California Virtual Campus?
This website provides comprehensive, accurate and current information on California's higher education online provision. It also provides information on careers, planning a degree, creating a resume through an e-portfolio, and credit transfers. It is funded by the California Community Colleges Chancellor's Office.

E-learning across the Atlantic

Authors: Davies, J., and Pigott, N.

Reference number: 40

Date of reference: 2004

North America: Diversity, success stories, and failures
In the US most e-learning strategies and policies are at the state or sector level, and there is no national quality assurance body. But there are numerous accrediting organisations at both state and federal level including the Distance Education and Training Council.

In contrast, Canada is closer to the UK. For example, in 2000 Canada created a National Advisory Committee for Online Learning, which made recommendations for the development of a Pan-Canadian Online Learning Service (Advisory Committee for Online Learning, 2001). This service was intended to act as a one-stop shop for learner and faculty support and for marketing online provision from Canadian institutions. However, the UK tendency towards national projects and centralisation (e.g. the University for Industry) was not apparent in the US and only occasionally visible in Canada.

Both the US and Canada saw e-learning as playing a critical role in continuous professional development. Key issues of quality, accessibility and portability of e-learning materials for the sake of regional and national economic, social and cultural development were emphasised strongly by a diverse range of sources. In Canada, 57 percent of institutions offer e-learning, compared with 44 percent in the US (The Council for Higher Education Accreditation, 2003).

There have been several high-profile failures, including the California Virtual University and NYU Online. In a government context, examples of inter-institutional initiatives in e-learning included the Faculty Online Support Services initiative coordinated by the Ontario government's Office for Partnerships for Advanced Skills. This office provides a comprehensive range of web-based tools, services and resources.

A statewide university system (16 campuses) creates collaborative learning communities in Second Life

Authors: Eaton, L. J., Guerra, M., Corliss, S., and Jarmon, L.

Reference number: 49

Date of reference: 2011

Purpose
This project was part of the University of Texas System's Transforming Undergraduate Education Programme. The rationale for the project was 'the critical need for a pedagogical transformation in undergraduate education'. They also wanted to use 21st century technology to

develop 21st century knowledge and skills. And they wanted to reduce (and in some cases replace) costs associated with physical infrastructure.

The Second Life learning environment, which underpins this project, hosts almost 200,000 students and 7,500 staff. Its expenses have been minimal relative to the significant cost savings and it has added value to existing provision. This project funded the requisite infrastructure and support to systematise a greater and more effective use of the internet. Each campus created its own dedicated project plan according to its needs and priorities.

Research methods

The success for the initial stage of the project (its first year of operation to July 2010) was measured by the degree to which each of the following outcomes was achieved. These included:

1. All campuses have virtual islands (49 in total).
2. Representatives from all participating campuses had participated in the prescribed training.
3. All participating campuses have offered at least one undergraduate course that incorporates virtual learning.
4. All participating campuses have reported collaborative activity with another campus.
5. Planning has been completed for a transition from these grant-supported initiatives to campus-supported maintenance and expansion initiatives.

Data sources and evidence

Surveys were used at the start of the project and also at the post-project stage. The core group of campus leaders met regularly to exchange key information and to compare the similarities and differences in campus experiences. These meetings were a primary source of evidence for the collaborative outcomes for the project. Faculty were provided with Internal Review Board proposal guides and were encouraged to publish their findings, positioning the project at the very forefront of research on virtual world learning environments.

Results

Two of the participants were involved in cross-campus collaborative initiatives. One campus reported substantial cost savings deriving from their project participation. Increased access to courses or discussion sections were reported by at least one campus. And at least one campus was planning to self-fund their virtual environment after project funding ceased. Three campuses reported using these virtual environments for research activities. One campus reported tying the students' virtual learning activities directly to the course's learning outcomes.

The most positive outcome reported from the project was the opportunity to pilot the technology in a collaboratively supported environment. And the peer relationships developed would allow staff to continue their work with teaching and learning in a virtual world. Time was reported as the biggest challenge to project implementation. Senior management support and incentives and financial assistance were required if successful implementation was to be achieved.

State U online

Author: Fishman, R.

Reference number: 60

Date of reference: 2013

Historical overview

Several consortia have offered online education including the Fathom Consortium (comprising the Universities of Michigan and Chicago, and Columbia), Western Governors University, and AllLearn (made up of Princeton, Yale and Stanford).

Changes to federal regulations have also assisted online education. The abandonment of the '12 hour rule', which required institutions to provide 12 hours' course work per week for students

not enrolled in semester-based courses if they were to be eligible for federal financial aid, has greatly assisted online education efforts. But probably more importantly, the federal government also repealed the '50 percent rule', where federal financial aid was withheld if an institution had 50 percent or more of their students enrolled in distance education courses.

Nevada and Alabama allow institutions to determine whether or not they offer online provision. In contrast, Georgia and Florida have the equivalent of a state-wide virtual university.

Collaborative practices of State U online

There are five steps that states can take to build a state-wide virtual university. At Step one (clearinghouse), state institutions collaborate to provide a clearinghouse of courses and degrees that students can easily search typically using a portal type environment. But there is no credit transfer and students must contact individual institutions to enrol. Examples of this are the University of Wisconsin System's eCampus and Montana University System Online.

In Wisconsin this encompasses 13 four-year and 13 two-year institutions as well as the state-wide distance education provider. But in Montana all institutions are included and their initiative was funded by the state government.

In Step two, state institutions join together for shared contracts for common resources such as Learning Management Systems or staff development materials. An example of Step two is in Minnesota, where their two tertiary education systems have formed a state-wide virtual university. This university has led to the creation of a combined pool of funds to buy contracts for online tools and resources that an individual institution would be unable to afford. It also provides some assistance for students not only in course selection but also in assessing their ability to successfully complete online education.

In Step three, state systems provide a variety of online student support services for all participating institutions. An example of Step three is the University of North Carolina system (one of their two tertiary education systems), which comprises more than 17 institutions. The Florida Virtual Campus (see reference 172 below) is another example of Step three.

In Step four, credit transfer and shared credentialing have been implemented. Examples of Step four are Georgia, Kentucky and Tennessee. In Georgia the university system has developed a shared online course curriculum. Known as eCore, these core classes provide broad access to oversubscribed courses within Georgia's university system. These core classes now include degree-level programmes.

Kentucky has taken a different approach, where their community and technical college system develops competency-based courses that allow students to undertake self-paced learning based around their attainment of predetermined competencies. Kentucky also provides online support services including a 24-hour 'coach' to assist students throughout their online course(s) and a 'college readiness' programme. This programme does provide recognition of prior learning, aligns content with the remaining competencies, guides students to unknown competencies through interactive learning activities, and provides a post-assessment.

Online materials are paid for by predetermined tuition fees and these are allocated to the delivering institution. The institution at which the student is enrolled receives credit for the student via head count. Any central services provided are covered by the remaining revenues.

In contrast to both Georgia and Kentucky, Tennessee offers stand-alone, fully online credentials that combine courses from different institutions in the system. Every participating institution has to provide seed funding for the venture and in exchange receives a set percentage of the revenues. There are 27 institutions in the consortium. Its provision does not duplicate existing offerings so a student can take a programme via one institution or through the consortium.

It receives no state government funding. Each institution is paid about US$6,000 to provide a course for the consortium and some of this goes to the course creator, some goes to the institution, and the remainder is allocated to the consortium's operations and IT infrastructure.

Tuition revenue goes to the host institution regardless of where else the student is enrolled. And all core classes are offered via the consortium.

The consortium undertakes quality assurance through a curriculum committee. On approval the relevant staff member has to complete online course development training (provided by the consortium). They use a specialised rubric to determine if the course meets the accepted quality. They are also planning to implement a state-wide recognition of prior learning scheme.

Step five would take Step four one step further by offering courses and programmes and the associated support services (including credit transfer and shared credentials) across state borders. While this has not been achieved, the Great Plains Interactive Distance Education Alliance (IDEA) does offer common degree programmes at a set price. This consortium is made up of 20 public universities from several states.[42]

Seed funding was provided by the US Department of Agriculture, the American Distance Education Consortium, and the Learning Anytime Anywhere Partnerships program of the federal government's fund for the Improvement of Postsecondary Education. But the scope of this initiative is limited as it does not provide common systems or shared services.

Direct from Washington

Author: Lewis, A. C.

Reference number: 112

Date of reference: 2009

Summary

The Obama administration intends to use community colleges as the centrepiece of its workforce training and retraining efforts. Part of these efforts includes planned new funding of US$50 million to develop online courses that would be free for both community college and secondary school students. These monies will fund 20-25 'high-quality' courses annually, with an initial focus on 'career-oriented' courses. The courses would be owned by the government and selected competitively through peer reviews.

The government would also establish a National Skills College at the community college level to develop examinations for these courses. And it would quality assure the courses to ensure they meet college standards and work to mix the online credits with fee-paying courses to enable students to obtain degrees at reduced cost.

Don't leave me hanging on the Anglophone: The potential for online distance higher education in the Asia-Pacific region

Author: Marginson, S.

Reference number: 117

Date of reference: 2004

Introduction

Many consortia, some with national government backing, have established fully fledged commercial operations for marketing and providing online education. But this ambitious vision of a global university is at odds with the traditional view of higher education which is centred on-campus delivery. Therefore hopes have been pinned on emerging markets, particularly India and China, to realise this grand vision of global online education.

[42] These include Arkansas, California, Colorado, Florida, Georgia, Kansas, Kentucky, Missouri, Montana, Nebraska, North Carolina, North Dakota, Ohio, Oklahoma and South Dakota.

The political economy of online distance education

Within the OECD there are varying national e-learning policies (OECD, 2004b). But despite the variations, most national governments in developed countries want enhanced capability from the tertiary sector in an online education context.

In countries with more decentralised tertiary systems, e-learning has spread more quickly via institutional initiatives and joint ventures. Governments support e-learning for educational, not commercial, reasons (Gallagher, 2001; Bell, Bush, Nicholson, O'Brien, and Thien, 2002). Governments see cross-border online education as meeting their own demand issues as well as those from overseas at reduced cost.

However, cross-border online education raises questions about whether its content fits national values and needs. Despite this, governments typically regulate cross-border online education more loosely than its traditional delivery equivalent, partly because regulating internet communications is inherently difficult.

The hype

Drucker (2000) and others portrayed e-learning as a 'tsunami' that would sweep away traditional delivery. E-learning also benefited from the dot.com boom because it attracted substantial monies by portraying itself as an extension of this emerging and profitable market. The flagships of these ventures were a small number of large-scale initiatives based on consortia of established universities. Their goal was to become global leaders in online degree-level provision. They attracted substantial investment and publicity/marketing.

One of these was the UK e-University, which was funded by the UK government from 2001 until its demise in 2004 at a cost of UK£62 million. It was conceived as a public-private partnership, where the private sector would provide investment and the institutions the degrees, teachers, student support etc. The aim was to 'concentrate resources on a scale that can compete with leading US providers' (UK Secretary of State for Education). Awards were to be offered by the participating institutions, not UKeU. It was expected to break even by 2004 based on enrolment projections of 5,600 students by the end of the first year.

In contrast, Cardean University was a joint venture between Carnegie Mellon, Stanford, the business schools of Columbia and the University of Chicago, and the London School of Economics. The initial investment was US$100 million. The intention was to provide a high-quality online platform that would underpin ongoing student support. Its business strategy depended on high volumes of management type provision such as MBAs targeted at an organisational level as well as at managers and senior/mid-level executives (Hirsch, 2001). Cardean outsourced course development and teaching.

Universitas 21 was an international network of research-intensive universities from the English-speaking nations was initiated by the University of Melbourne (Australia). The 21 participating institutions partnered with Thomson Learning. The initial investment was US$25 million, with a minimum contribution of US$0.5 million. Melbourne pledged over US$6 million.

Courses would be developed in Singapore, accredited by the participating universities, and quality assured by a stand-alone entity created solely for this purpose (U21pedagogica). It was intended to target school leavers and educated workplace learners and tap into the significant unmet demand for tertiary education in the Asia-Pacific region. The venture's backers thought it would be successful because someone had to succeed in tapping the immense potential of global online education and its associated unmet demand.

The failure

Even as these ventures were being launched, the dot.com boom was turning to bust. This significantly reduced funding for e-learning ventures. Online education was particularly vulnerable as it had failed to deliver revenues and was only a small component of overall expenditure. The high start-up costs for these ventures were also becoming increasingly

apparent. As a result, at the time of writing, even some of the flagship initiatives had already failed including the state of Maryland's state-wide initiatives, UKeU and Cardean University.

Why did they fail?
The first serious attempt to provide online cross-border education failed mainly because the unmet demand did not materialise in the form of large student enrolments. The failure was built in from the start because of the substantive gap between the hype and reality, where the hype led to the overriding belief that e-learning would replace traditional delivery. These claims and assumptions made the industry inflexible and unable to change course even when significant problems were encountered.

The implications for government are that policy based on marketing is inferior to policy grounded in evidence and expert judgement. Where the various governments went wrong was the methodology that allowed their own perspectives and responsibilities to be subordinated to the industry's vision of the e-learning future.

More generally, the failure of the online industry raises doubts about the extent to which governments should allow competitive market forces and industry-determined investments to shape mass higher and cross-border education. In extreme cases such as this, governments can provide very expensive infrastructure without the equivalent increase in the capacity to provide higher education and the liquidation of most of the temporarily-acquired expertise leaving very little behind.

Cyberlearning: Transforming education

Author: National Science Foundation

Reference number: 136

Date of reference: 2013

Introduction
The National Science Foundation is an independent US government agency responsible for promoting science and engineering through research programmes and education projects. The programme will support research that will explore opportunities and ways to promote and assess learning made possible by new technologies, help students capitalise on those opportunities, develop new practices, and use technology to promote stronger student engagement.

Programme description
The goals of its cyberlearning programme are to:

- understand better how people learn with technology, and how technology can be used productively to help learn through individual or collaborative mediation
- make better use of technology for collecting, analysing, sharing and managing data to shed light on promoting learning and designing learning environments
- design new technologies for these purposes, and advance understanding of how to use them and integrate them into learning environments so their potential is fulfilled.

Project categories
Awards will be made in three research categories: exploratory (EXP); design and implementation (DIP); and Integration and Deployment (INDP). The programme also supports capacity-building projects (CAP) and a cyberlearning resource centre (CRC).

EXP projects will be funded up to US$550,000 over two to three years. DIP projects will be funded up to US$1.35 million over four to five years. INDP projects will be funded up to US$2.5 million over four to five years. CAP projects are expected to be funded for a maximum of US$50,000 for up to one year. The CRC will have funding of up to US$500,000 in its first year and up to US$1 million per annum in out years for a maximum of five years.

The Gates effect

Authors: Parry, M., Field, K., and Supiano, B.

Reference number: 153

Date of reference: 2013

Summary

The Bill and Melinda Gates Foundation has played a critical role in establishing a programme at Southern New Hampshire University that will allow workers to upskill while still remaining employed, by completing low-cost self-paced online learning programmes. The Foundation's main role was in securing the US Department of Education's approval to allow Southern New Hampshire to become the first university eligible to award financial aid for a programme that does not have prescribed credit hours.

The programme derives from a US$1 million grant from the Next Generation Learning Challenges programme established in collaboration with Educause. While Massive Online Open Courses (MOOCs) have captured most of the public attention, the type of programme being offered by Southern New Hampshire could represent a more radical reform.

This is because they are designed to control costs by using computers where possible and humans where necessary. In this programme, for example, the learning occurs virtually, while assessments are undertaken by part-time adjunct professors. A coach helps the student set goals, navigate materials, and handle problems. The foundation is also developing projects to test how MOOCs could change introductory or remedial classes.

Approaches to funding

Authors: Rumble, G., and Litto, F. M.

Reference number: 166

Date of reference: 2005

Purpose-built teaching universities

Governments initially saw the foundation of purpose-built, large-scale distance teaching universities as a relatively cheap way of funding the expansion of higher education. And these institutions are still generally funded by governments. However, the initial set-up costs can be substantial, particularly where sophisticated administrative systems are adopted; there is an increased use of high-cost technologies, and an extensive curriculum and supporting materials. Meeting a large proportion of these costs from student fees has proved challenging.

And this is compounded by the lag between establishing the institution (with its considerable costs) and any income from students, which some have suggested could be as much as two years. Even when students enrol, there may be problems. Their cost structures mean that the average per student cost is high. To reduce fees, these institutions need to attract large numbers of students. Having a phased or pilot approach does not resolve these problems and this may explain why distance teaching universities have been publicly, rather than privately, funded.

The other problem relates to the actual way funding is determined. Conventional funding approaches do not work well where high-cost media distance education is concerned. But this approach does not deal with the extensive start-up costs of large-scale, extensive provision, high-technology-use distance systems. This is because this approach will significantly underfund these systems in their early years, and it can substantively overfund these systems when they are well established, by ignoring the economies of scale they can achieve.

Taking it to the world: The US private sector model

Author: Ryan, Y.

Reference number: 167

Date of reference: 2004

For-profit providers
In the US, vocational education and training (VET) is dominated by national and typically publicly listed firms, in contrast to Australia, where there are many more private providers. They generally eschewed e-learning because of their types of provision and conservative approach. But the success of institutions such as the University of Phoenix has encouraged more of these firms to offer e-learning options.

However, there have been some problems for providers in this space often because they were too aggressive in their growth plans and any growth has been through acquisitions and mergers rather than growing their offerings and enrolments (Chronicle of Higher Education online edition, 2002). Moreover, their share of total provision in the US tertiary education sector is small (Chronicle of Higher Education online edition, 2001; Evans, 2001). Australian providers generally prefer a blended approach with many of its support structures and services being provided offline.

Corporate universities
E-learning was seen as the key to corporate training. Despite the lack of success corporate universities have had in meeting the objective of offering larger amounts of training through e-learning and a lack of collaboration with universities, they have benefited for-profit and public providers. This is because corporate universities are in effect company training programmes which often only employ video-conferencing type technologies. More sophisticated approaches are very expensive, although companies can make savings on travel-related costs.

Despite the presence of suitable infrastructure and resources, and optimistic predictions about the scale and uptake of corporate e-learning, this had, at the time of writing, largely failed to materialise (ACTIV Consulting, 2001; Evans, 2001). This is most likely because of poor organisational learner support, poorly designed materials, inadequate infrastructure and insufficient learner motivation.

There are emerging examples of public sector entities partnering with sector consortia to provide e-learning-delivered training opportunities for their staff. For example, the UK's National Health Service has created a virtual university to broker training opportunities for its employees. This may well provide some valuable information on large-scale e-learning, as Learn Direct's efforts have been disappointing because they have not led to changes in training patterns.

Not-for-profit providers
E-learning has increased, rather than decreased, the costs for publicly funded providers. There is tension for these providers between governmental economic imperatives and the support requirements of vocational learners (Butler, 1998; Chronicle of Higher Education online edition, 2001), which in distance e-learning are prohibitively expensive and would require a degree of standardisation that most institutions would be uncomfortable with.

Governments have responded in the US and Australia by developing common online student platforms and curriculum materials. They have also encouraged the adoption of e-learning systems. This is possible because of common training packages and competency-based, standardised qualification levels agreed by all key stakeholders.

But despite these efforts, few VET students are enrolled in distance courses. In Australia, as elsewhere, students are showing a clear preference for a blended delivery approach. The

community college sector in the US has also been slow to adopt e-learning because of high entry and establishment costs.

Florida Virtual Campus

Author: State University System of Florida and the Florida College System

Reference number: 176

Date of reference: 2012

What is Florida Virtual Campus?
Florida Virtual Campus was established by statute in 2012 and developed by the Florida Distance Learning Consortium in partnership with other relevant state-wide organisations.[43] Its aim was to provide online support for students. And it was to serve as a state-wide resource and clearinghouse for public tertiary technology-based distance learning courses and degree programmes.

Its services to students, faculties, and staff in the state's public colleges and universities include:

- online academic advising services
- support and training for college and university students and staff using Florida Virtual Campus' services
- access to an e-portfolio and tracking of progress.

Learning Technology Advisory Committee

Author: Texas Higher Education Coordinating Board

Reference number: 179

Date of reference: 2013

Summary
The Learning Technology Advisory Committee (LTAC) engages in substantive policy, research and discussion related to the role of learning technology in higher education. Its policy work involves developing policy recommendations on critical issues such as the development of institutional collaborations to support distance education and share resources; best practices in the evaluation of distance education; using e-learning to change the way higher education is offered; and ways to use e-learning to increase student retention and success.

Over the last several years, LTAC has reviewed the Coordinating Board's rules and policies pertaining to distance education, revised the state's Principles of Good Practice in Distance Education, and researched critical issues in distance education. In the 2011/12 academic year their focus was on producing a comprehensive analysis of distance education in Texas, with recommendations for changes to Coordinating Board policy and state legislation.

Request for Proposals for online professional development project

Author: Texas Higher Education Coordinating Board

Reference number: 180

Date of reference: 2011

Project requirements overview
The purpose of this project is to create readily available, online professional development opportunities for staff to learn the most effective strategies and 'best' practices for improving

[43] These were the College Center for Library Automation, the Florida Center for Library Automation, and the Florida Center for Advising and Academic Support.

undergraduate teaching and learning in a number of critical areas. The priority topics are writing across the curriculum and best practices in undergraduate teaching and learning. The Coordinating Board anticipates awarding two contracts for each priority topic. The funding for each contract is not expected to exceed US$165,000.

Consolidated annual program evaluation report

Author: Texas Higher Education Coordinating Board

Reference number: 181

Date of reference: 2010

Projects overview
One of the projects reviewed in this report is faculty professional development modules for online learning, which targeted critical thinking, reading comprehension, foreign language teaching, and college mathematics teaching. The report recommends that the Learning Objects Repository (run by several institutions) be used as a place for disseminating the project's materials.

This Learning Objects Repository was mandated as part of Texas state legislation, which notes that a project should be implemented 'under which institutions of higher education selected by the Board will review, revise entry-level lower division academic courses to improve student learning, and reduce the cost of course delivery through the use of information technology'.

Background on the Texas Course Redesign Project

Author: Texas Higher Education Coordinating Board

Reference number: 182

Date of reference: 2010

Summary
The goal of the Texas Course Redesign Project is to improve student learning, especially in large, introductory-level courses, while at the same time reducing teaching costs through a variety of savings mechanisms. This project will involve shifting much of the relevant content online.

The courses will be redesigned based on the five general models identified by the National Center for Academic Transformation, as follows:

- **Supplemental model**: supplements traditional delivery with technology-based activities.
- **Replacement model**: replaces some traditional delivery with online, interactive learning activities.
- **Emporium model**: eliminates traditional delivery and replaces it with a learning resources centre which features online materials and on-demand personalised assistance.
- **Fully online model**: moves all learning online and uses a range of technologies and resources including automatically evaluated assessments with guided feedback, and alternative staffing models.
- **Buffet model**: customises the learning environment for each student based on background, learning preference, and academic/professional goals, and offers students an assortment of individualised paths to reach the same learning outcomes.

Stepping up: A strategic plan for the Florida college system 2012-13 to 2017-18

Author: The Division of Florida Colleges

Reference number: 183

Date of reference: 2012

Summary

The plan's four overarching goals include expanding access and enhancing distance learning. Success in respect of enhancing distance learning will be measured by comparable completion rates between traditional delivery and distance and blended provision by 2017/18. In respect of expanding and maintaining access by 2017/18, it is intended that 36.2 percent of college students will be enrolled in an online/distance learning course, up from 33.1 percent in 2010/11. These goals will be supported in part by accommodating transient and place-bound students throughout Florida and a Florida Virtual Campus (see reference 171 above for further details).

The 2012-2020 Statewide Plan for Higher Education

Author: The University of the State of New York the State Education Department

Reference number: 185

Date of reference: 2013

Departmental initiatives

Departmental tertiary e-learning initiatives include the New York State (NYS) Online and Blended Learning Summit, providing guidance for online and blended coursework, supporting policy guidance, research and surveys, and Learning Technology Grants. The University of the State of New York has also developed a state-wide learning technology plan, and 21st Century Community Learning Centers are also being established.

There is also the Office of Educational Design and Technology, which facilitates a state-wide virtual learning initiative to support the growth of effective online and blended teaching. The state's Office of Adult Career and Continuing Education Services is piloting the use of a web-based learner support system designed to help adults improve their English language skills, basic literacy skills, or job-related basic skills.

Sector initiatives, views and recommendations

The City University of New York (CUNY), one of the state's public tertiary education systems, has established a Committee on Academic Technology that is responsible for CUNY's Learning Management System, developing e-portfolios, modelling standards and practices for online, blended and technology-mediated teaching and learning, and trying out new technologies and establishing associated practices and evaluation protocols. The Committee has also established a research and development arm.

The Open State University of New York (SUNY, the state's other public tertiary education system) initiative will use a combination of online courses, an expanded YouTube channel, and an increased iTunes U presence. It was due to be launched in 2013.

SUNY is also providing Innovative Teaching Technology Grants. SUNY faculty and staff can apply for these competitive grants, which provide funding for conferences and workshops, collaborative curriculum development, research, and matching institutional grants. SUNY has also established the Learning Network Initiative (which was initially funded by the Alfred P. Sloan Foundation). This is a common platform that enables over 150,000 students a year to study from a distance.

Regents initiatives
Six prescribed state 'literacy zones' are using a 'learning web' with five community colleges to support secondary-tertiary transition. Literacy volunteers support learners in closing digital literacy gaps. Where an online programme requires a clinical component for licensing, the institution must be registered with their Department of Education. In addition, the federal government has issued guidance and recommendations related to state-level approval of out-of-state online programmes.

Regents Statewide Learning Technology Plan

Author: The University of the State of New York the State Education Department

Reference number: 186

Date of reference: 2010

Goals and supporting actions
The plan has six goals including: digital content, digital use, and digital capacity and access. The plan's supporting actions include:

- analysing all existing funding streams for learning technology, and recommending specific improvements and alignment with state-wide learning technology priorities
- developing a performance measurement, determining current capacities, and exploring ways to ensure the reliability of a digital technology infrastructure
- developing and/or revising regulations and policies to promote sustained support for the delivery of quality teaching for all learners through digital means
- determining and continuously reviewing the benchmarks for institutions to demonstrate how they are achieving the actions of each goal, and the degree to which they meet the respective standards in technical support for technology integration
- identifying and/or developing incentives for the expansion of digital learning.

How will progress and performance be assessed?
This will be achieved through answering a number of questions including: was the action completed on time? Does the action taken have a strong evidence base? Does the action taken include an analysis of appropriate law, regulations and policies to identify needed changes? Was the action taken/outcome produced consistent with Regents' policy? If no policy existed, were the Regents informed in a timely manner? And can the outcome be sustained (financially and politically)?

The Board of Regents Statewide Plan for Higher Education

Author: The University of the State of New York the State Education Department

Reference number: 187

Date of reference: 2005

Priorities for the higher education system
The 13 priorities for 2004-2012 are organised under five categories: 1) maximising success for all higher education students; 2) smooth secondary-tertiary transitions for students; 3) meeting New York's needs through graduate programmes and research; 4) qualified professionals for every community throughout the state; and 5) a balanced and flexible regulatory environment to support excellence.

Sector initiatives to support the priorities
The independent sector (not-for-profit, state-funded institutions) would continue to integrate appropriate technology into the curriculum to improve student learning. The State University of

New York (SUNY) system comprises 64 campuses across the state consisting of both universities and community.

The SUNY network would explore plans to use technology-mediated learning, including online learning. They had also established an online learning network (SLN). In 2004/05 the state provided US$1.8 billion in funding, which was the largest share for their tertiary sector.

They would ensure faculty had the necessary tools to adopt e-learning. Through their (then) recently developed online platform they were also looking to promote online learning as a means of increasing inter-campus academic collaboration in degree and programme development.

One of the initiatives the proprietary college sector[44] is introducing is online tutoring. To ensure the success of graduate programmes, the state government has provided dedicated funding to the independent sector for e-learning infrastructure. For every US$1 pledged by the state government, the independent sector is expected to provide US$3 for these infrastructure projects. And one of the priority programmes identified by the independent sector is digital literacy.

Regents' initiatives to support the priorities

The Regents were looking to create a dedicated educational television channel to enhance learning services and increase accessibility to underserved persons and those with disabilities, as well as providing professional development. Partners in this venture include higher education institutions. They also provide resources and tools that can be used to analyse and promote an institution's incorporation of technology into teaching and learning.

Transforming American education: Learning powered by technology. National Education Technology Plan 2010

Author: US Department of Education Office of Educational Technology

Reference number: 189

Date of reference: 2010

Goals

The plan is underpinned by five 'essential' areas: learning, assessment, teaching, infrastructure, and productivity. The overarching goal for the learning area would be achieved by states using technology for all content areas. The main goal in the assessment area would be achieved by building the capacity of educators and institutions to use technology to improve assessment materials and processes. It would also involve conducting research and development that explores how embedded assessment technologies, such as simulations, virtual worlds, and games can be used to engage and motivate learners while assessing complex skills.

For the teaching area the goal is that 'professional educators will be supported individually and in teams by technology that connects them to data, content, resources, expertise, and learning experiences that enable more effective teaching for all learners'. The associated recommendations include expanding opportunities for educators to have access to technology-based content, resources and tools, where and when they need them.

In the infrastructure area the goal is that 'all students and educators will have access to a comprehensive infrastructure for learning when and where they need it'. Its associated recommendations include supporting the development and use of open educational resources and accelerating the development and adoption of new open technology-based learning tools and courses.

[44] These are for-profit institutions whose primary course offerings are in business and commerce.

In the productivity area the goal is that the US ‘education system at all levels will redesign processes and structures to take advantage of the power of technology to improve learning outcomes while making more efficient use of time, money, and staff’. Its associated recommendations include developing useful metrics for the educational use of technology in states and districts, and designing, implementing and evaluating e-learning programmes and interventions to ensure students progress seamlessly through their tertiary education system and are prepared for their future careers.

Higher education use of new data could help improve oversight of distance education

Author: US Government Accountability Office

Reference number: 191

Date of reference: 2011

Brief history of statutory provisions related to distance education
Distance education in the US is defined by federal law and regulation as ‘education that uses one or more technologies [such as the internet- or audio-conferencing) to deliver (teaching) to students who are separated from the teacher and to support regular and substantive (teacher-student interaction]’.

In 1992, in response to concerns about fraud and abuse at institutions, the US Congress stipulated that institutions were not eligible to participate in federal aid programmes if more than 50 percent of their provision was in distance education which included e-learning delivery.

In 2006 this restriction was relaxed and e-learning courses were exempted, which led to an expansion of distance education provision. However, at the same time, Congress gave accrediting agencies sufficient power to combat potential fraud and abuse by allowing them to check the authenticity of students enrolled in distance education courses and to monitor institutions with high enrolments in this type of provision.

Federal government
The Department of Education’s Office of Federal Student Aid has increased its monitoring of distance education because this has been identified as a high-risk area for managing student aid dollars. It has updated its programme review procedures to provide more detailed guidance on how institutions are expected to comply with the appropriate rules and regulations. Institutions with more than 50 percent of their total provision offered at a distance will be required to undergo expanded testing for regular and substantive interaction.

Accrediting agencies
Accrediting agencies are the arbiters of quality assurance in the US. If an institution substantively changes its delivery methods, it could lose accreditation if these changes do not meet the requisite standards.

Accrediting agencies tended to use the same standards for both traditional delivery and distance education. But they differed in the practices they used to examine institutions offering distance education. National agencies tended to set minimum performance thresholds around key areas like student retention and achievement. However, these thresholds were the same irrespective of delivery mode. But their reviewing staff had to have expertise in distance education.

Institutions would generally be reviewed if a shift to distance education provision constituted more than 50 percent of total offerings. Agencies had to be satisfied that institutions had adequate measures in place to prevent student cheating.

Institutions
By 2006/07, 61 percent of US institutions offered fully online provision, 35 percent blended delivery, and 26 percent other types of distance delivery. The overarching reason for strong growth in online distance education provision (which is much higher than the overall average for US tertiary education) is its ability to expand access through new recruitment opportunities and meet student demands for more flexible options.

Public institutions were more likely to offer distance education than private schools (both non-profit and for-profit). Two-year institutions (typically community colleges) were more likely to offer distance education than traditional (four-year) universities.

Institutions that exclusively or primarily served African-American students were more likely to offer distance education than institutions overall and those with high concentrations of other ethnic groups. And larger institutions were more likely to offer distance education than smaller institutions.

What went wrong with AllLearn?

Author: University Business

Reference number: 192

Date of reference: 2006

Introduction
Oxford, Yale and Stanford Universities closed their AllLearn (Alliance for Lifelong Learning) non-profit online learning venture in 2001, citing insufficient enrolments and revenue. This was the latest in a series of ventures launched in the dot.com era that failed, including NYU Online and Fathom, which invested US$25 million each.

Before it failed, it offered 110 non-credit courses to more than 10,000 students in 70 countries. Its business model was based on flexible delivery and shorter duration courses (typically five to 10 weeks). However, despite significant support from its partner institutions and extensive efforts to expand its operations to high school students, the general public, and international students, it consistently failed to meet its enrolment targets.

What went wrong?
In contrast to similar initiatives such as Universitas 21, AllLearn did not have commercial partners or private funding. Although it did receive US$12 million in start-up funding, its operational budget was smaller than similar ventures. The expense of creating its courses and the rising tuition costs required ever-increasing enrolments, which simply did not materialise. By June 2005 AllLearn had incurred a deficit of just over three-quarters of a million dollars (US), with revenue of US$2.5 million and total expenses of US$3.28 million.

The project's founders appear to have underestimated development costs, while at the same time overestimating student demand. Lack of student demand has been cited as the main reason AllLearn failed and might have been due to the non-credit nature of AllLearn's provision. Other non-credit ventures have been successful by offering these types of courses to secondary school students or having close ties with business. Lack of student demand might also have been due to the non-interactive and lower-quality delivery technologies available at that time. Another reason for its failure was its focus on 'edutainment' rather than high-quality provision.

Successful ventures appear to be either non-profit or outsource their operations to the private sector. But further research was recommended into the failed ventures to try and obtain a better understanding of the factors contributing to successful distance education programmes and enable those that have survived to redefine their business models and marketing strategies accordingly.

Western Governors University annual report 2012

Reference number: 196

Date of reference: 2012

What is Western Governors University?
Western Governors University (WGU) was established in 1997 by the governors of 19 states.[45] WGU is an accredited non-profit university that offers fully online degree-level provision in the key workforce areas of secondary teacher education, health, business, and information technology. WGU is supported financially by a number of leading corporations and foundations[46] and this ensures WGU's provision is relevant for their respective industries.

WGU is regionally accredited by the Northwest Commission on Colleges and Universities (which is recognised by the US Department of Education). The specialist areas of provision are accredited by their respective accrediting bodies (e.g. for teacher education the accrediting body is the National Council for the Accreditation of Teacher Education).

As at June 2012 WGU had nearly 34,000 enrolments and the student retention rate was 79 percent. And they provide a dedicated portal for students.

Online and hybrid course enrolment and performance in Washington State community and technical colleges

Authors: Xu, D., and Jaggars, S. S.

Reference number: 197

Date of reference: 2011

Introduction
By 2009 over 30 percent of US students had taken at least one online course (Allen and Seaman, 2010) and the data suggests that growth in this provision has been stronger in community colleges than universities (Parsad and Lewis, 2008).

Data and methodology
The authors used the 2004 degree-level cohort in Washington State's community and technical college sector after a number of key student support initiatives had been introduced, and tracked them for about five years. An online course was defined as one that had 51 percent or more of its delivery done online; a blended delivery course had 50 percent or less of its delivery online; and traditional delivery was where technology did not replace any classroom time. Both students and courses were used as the unit of analysis.

Findings
From 2004 to 2009, 33 percent of students attempted an online course, and nine percent undertook a blended learning course. Enrolment data indicates large differences in uptake of online and blended learning courses between institutions. This suggests that some are offering more of these types of courses than others, which could be due to differences in the respective student populations.

For example, women were more likely to take an online course than men. Older students, white and multiracial students, learners from wealthier backgrounds, learners with better academic records, and students working more hours were all more likely to take an online course than those form poorer backgrounds or from the Asian, Hispanic, and African-American ethnic groups.

[45] The member states are Alaska, Arizona, California, Colorado, Guam, Hawaii, Idaho, Indiana, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming.
[46] Including Microsoft, Google, Oracle, Hewlett-Packard, AT&T, the Bill and Melinda Gates Foundation, and the Alfred P. Sloan Foundation.

While the completion rates for blended and traditional delivery courses were similar, the rates for online courses were about eight percent lower. But this gap had narrowed by the fifth year of enrolment. Their modelling suggests that this is most likely because student performance in online courses improves as they gain more experience in them. Alternatively, it could be because students who are unsuccessful in online courses switch to traditional delivery.

Students in online courses were more likely to withdraw from tertiary study entirely than those in traditional delivery. Students in online courses were also significantly less likely to attain an award or transfer to university.

12 OPEN EDUCATIONAL RESOURCES (OER)

Playing catch-up: Investigating public and institutional policies for OER practices in Australia

Authors: Bossu, C., Brown, M., and Bull, D.

Reference number: 18

Date of reference: 2011

Some global OER initiatives
By 2007 the Massachusetts Institute of Technology's OpenCourseWare Initiative had made available 1,800 courses (Wiley and Gurrell, 2009) and had had 78 million visitors (MIT OCW, 2011). This has inspired the establishment of a global consortium (OpenCourseWare Consortium) with over 200 institutional and affiliate members. The UK's Open University has also successfully launched an OER site (Open Learn) with 75,000 registered users and about five percent of these become students (Gourley and Lane, 2009; McAndrew, P., dos Santos, A. I., Lane, A., Godwin, S., Okada, A., Wilson, T., Webb, R., 2009).

Developments in open policies globally
New Zealand, the UK and the US have all created national copyright licensing schemes that support OER. OER initiatives are more likely to be successful where support is provided at the national level (Carey, 2011). Carey notes that both the UK and US governments have provided policies and substantial funding to support open access initiatives. But the funding tends to be grants (on both a large and small scale) to individual institutions. The UK has also supported an extensive research programme. The result of all this activity has been the creation of research literature and supporting guidelines and frameworks for OER.

OER initiatives in Australia
Australia's vocational education and training (VET) sector has established a learning object and teacher training resources online repository (LORN) as part of the Flexible Learning Framework work programme. But due to budget cuts and (possibly) jurisdictional issues, it was decommissioned in 2011 (LORN, 2011). There are no sector-level OER initiatives in Australia.

Open policies development in Australia
As is the case in New Zealand, the UK and the US, Australia is developing a national open licensing scheme. But it has not introduced educationally focused open policies. The Australian Learning and Teaching Council was playing this role but has recently been disestablished (ALTC, 2011). This lack of government support appears to be limiting and/or slowing down the process of OER adoption. But even with institutional and/or government support, significant delays and challenges remain for institutions adopting OER, including the need for a comprehensive consultation process and institutional overheads associated with key decisions relating to quality control and appropriate access for disabled students as well as technical issues pertaining to metadata format, standards, and software architectures. There are also

cultural challenges to overcome (Atkins, Brown, and Hammond, 2007; OECD, 2007; Wiley and Gurrell, 2009; Ehlers, 2011).

Opening up Down Under: The role of Open Educational Resources in promoting social inclusion in Australia

Authors: Bossu, C., Bull D., and Brown, M.

Reference number: 19

Date of reference: 2012

Introduction
The OER movement has a number of significant initiatives in place, such as the Massachusetts Institute of Technology OpenCourseWare initiative and the UK's Open University OpenLearn initiative (Wiley and Gurrell, 2009).

OER Down Under
The vocational education and training sector has had initiatives to make educational resources more widely available, but not all are free of charge or supported by open licensing regimes (Bossu, Brown, and Bull, 2008). There have been no sector-level OER initiatives for higher education.

However, the University of Southern Queensland and the University of Wollongong are members of the OERu initiative (Thompson, 2011). This initiative aims to provide free learning opportunities for all students worldwide, with courses built entirely on OER. Formal credit of student learning will be given through assessment and credentialing services on a fee-for-service basis at a price determined by the awarding institution (OERu, 2011).

Government responses
But these initiatives and many others are limited and lack coordination. Despite the potential for OER to meet the government's objectives around widening access and participation (Bradley et al., 2008), to date there have been no policy enablers to support universities and other institutions in pursuing OER initiatives. For example, they could use it as a strategy to widen participation because OER represent a cost-effective means of leveraging taxpayer-funded education (OECD, 2007). If there are no explicit policies from government and institutions to support OER initiatives, they are unlikely to be successful, according to the authors.

Survey on governments' Open Educational Resources (OER) policies

Author: Commonwealth of Learning

Reference number: 33

Date of reference: 2012

Methodology
A questionnaire (based on an OECD equivalent) was sent to the Commonwealth governments, and UNESCO sent this to all of its member states (195). Eighty-two responses were received, but only the New Zealand, Australian and Canadian responses will be reviewed as part of this annotation.

Findings
Open Educational Resources (OER) initiatives tend to be institution rather than government driven. Most OER activity is in the tertiary sector. While Australia has no national or state-level OER initiatives, there are several sector-led ones, including the National Digital Learning Resource network, which is underpinned by a Creative Commons licensing scheme.

The federal government has also provided funding for a university consortium to undertake a feasibility study to facilitate the adoption, use and management of OER for teaching and learning in Australia. Similar initiatives were being introduced at the state level in South Australia, New South Wales, the Australian Capital Territory, and Western Australia.

The Australian government is considering a national Creative Commons licensing regime and these are also being introduced at a state level, for example in Queensland and Victoria. The Australian government has also funded research into its Creative Commons licensing regime and provided funding to the Australasian Council on Open, Distance, and E-learning to promote the uptake of OER in the university sector.

Australia saw the main challenges as being a lack of awareness, the need to provide specific professional development, and existing copyright legislation. In addition Australia may not view OER adoption as a priority because of its highly developed and reasonably well-funded education sector which may not require free and open resources.

The New Zealand government supports sector-led OER projects, but is not contributing funding towards tertiary initiatives. However, the New Zealand government is introducing a national Creative Commons licensing regime which would support OER initiatives. But despite sector-led initiatives, overall OER penetration in New Zealand is low.

There is no formal federal government support in Canada for OER initiatives, but the Canadian government is considering the development of OER-specific policies. At a provincial level, Nova Scotia has OER embedded in related policies. Quebec's higher education agency supports OER projects including a shared college platform.

British Columbia's higher education agency has provided over CA$9 million in direct funding since 2003 to provide OER through its Online Programme Development Fund. To date, this fund has led to the development of nearly 800 full courses or course components and 19 websites or web tools. And British Columbia has also introduced a province-wide Creative Commons licensing regime.

At a provincial level, Canada saw its main challenges as the absence of a national strategy and pan-Canadian research, increased costs associated with the incorporation of copyrighted materials, the integrity and accuracy of OER, and the use of public funds to produce OER that will be used outside Canada. Tertiary OER materials are the least likely to be publicly funded.

The role of Open Educational Resources in personal learning

Author: Downes, S.

Reference number: 48

Date of reference: 2013

The idea of openness

In OER, 'open' can be defined as encompassing four critical freedoms: freedom to run, study, distribute, and modify the software (Stallman, 1994; Wiley, 2003). This freedom tends to be viewed from a creator not a user perspective (Debian, 1997), which ignores the needs of those who do not have access to the software but want to use it. Downes argues that if their access to the software is restricted, then this cannot be considered an open licensing regime. These differing perspectives make it clear that the term 'open' changes depending on the individual's perspective.

The challenge: making things unfree

Supporters of more restrictive licensing regimes point out that widely available content can be accessed for free elsewhere (Norman, 2010). But in practice, the licence holders are unlikely to allow this to occur in order to protect their commercial interests. Typical business models for OER include:

- the endowment model: a sum of money is invested and draws interest and the earnings from the interest are used to publish the resource (Loy, 2009)
- the membership model: members of the consortium pay a membership fee and they participate in the resource development
- the donation model: a participating organisation is charged with the responsibility of undertaking some of the publication work.

But even under these conditions, commercial users can and do extract monies from users through a variety of methods, which include: making free distribution unaffordable by attaching a high number of stringent conditions; gaming the search facilities so that commercial products and services rank higher than their free counterparts; and initially providing a critical resource for free before charging users once they have become dependent on it.

Dimensions of openness

There are three different dimensions to openness: openness in resources, courses, or assessment. The OER university follows a similar pattern in the services it provides to students, although it also adds in open support and the awarding of credentials (Day, Ker, Mackintosh, McGreal, Stacey, and Taylor, 2011). Downes refines these broad areas by focusing on an open curriculum that is underpinned by open resources, open admission, open standards, open source software, and open teaching and tutoring.

OER projects noted here include the Massachusetts Institute of Technology's Open Courseware initiative and MERLOT, which is a consortium of North American institutions. Creative Commons has become the dominant licensing regime for OER and this allows for wide distribution, with the only restriction being that the author(s) or creator(s) must be appropriately acknowledged.

The new manifestation of OER within a MOOC environment is in contrast to the heavily restricted, commercially oriented OER that is typically used or accessed. In Downes' view, OER need to be positioned as language not content. This is because the students who use OER have moved beyond a static, content-based view and use of OER.

Global Learning Objects Brokered Exchange (GLOBE)

Reference number: 69

Date of reference: 2013

What is GLOBE?

The Global Learning Objects Brokered Exchange (GLOBE) is a one-stop shop for learning resource broker organisations. It provides a suite of online tools and services for its members so they can exchange learning resources. It also acts as a global community in this context. Its members include:

- Education Services Australia (which is an Australian ministers' owned agency that conducts research on behalf of Australia's tertiary sector and co-constructs products and services with them)
- LORNET (the main Canadian research organisation devoted to OER repositories, which is funded by the Canadian federal government)
- a US consortium (Multimedia Educational Resource for Learning and Online Teaching).

A guide to Open Educational Resources

Author: Groom, C.

Reference number: 72

Date of reference: 2013

What are Open Educational Resources?
Open Educational Resources (OER) are teaching and learning materials that are freely available online for all users and they can reuse or repurpose them. Examples of OER include full courses or modules, lectures, and assignments. They are available from both proprietary (e.g. i-Tunes U) and more open websites (e.g. YouTube). To make OER genuinely open, they need to be supported by an appropriate licensing scheme; the most widely used is Creative Commons.

OER – the story so far
Since 2009 the Higher Education Academy (HEA)[47] and the Joint Information Services Committee (JISC) have received nearly UK£15 million of government funding to lead a programme of work on OER in the UK. Looking at initiatives in the time frames of this bibliography (2004 to 2013), the article notes the following:

- **2005**: The OpenCourseWare Consortium (which includes institutions and organisations from Australia, Canada, the UK and the US).
- **2006-2009**: The JISC repositories programme.
- **2008**: The JISC RePRODUCE programme is launched, which funds 20 projects to develop and run technology-enhanced courses using reused and repurposed learning materials sourced externally to their institution.
- **2009-2012**: JISC and HEA, supported by funding from the Higher Education Funding Council for England (HEFCE) establish the UK OER programme. This programme involves more than 80 universities.
- **And in 2009** the Support Centre for Open Resources in Education is funded by HEFCE for a three-year period to support individuals, projects, institutions and programmes across the higher education sector in England in creating, sharing and using open educational resources.
- **2010**: The Learning Registry is launched by the US Departments of Education and Defense to create a set of technical protocols to assist educators in quickly finding content specific to their need.
- **And also in 2010** JISC funds the JLeRN (JISC Learning Registry Node) to examine the Learning Registry approach in the UK through dialogue and experimentation.
- **2011**: The OER university is launched.

Despite these efforts, an OER Impact Study (2011) found few examples where full OER courses or modules were being reused and, if they were, they were more likely to be reused overseas. The study concluded that further research was needed into the best ways to promote reuse of OER by teachers.

Adopting OER
The widespread adoption of OER is being hindered by the lack of clearly articulated institutional business cases and absence of supporting business models (Sharing e-Learning Content report, 2007; Good Intentions report, 2008). OER need to be supported by open educational practices if they are to be widely used. But these practices can be implemented before OER release policies are developed (Open Practices Briefing Paper, 2012).

Introducing OER is more likely to occur and be successful if institutions: develop a clear rationale along with credible business and benefit cases; leverage existing expertise, knowledge and enthusiasm; support staff development in using OER; and incentivise staff to adopt OER. When collaborating with other organisations, agreement is needed on domain registration,

[47] The UK equivalent of Ako Aotearoa, the National Centre for Tertiary Teaching Excellence.

branding, website terms and conditions, accessibility, the privacy policy, shared site administration, and data sharing.

Institutions can also create specialist OER repositories or utilise others'. Copyright and licensing should be integrated into standard practice. Institutions need to ensure they have received the appropriate legal advice before implementing an open licensing regime. The benefits of adopting OER for institutions include: enhanced reputation; widening access and participation; and more opportunities for collaboration within and beyond the institution.

Open Educational Resources: Opportunities and challenges

Author: Hylén, J.

Reference number: 82

Date of reference: 2006

What is OER?
The term OER was first coined in 2002 at a UNESCO conference. According to the author they are currently defined as 'digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research'. OER consist of content, tools, and implementation resources such as intellectual property licenses. But this definition is problematic. According to Downes (2006), there is no consensus as to what open actually means. For example, does it mean no cost and/or without restrictions?

'Educational' is also an ambiguous term. Does it refer to formal educational material only? To incorporate other appropriate forms of educational content and resources it could be restricted to only materials that are used for teaching and learning (Open eLearning Content Observatory Services, 2006).

Who are the users and producers of OER?
While the number of OER projects and initiatives cannot be estimated with any precision, they are increasing rapidly. For example, MERLOT offers almost 15,000 resources. Some initiatives are wholly institution based, such as MIT's OpenCourseWare project. Others use a mix of institution and external resources, like Rice's Connexions project.

Why are institutions engaged in OER?
There are five arguments put forward for institutions to engage in OER projects. Firstly, there is an altruistic argument that freely sharing knowledge is a longstanding academic tradition that should be continued and one that is supported by OER. OER allow a greater return on investment for publicly funded resources and content.

OER allow for a reduction in content development costs, and quality would improve as OER build on existing good works rather than creating them from scratch. Being engaged in OER can enhance institutional reputations. Finally, it allows institutions to have an alternative revenue stream and provide an opportunity to update existing business models.

Challenges for the OER movement
There are three major challenges facing the OER movement: lack of awareness among academics regarding copyright issues; how to assure quality; and how to sustain OER initiatives long-term. The copyright challenges can be minimised through use of open licensing schemes.

Institutional responses to the quality of OER include relying on their 'brand' to persuade users its OER are of acceptable quality. The OER can be peer reviewed (Taylor, 2002). Quality could be self-assessed by users by allowing them to rate resources or make available information on how they are being used and by how many, to allow users to make their own decisions about quality.

Two sustainability models were discussed here: the community model and the institutional model. Institutions launching OER projects may need to consider different revenue models. Dholakia (2006) suggests the:

- Replacement Model, where OER replaces other use and can benefit from the resulting cost savings
- Segmentation Model, where the provider makes the OER freely available but charges for ancillary services such as expert advice and training and user support. This model and the conversion model are the most widely used in the education sector
- Conversion Model, where OER users are converted into paying customers
- Voluntary Support Model, which is based on fund-raising campaigns
- Contributor-Pay Model, where the contributors pay the cost of maintaining the contribution, which the provider makes available for free
- Community model, where individuals contribute their time, knowledge and resources on a voluntary basis.

Open Educational Resources: An update on activities

Author: Joint Information Services Committee (JISC)

Reference number: 95

Date of reference: 2010

Introduction

More than 80 UK universities have been involved in the JISC's pilot Open Educational Resources (OER) programme, which explores OER-related policies and processes, intellectual property rights, cultural issues, technical requirements, and data management issues. In addition, the Higher Education Funding Council for England provided an initial UK£5.7 million to fund 29 pilot projects.

How resources are shared

Institutions firstly need to identify the ownership of the resources and then, through the use of a Creative Commons licensing regime, clearly articulate the terms and conditions for sharing them. The resources are then stored on a repository created for this JISC programme. But institutions can still use their own or other external repositories to store these OER.

Technical solutions

Search engine optimisation can be used to make the programme's OER more widely available and accessible. Some projects have embedded the appropriate Creative Commons licence within the materials. With its relevant partners, JISC has been exploring ways to automate the uploading of resources into the programme's repository.

Benefits of OER and JISC's OER programme

OER can improve an institution's reputation by providing a 'shop front' for prospective students on their provision. This programme has allowed institutions to find solutions to complex intellectual property issues. They have also had to make their systems more efficient to effectively support OER production and dissemination. And making educational resources more widely available and accessible encourages proactive quality management.

A review of the role of national policy and institutional mission in European distance teaching universities with respect to widening participation in higher education study through open educational resources

Author: Lane, A.

Reference number: 106

Date of reference: 2012

OER

There are a number of different terms and definitions used to describe OER. But the one often quoted is a modified version of the original UNESCO definition: 'OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property licence that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, and any other tools, materials, or techniques used to support access to knowledge' (Atkins, Brown, and Hammond, 2007, p. 4).

But this definition implicitly favours resources created for an educational purpose and in so doing also leans more towards teachers who want to revise or repurpose resources than students who simply want open access so they can study using these resources online (Lane, 2010).

Distance and open education

OER have reignited interest in how distance and open education might increase access and participation in tertiary education. However, 'open' does not mean that there are no entry criteria. Rather, openness has been interpreted by institutions to mean flexibility in delivery, scheduling and even in how programmes are designed and structured. Supported by open licensing regimes (particularly Creative Commons), OER can provide even more flexibility and freedom for students and increase their control over the learning process.

Institutional mission and widening participation in European distance teaching universities

In the UK, most institutions participating in the publicly funded OER programme were more concerned with the technicalities of publishing OER and how OER could assist their staff and students than with the scope of OER to help with access (Osborne, 2003). Institutions also want to use OER as a key contributor to their recognition of prior learning and credit transfer policies and practices. New forms of credentialing for informal study, such as badges, are also being trialled.

The European Association of Distance Teaching Universities (EADTU) has been working with UK and other European institutions since 2006 on developing strategies for publishing and using OER. This work has been funded by the US-based William and Flora Hewlett Foundation and more recently by the European Commission (EADTU, 2011).

The UK's Open University OpenLearn initiative has shown that students (as individuals or in groups) have been able to use OER to undertake informal and non-formal study for interest and for particular work-related needs, and also to help orient or prepare them for tertiary study. The role of formal or informal organisations or groups that act as intermediaries between the OER and the students has often been crucial to success.

But measuring the impacts of OER is very challenging and the subject of much debate and activity, because engagement by students with them is so open and difficult to track and only participation in formal study is measured. There is also the question of how much formal and informal study constitutes engagement or participation.

Evidence is typically anecdotal or from small, qualitative studies (Masterton and Wild, 2011). And despite their relative longevity, only a very small proportion of higher education institutions are involved with publishing OER. And it is only since about 2008 that there has been any significant acknowledgement that OER can play an important role in widening access and participation in tertiary study. Despite these issues, a key finding of this review is that non-students are using the informal learning opportunities made available through OER as a bridge to formal study or as part of a wider set of lifelong learning activities.

How OER support lifelong learning

Author: Lane, A.

Reference number: 107

Date of reference: 2013

Introduction

The Open Educational Resources (OER) movement is still dominated by higher education institutions publishing their own resources. Much of the discussion and debate about the potential value of OER has centred on their benefits to institutions and their staff and students (McAndrew, Santos, Lane, Godwin, Okada, Wilson, Connolly, Ferreira, Buckingham-Shum, Bretts, and Webb, 2009; Lane, 2011; Masterton and Wild, 2011).

OER do provide an opportunity for institutions to showcase their teaching and learning more widely. And staff and students from other institutions can and do avail themselves of these OER to support their own teaching and learning (Massachusetts Institute of Technology Open Courseware, 2006; Lane, 2010). In addition, OER can be used to support workplace learners who need just-in-time knowledge or skills to further or support their work and careers. But a lack of data makes it difficult to accurately assess the contribution of OER to lifelong learning (Bacsich, Phillips, and Bristow, 2011).

What can OER offer lifelong learners?

The key issue is whether it matters to learners if an educational resource is OER or not. In practical terms there is often little difference. This is because whether or not they have copyright restrictions in place learners will download and use them for their own purposes. The copyright holders, rather than the individual users, tend to pursue websites that allow this to occur on a significant scale. Weller (2010) has coined the terms ‘little’ and ‘big’ OER. This differentiates OER on the basis of their size and complexity, both of which impact on how learners use them.

But most institutions only provide OER created by teachers for teachers. These are useful for confident learners who are familiar with tertiary study, but less so for students with lower levels of educational attainment. Materials designed for self-study are more expensive to produce. The most widely used OER are those that most closely resemble traditional delivery. However, these do not assist self-supported learning (Lane and Law, 2011). Paradoxically, it appears that OER that are most useful for self-supported study are the least useful for teachers and developers.

The most obvious use for OER in a lifelong learning context is to support personal interest learning, which may or may not lead to more formal study of some kind. People are using OER to mix formal and informal learning in a complex profile of activities (McAndrew et al., 2009).

This non-formal or informal learning that is achieved through OER can supplement or replace institution-based formal learning. This is where learners are using institution-based learning from a variety of providers combined with non-formal learning experiences into a package that they expect will be acceptable to credible professional organisations such as universities or their peers in education or work contexts.

How will lifelong learners know about the quality and reliability of the OER they use?
Currently, the quality of OER is most often defined by the provider through their normal quality assurance processes. But in other cases this determination is made by the individual and based on whether it meets their requirements. The views of experts, or of large numbers of people using available ratings schemes, can also help individuals assess the quality of OER.

Many in the OER movement are looking at the different ways quality could be determined for users, especially for non-institutional resources. Examples of these non-institutional OER quality assurance processes are the MERLOT and Connexions OER repositories.

MERLOT uses a traditional peer review mechanism before publication and for post-publication user rating and comments (although these can be sporadic). In contrast, the Connexions repository only judges resources post-publication through endorsements from an authoritative body; an affiliation perspective from an institutional content creator who has not had the content reviewed; and user ratings. And initiatives like the OERu carry institutional authority.

Open education research: From the practical to the theoretical

Authors: McAndrew, P., and Farrow, R.

Reference number: 121

Date of reference: 2013

Six stages of OER development and implementation
Based on the UK Open University's OER model (OpenLearn), a six-stage description of potential work was developed: 1) legal; 2) practical; 3) technical; 4) pedagogic; 5) economic; and 6) transformative. The first two stages can use existing schemes such as Connexions from Rice University and Carnegie Mellon University's Open Learning Initiative. In respect of sustainability, Open Learn used additional funding for projects that required the dissemination and sharing of their materials, attracted new learners, and brought in new content for existing courses.

While it is too soon to tell if OER have transformed Open University, they have changed the way Open University collaborates with other organisations and have had a significant impact on mainstream production techniques and approaches to research. But if OER are to have a transformative impact at a macro level, support is needed for two main assumptions: firstly, that OER contain transformational elements; and secondly, that these elements have educational merit.

Key challenges of OER (OLnet Framework)
The key challenges for OER can be categorised as persistent challenges (i.e. copyright, technology and access), sticking points (i.e. quality, sustainability and reuse), underlying challenges (i.e. cost/benefit, impact and policy – although these can be addressed by applying research to increase understanding and take-up), and emerging or contemporary challenges (i.e. open assessment, culture, and advocacy).

Is the 'resources' part of OER solved?
The Creative Commons licensing scheme has played a critical role in the growth of OER. As a result of the scheme, licensing remains the least contentious and most practical way of identifying OER. But the 'openness' of a particular OER is contextual, and not necessarily a feature of the resource itself.

Assessment and evaluation
The lack of a viable assessment model is a central issue for a number of OER providers who operate outside (or parallel to) traditional institutional boundaries, including the Peer 2 Peer University and the Khan Academy. The Massachusetts Institute of Technology (MIT) will offer certificates to students who complete courses offered through its OpenCourseWare programme.

However, a fee will be charged for accreditation (MIT, 2011b) and MIT will not be the awarding body for any credits obtained through the OER model. This disaggregation of services is at the heart of the planned OER university (OERu, 2012), which is a consortium of established institutions that will accredit learning from OER.

Technological infrastructure

One of the central challenges faced by the OER movement is the development of an appropriate supporting infrastructure. This is because, in practice, parallel systems have emerged for formal, institutional, and informal general learning. This reflects the tensions that govern institutional use of OER.

Weller (2011) has made a distinction between 'big' and 'little' OER. Big OER refers to funded projects, institutions, and collaborations that have substantive outputs such as courses, learning environments, lectures and textbooks. In contrast, little OER often refers to learner-generated products that include images, presentations, video clips, and notes. Big OER may be more useful for learners because they offer a more complete and structured solution than little OER.

JISC/HE Academy OER programme: Phase 3 synthesis and evaluation report

Authors: McGill, L., Falconer, I., Littlejohn, A., and Beetham, H.

Reference number: 122

Date of reference: 2013

Introduction

The Joint Information Services Committee (JISC)/Higher Education Academy (HE Academy) Phase 3 OER programme priorities were grouped around four themes:

- Theme A: Extending OER through collaborations beyond higher education.
- Theme B: Exploring OER publishing models through collaboration with commercial publishers and using a range of openly licensed collections of materials.
- Theme C: Addressing sector challenges by supporting emerging forms of learning and accreditation.
- Theme D: Enhancing the student experience by drawing on learner-produced materials.

Summary of key lessons learned

There is evidence that institutions that have been involved in several phases of the OER programme's initiatives have increased awareness and staff competence and more developed infrastructure to support open educational practices. There is less evidence that this is transferable outside of individual institutions. Making OER more sustainable and embedded relies on individuals and communities disseminating their practices further within their own organisations.

There is also evidence that adopting an open course approach can have significant positive impact on the student experience and a transformative impact on how teachers perceive their roles. Collaborative approaches and collective action offer successful strategies to support open education practices.

Legal constraints and lack of knowledge about what is permissible remain the biggest barriers to adoption of OER. Other major barriers include time constraints, concerns about pedagogic fit, and a lack of digital literacies and confidence in adopting OER. Reuse of OER was hindered by format choices or barriers associated with the platform used. Key enablers of the adoption of OER include the use of champions to promote them, financial incentives, and supportive institutional policies and procedures.

Encouraging open partnerships within an institution is challenging because it requires significant change in both culture and practice for support teams and subject-based faculties.

This also applies to open partnerships across institutions, but it can reap substantial rewards. Focusing OER initiatives within one faculty or department can often be easier to manage because there may be at least some agreement of accepted pedagogic approaches and intentions, and potentially a culture of sharing may exist to some extent.

Involving intended user groups in the development and testing of OER can ensure that they are pedagogically and technically accessible and improve their quality. However, accessibility is not merely technical interoperability or appropriate licensing, but is a complex mix of factors that take time, consideration and experience to resolve.

Projects typically focused on the requirements of their intended audiences had an impact on the OER content, presentation, organisation and hosting arrangements. While this increases senior management and staff buy-in, it can actually have negative impacts on wider use and does result in some OER being less accessible, which presents a very real tension for funders of OER initiatives. For example, context-specific OER are unlikely to be able to be used beyond their original purpose(s) and audience(s).

The benefits from OER for institutions include: increased capacity to support remote students, enhanced reputation, efficiencies in content production, and making niche subjects or courses more sustainable by sharing them across networks.

Further research
Further research should focus on OER and accessibility in terms of educational design. Further research also needs to be conducted to ensure that those with poorer educational facilities or who do not have staff using OER can still benefit from them.

Open Educational Resources university: An assessment and credit for students initiative

Authors: McGreal, R., Mackintosh, W., and Taylor, J.

Reference number: 123

Date of reference: 2013

Problem definition
The problem is not that individuals are free to learn from OER and other web-based materials, but that they cannot readily have their learning assessed nor can they subsequently receive appropriate academic recognition for their efforts. In addition, the complexities of credit transfer and course articulation call for a collaborative networked solution for addressing transnational online learning and credentialing.

Proposed solution
The OERu aims to establish a collaborative network where assessment and credentialing services can be provided by participants on a cost-recovery basis or funded through their respective ministries of education or other external sources. Quality assurance and institutional accreditation are essential to OERu's success.

To achieve its objectives, the OERu will leverage the expertise of large-scale distance institutions and refine recognition of prior learning protocols. It has been established to meet the forecast global demand for tertiary education because OER allow global learning and local accreditation. And OERu can provide this accreditation at scale. And there is now a vast array of open access learning materials including those available from the OpenCourseWare Consortium and the UK's Open University OpenLearn initiative.

The OERu has the following core components: OER collaboration network, educational institution services, and OER support infrastructure. Learners can choose to enrol at institutions, or learn from internet-based OER or from courses supplied by the OERu consortium.

Initiatives
The project has been sub-divided into a number of initiatives including Open Curriculum, Open Design and Development, Open Pedagogy, Open Student Support, Open Assessment Services, Open Credential Services, Open Business Models, and Open ICT Infrastructure. The OERu now has 20 participating institutions, most of whom are universities,[48] but most New Zealand participants are polytechnics. The first qualification to be offered through the OERu will be a Bachelor of General Studies with specific courses to be developed later.

Giving knowledge for free: The emergence of Open Educational Resources

Author: OECD

Reference number: 141

Date of reference: 2007

What are OER?
This report's definition of OER is 'accumulated digital assets that can be adjusted and which provide benefits without restricting possibilities for others to enjoy them' (p. 11). Openness refers to being freely and readily available via the internet and with as few restrictions as possible, whether technical, legal, geographical or price barriers. The resource should also be able to be modified and adapted by the end user. In this report OER refers to courses or learning objects.

Methodology
The report used several papers commissioned from experts. Small expert meetings were held and wider feedback was sought through an internet forum. Desk-top research to locate relevant studies was also undertaken, and a web-based questionnaire and higher education institutional case studies were used.

Site visits were arranged and the relevant institutions were selected on the basis of their actual use and production of OER and the experts' familiarity with the specific circumstances in their country. Australian, Canadian, UK, and US institutions were visited.

Who is using and producing OER and how much?
While definitive numbers are not available, the report states that there has been a rapid expansion in OER projects and resources. These are both individual institutional efforts and consortia such as MERLOT and Open Learn. While English is the dominant language, the number of non-English OER is rapidly increasing. Institutional efforts typically derive from those that are well-reputed internationally or in their home countries, rather than from organisations that are unknown or have low status.

Why should governments be involved? And why are institutions participating?
There are three arguments for governments to support OER projects. Firstly, they can help widen participation in higher education. Secondly, they can be an efficient way of promoting lifelong learning. And finally they can bridge the gap between non-formal, informal and formal learning. However, governments have to combine the encouragement of efficiency and excellence with the promotion of equity.

[48] The participants are: Athabasca University (Canada), Dr Babasaheb Ambedkar Open University (India), Empire State College – SUNY (New York), Excelsior College (US), Kwantlen Polytechnic University (Canada), Southern New Hampshire University (US), Thomas Edison State College (US), Thompson Rivers University (Canada), Universitat Oberta de Catalunya (Spain), University of Glamorgan (UK), University of Canterbury (NZ), University of South Africa (South Africa), University of the South Pacific (Fiji), University of Southern Queensland (Australia), University of Wollongong (Australia), Nelson Marlborough Institute of Technology (NZ), Northland Polytechnic (NZ), Open Polytechnic (NZ), Otago Polytechnic (NZ), Unitec Institute of Technology (NZ), Waikato Institute of Technology (NZ), BC Campus (Canada), and the OER Foundation (NZ).

The UK government directly supports OER through their Joint Information Services Committee agency. And the Canadian province of British Columbia (BC) has an OER initiative as part of its BC Campus,[49] which has direct government support, both financially and politically.

Institutions typically offer six reasons for being involved in OER projects, which include: an obligation for institutions to leverage taxpayers' money more effectively, quality improvement, reduced costs of content development, and enhancement of their reputation. Institutions need to consider the types of resources they will offer, the media formats in which these will be shared, and the types of end user reuse that is most likely to help the project meet its goals. They also need to find and use non-monetary incentives to engage as many participants as possible.

How can OER projects be sustained long-term?
The costs involved in OER projects vary greatly. The Open Learn initiative launched by the UK's Open University had a budget of almost US$5 million for its first two years. The Massachusetts Institute of Technology's OpenCourseWare initiative has an annual budget of US$4.3 million. In contrast, the Stanford Encyclopaedia of Philosophy costs roughly US$190,000 per annum (Zalta, 2005).

The report suggests a number of cost recovery models that institutions can implement to ensure the long-term sustainability of OER projects. These are the:

- **replacement** model, where OER replaces other uses
- **endowment** model, where project funding is provided from an external source
- **segmentation** model, in which the institution offers value-added services to target audiences and charges them for these services
- **conversion** model, where users are converted into paying customers
- **membership** model, which is based on paying members
- **voluntary support** model, which relies on fund-raising campaigns
- **contributor pays** model, in which the contributors pay the cost of maintaining the contribution, which the provider makes available for free.

OpenCourseWare Consortium

Reference number: 144

Date of reference: 2013

What is the OpenCourseWare Consortium?
The OpenCourseWare Consortium comprises hundreds of higher education institutions and associated organisations, including government agencies.[50] It serves as a resource for starting and sustaining open courseware projects, as a coordinating body on a global scale, and as a forum for the exchange of ideas and future planning. The Consortium's materials are organised as courses, but also often include course planning materials and evaluation tools as well as content, and they are free and openly licensed, accessible to anyone, anytime via the internet.

Open Educational Resources Commons

Reference number: 145

Date of reference: 2013

What is OER Commons?
Supported by the William and Flora Hewlett Foundation from the US, OER Commons is an ISKME[51] project that was launched in 2007 to support and build a knowledge base around the

[49] An inter-institutional collaboration of 26 institutions – refer to reference 15 in the Canada chapter above.
[50] These include the University of Southern Queensland from Australia, Athabasca University from Canada, the Massachusetts Institute of Technology and Tufts University from the US, and the Joint Information Services Committee and Higher Education Academy from the UK.
[51] A non-profit institute, whose full title is the Institute for the Study of Knowledge Management in Education.

use and reuse of OER. OER Commons has forged alliances with over 500 major content providers.[52] The project provides access to a large number of vetted and fully indexed OER, and develops, facilitates and evaluates educational programmes. It defines OER as teaching and learning materials that can be freely used and reused without charge.

The open courseware movement in higher education: Unmasking power and raising questions about the movement's democratic potential

Authors: Rhoads, R. A., Berdan, J., and Toven-Lindsay, B.

Reference number: 161

Date of reference: 2013

Introduction
One of the sub-sections of the OER movement is the OpenCourseWare (OCW) movement. Most notable among the various OCW initiatives is the Massachusetts Institute of Technology's (MIT) OCW project. Launched in 2001 this initiative saw MIT make all its undergraduate and postgraduate materials freely and openly available on the internet. Other important initiatives in this context include the AllLearn[53] and Fathom consortia-based efforts.

The problem of epistemology
OCW materials as cited in the research literature point to a preponderance coming from the science disciplines. If course content in the humanities and social sciences is discussed in the OCW literature, it is more often simply in terms of recorded lectures by distinguished professors. The wider implications of this narrow focus of OCW materials are rarely raised in the literature. This suggests that course content that is complex in knowledge, political or cultural contexts is being excluded.

The problem of pedagogy
Despite the potential of the OCW movement to support more active and collaborative pedagogies, the vast majority of its materials are predicated on transmission type pedagogies, where knowledge is 'given' by teachers to students. But courses that incorporate technologies that support quality pedagogy are very expensive to develop, with the Carnegie Mellon OCW initiative initially costing US$1 million per course and even at the time of writing being US$500,000. And there is no analysis on how one becomes a producer or user of the information and knowledge generated by the OCW movement.

The problem of hegemony
Most OCW materials are produced by staff from elite institutions. There is a lack of attention in the OCW literature to marginalised populations, most notably in terms of their potential unequal access as both producers and users of course content. The literature also does not question whether or not this knowledge is actually relevant and useful for them.

The Open Education Resource university

Reference number: 184

Date of reference: 2013

Summary
The Open Education Resource university (OERu) is a collaborative venture involving a number of institutions from New Zealand, Australia, Canada and the US (see reference 117 above for

[52] These include institutions such as Harvard University, the University of California, and the Massachusetts Institute of Technology from the US, the UK's Open University, and Australia's University of Southern Queensland, and agencies including the US Environmental Protection Agency.
[53] AllLearn involved Oxford, Princeton, Stanford and Yale.

further details). They are exploring how learners can use OER to obtain degree-level qualifications. However, OERu does not in and of itself confer awards; rather it works in partnership with accredited institutions to provide credit for OER learning on the way to awarding credible credentials.

How this is intended to work in practice can be summarised as follows: 1) Learners access OER courses; 2) they receive support via an international volunteers' network; 3) their learning is assessed by participating institutions; 4) the participating institutions grant credit for courses; and 5) students are awarded a credible degree or credential.

The OER university is supported by three broad categories of initiatives: 1) open collaboration; 2) OER support infrastructure; and 3) institutional services, which refer to the initiatives that participating institutions will provide on a cost recovery basis. Within these initiatives there are a number of projects including teacher professional development, information on copyright and licensing, and assessment and formal accreditation of open digital learning through community service approaches.

Into the wild – Technology for open educational resources: Reflections on three years of the UK OER Programme

Authors: Thomas, A., Campbell, L. M., Barker, P., and Hawksey, M.

Reference number: 188

Date of reference: 2012

Introduction

In the UK the first large-scale OER initiatives were launched in late 2006 when the UK's Open University launched Open Learn. Between 2009 and 2012 the UK's Open Educational Resources (OER) Programme was jointly run by the Joint Information Services Committee (JISC) and the Higher Education Academy, with funding from the Higher Education Funding Council for England.

JISC has being supporting similar initiatives since at least 2002. While there has been considerable progress in developing open access institutional repositories, there was arguably less success in using these repositories to support and facilitate access to OER.

The UK OER Programme

The UK's OER Programme defines OER as 'teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others'. They include full courses, course materials, modules, and textbooks.

The programme consisted of three phases. The first phase ran from 2009 to 2010 and received UK£5.7 million, which was allocated to 29 projects. As well as aiming for maximum output and distribution of OER, this phase encouraged projects to work towards the modification of institutional policies and processes so that OER release would be an expected part of the educational resources creation cycle.

Phase 2 ran from 2010 to 2011 and received UK£5 million, which was allocated to 23 projects focusing on the release, use and discovery of OER. To further support the programme, CETIS and JISC commissioned a series of small additional projects to explore specific technical issues. The third phase ran from October 2011 until October 2012 and covered a wide variety of themes, including the evolution of institutional policy to support the use, development and cultural acceptance of OER as part of everyday educational practice.

JISC's UK£5.4 million Content Programme, which ran from 2011 to 2013, funded 23 projects focused on mass digitisation, clustering of existing digital content, and digitisation for OER.

As the programme progressed, it became apparent that there was no systematic data being collected about learners' attitudes towards the use of OER, either for self-directed learning online, or for more formal learning mediated by teachers. Barriers to their uptake of OER identified included lack of skills to locate and use OER effectively, an unwillingness to seek support from experts such as librarians, and publishers' restrictions on materials.

Very early on in the programme it became clear that projects gravitated towards systems and technologies they were familiar with and already had in place. But it was a noticeable trend that projects used multiple platforms to support different functions such as preservation and dissemination. And many of these platforms were Web 2.0, such as YouTube, which have much wider reach than institutional repositories and so attracted larger audiences. They also tend to offer additional features to users.

However, there was relatively little use of institutional systems for releasing OER. One of the major repositories used was Jorum, the national repository funded by JISC from 2002 to support the sharing of teaching and learning materials among the UK's institutions. But other major (internationally based) repositories such as Merlot and OER Commons were not used at all.

Overall evaluation
Being able to repurpose OER so they are more appropriate for the user or simply to improve their quality is not well supported by existing arrangements. And the ability to create aggregations of OER by bringing together resources from several dissemination platforms is also not well supported. This means that it is still difficult to produce a favourable view of the resources released through the UK's OER Programme.

State-of-the-art in open courseware initiatives worldwide

Author: Vlădoiu, M.

Reference number: 195

Date of reference: 2011

Introduction
2011 marked 10 years since the Massachusetts Institute of Technology (MIT) launched its OpenCourseWare initiative. The project was set up jointly by the William and Flora Hewlett and Andrew W. Mellon Foundations along with the Ab Initio Corporation and MIT, and aimed to make course materials and content widely available via the internet. By 2010, 2,000 courses were available through the MIT initiative, covering a wide range of tertiary and secondary subjects and topics. Typically these materials are made available through the Creative Commons licensing scheme.

OpenCourseWare Consortium
The wider OpenCourseWare Consortium (OCW), whose members comprise than 250 universities from around the world, has made available more than 13,000 courses in 20 languages. Its website reported visitor numbers of 100 million in 2010 (Myiagawa, 2010; About OCW Consortium, 2011). It plays three major roles: 1) as a supporting resource for starting and sustaining OCW projects; 2) as a coordinator for the global OCW movement; and 3) as a forum for exchanging ideas and planning its future.

Its members are institutions, associate consortia, and affiliates. Most of its members are from the US and most visitors are from North America or Europe/Asia. Most are self-learners or students who mainly use OCW to enhance their personal knowledge or complement existing study (students) or to keep up to date with their areas of professional or personal interest (self-learners). Most report that materials are easy to locate and are high quality and relevant.

Other OCW consortia-led initiatives
Rice University has established a supporting consortium for its OER project which includes institutions from the US as well as private foundations and non-government organisations. OER Commons is a project run by the Institute for the Study of Knowledge Management in Education and is supported by the William and Flora Hewlett Foundation. OER Commons has also established partnerships with over 120 major content providers[54] and typically makes its resources available under a Creative Commons licensing scheme.

It provides a website that links to over 30,000 OER via a database. To be included in this database OER must meet predetermined quality and authenticity criteria. The OER here range from full courses to specific activities.

13 MASSIVE OPEN ONLINE COURSES (MOOCS)

Changing course: Ten years of tracking online education in the United States

Authors: Allen, I. E., and Seaman, J.

Reference number: 2

Date of reference: 2013

Methodology
The survey comprises 62.3 percent of all degree-granting institutions in the US but does represent 83.3 percent of all their enrolments. These responses were merged with the data from the previous survey years (2003 to 2011) for examination of changes over time. Institutional descriptive data came from the College Board Annual Survey of Colleges and from the National Center for Educational Statistics' IPEDS database.

Key findings
Only a small minority of higher education institutions are providing MOOCs (2.6 percent). There are a larger number who are in the planning stage (9.4 percent). But most institutions remain undecided about whether or not they will offer MOOCs (55.4 percent). And 32.7 percent state that they have no plans to offer MOOCs.

Research universities that are publicly funded are more likely to offer MOOCs, while the for-profit universities are most likely to be in the planning stages. Larger institutions are more likely to offer MOOCs or be in the planning stages to do so. Most institutions offering or planning to provide MOOCs intend doing so as part of a collaborative venture. Large and medium-sized institutions are more likely to think it will attract students than smaller providers.

But only 43.3 percent of institutions believe that MOOCs will attract students. Institutions that already offer online courses were more likely to offer MOOCs. Institutions that do not have online provision are more likely to state that they will never offer MOOCs. Institutions offering MOOCs are more likely to think they are sustainable than those who are not.

Academic leaders remain unconvinced that MOOCs represent a sustainable method for online provision and are concerned that their credentials will cause confusion about degrees. However, they do believe that MOOCs provide an important means for institutions to learn about online pedagogy.

[54] For further details on these content providers please refer to reference 145 above.

Promise and/or peril: MOOCs and open and distance education

Author: Anderson, T.

Reference number: 5

Date of reference: 2013

Massive
Massive refers more to the potential of MOOCs to scale up, rather than their actual numbers, as some have only a few hundred students (however, others have over 100,000).

Open
Openness can refer to content, access, or no cost provision (Peter and Deimann, 2013). But it can also refer to an open market where for-profit providers who were previously restricted or unable to offer tertiary provision can now do so via MOOCs (Gilde, 2007).

Online
This is probably the least contentious aspect of MOOCs. However if sufficient students are in (or close to) the same location they can form offline study groups. At a more formal level, some institutions encourage this. This moves MOOCs from a fully online to a blended delivery model.

Course
There is no consensus amongst jurisdictions about what comprises a course. The UK/European definition would see a MOOC treated as a single course regardless of size. In contrast, the North American view would see only the larger MOOCs as courses.

MOOCs pedagogy
The most popular MOOCs (referred to here as x-MOOCs) are often criticised for using transmission pedagogies (Davidson, 2012). But the author notes that this type of pedagogy is widely used in paper-based distance education with some success.

c-MOOCs create scalability by substituting teacher-student interactions with student-student interactions. Provided these student-student interactions are at a high enough level, they can effectively replace teacher-student and student-content interactions. Having two or all of these interactions at a high level would cost more in terms of money and time so MOOCs could be used to reduce these interaction costs.

Students
Many MOOC participants have no intention of completing their course. MOOC students are typically passive participants and may be enrolled in MOOCs for the novelty value. Large numbers do not even start the course proper. While the low numbers of completions could be considered a failure, this may not be the view of those students who did pass or others who obtained the learning they wanted or needed. And students in MOOCs are much less likely to use the full range of institutional support services, which does not add to, and may even decrease, institutional costs.

Credentials
Many of the top-ranked universities offer MOOCs. However, they also make it clear that completing these is not the equivalent of obtaining one of their degrees. Alternatives are being created, including badges, certificates of completion, and third party credentialing. Typically, commercial providers are trying to deploy credible alternatives, while on-campus institutions are trying to protect their existing provision.

Business models
Two features of MOOCs have attracted the most concern: the lack of a clear revenue model to justify expenses, and a for-profit mindset and modus operandi being more widely introduced into higher education. While learning analytics may be used as a revenue source, they can also

materially improve student outcomes (Buckingham Shum, S. and Deakin Crick, R., 2012). MOOCs' ability to provide low-cost education solutions provides a strong rationale for ongoing state support.

Implications for open and distance education institutions
MOOCs serve as vehicles for institutions to experiment with and seriously engage in online provision. They also compel institutions to examine their models and methods of accreditation and could provide useful professional development. But MOOCs can also be a threat to institutions because they can unbundle educational services and offer much cheaper access to tertiary education.

An avalanche is coming: Higher education and the revolution ahead

Authors: Barber, M., Donnelly, K., and Rizvi, S.

Reference number: 9

Date of reference: 2013

Summary
There has been a rise in MOOCs since 2011. While distance and online learning are not new, what is new is the improved quality of online delivery through technology and design and some of the teachers that MOOCs offer. There is some early evidence that online delivery is higher quality than traditional delivery, not least because all the interactions are explicit and can be analysed and improved upon, rather than taking place behind lecture room doors.

Some commentators think MOOCs represent a 'tipping point' for universities, because they are at the right place and at the right time, with a capable and receptive audience. In response to US efforts, the UK has created the FutureLearn consortium, which is led by the Open University, but has content from other institutions.

This report also argues that non-degree credentials are becoming more relevant and accepted by employers and the wider public. As an example, they note that the professional networking site LinkedIn can provide an actual reflection of an individual's skills and experiences rather than a degree, which is a proxy for this. MOOCs also open up curricula and their associated courses to a global audience. This has led commentators to label them as the 'Napster[55] moment' for higher education. And students are increasingly accessing course content and materials online.

The three major MOOC consortia are Coursera, Udacity and edX. Coursera, the largest of the three, originated from Stanford University and already has over one million enrolments. They have also partnered with the American Council on Education to offer credit for their MOOC provision. edX and Udacity are using Pearson's global examination network of some 4,500 centres to administer MOOC examinations.

MOOCs could be customised to meet local requirements. For example, a professor in China could use an edX MOOC on undergraduate economics to develop a Chinese version using local case studies. Universities could also focus on niche provision not covered by MOOCs. And while MOOCs can provide content, they cannot check easily whether or not students are developing the wider attributes that will ensure success in the 21st century labour market or society like a good teacher can.

About two-thirds of US chief academic officers believe that online education has the same or better quality than traditional delivery. And while employers remain sceptical, this is likely to change. This is part of a wider trend towards competency-based education, which is a core objective of the Western Governors University initiative (see reference 190 in the US chapter above for further details). And Wisconsin University is offering a degree that can be achieved simply by demonstrating competence in a series of tests that can be done online and at home.

[55] This is a well-known music sharing website that is widely credited with disrupting the music industry.

MOOCs could allow the elite institutions to extend their reach and influence by becoming the primary source of content and curriculum for other universities around the world. This would extend their reach far beyond the small global elite of students they educate directly. MOOCs raise some challenging questions for governments to consider: how do they ensure quality or recognise or accredit a degree from an online university based in another country or a MOOC? Should government be willing to pay a share of student fees in MOOCs? Is so, why? If not, why not?

Innovation in incapacity: Education, technique, subject

Author: Bartlett, A. J.

Reference number: 11

Date of reference: 2013

How transformative are MOOCs?
Butin (2012) argues that MOOCs will usher in 'an historic transformation both in the way education is delivered and conceived'. Downes (2005) calls these changes a 'social revolution'. And the changes wrought by MOOCs are being legitimised because of the involvement of elite institutions (Hill, 2012).

But these debates mask the critical issue, which is whether or not this is disruptive or an attempt to provide more stability to the change process (Long and Siemens, 2011; Peters, 2011; Roche, 2013). For example, while MOOCs claim to be transformative, their proponents also note that they are based on established distance learning models. Others who adopt a more process-oriented view see the real potential of MOOCs in the analytics they make available.

According to Bartlett, MOOCs are firmly in the thrall of the status quo. This results in the perpetuation of existing pedagogies and processes. In Bartlett's view, this will lead ultimately to its proponents adopting a cynical and defeatist attitude and MOOCs will not achieve the transformation that they desire or have advocated for.

Into the future with MOOCs

Author: Carey, K.

Reference number: 26

Date of reference: 2012

Summary
Elite institutions like Harvard are offering MOOCs when they have not previously had much of a presence in online education. Status anxiety is the main driver for elite institutions, so Harvard's move (as well as that of Stanford and others) is likely to see more elite institutions also offer MOOCs.

The author argues that, as a result, the future of MOOCs is assured and they will continue to be a presence in tertiary education. In the author's view, the interesting questions relating to MOOCs now revolve around finance, quality assurance, and most importantly credit. They believe that MOOCs will break the monopoly institutions have on accreditation. They think it is untenable that a high-quality MOOC cannot offer formal credit, while a mediocre course can offer this to underperforming students.

As a result, some institutions will start offering formal credit for MOOCs because of the marketing and enrolment opportunities this will present. There is also demand from students and their families for lower-cost tertiary education options and MOOCs provide that opportunity for institutions and governments. And some organisations such as Pearson will

specialise in assessing MOOCs, while others will offer similar services for student and teacher support.

Students will pay for these additional services because they incur higher costs, whereas the MOOC itself does not and economies of scale are more easily achieved. The current business model where all students pay for all services regardless of need is challenged by MOOCs. Institutions will need to re-examine exactly what value they provide to students, what it costs, and what price the market will bear.

How online learning affects productivity, cost and quality in higher education: An environmental scan and review of the literature

Authors: Carey, T., and Trick, D.

Reference number: 27

Date of reference: 2013

Minimising marginal costs via Massive Open Online Courses
The MOOCs infrastructure could lead to course offerings in which marginal costs for additional students declined to the point where new enterprise models for higher education became effective. Early MOOCs are now referred to as connectivist MOOCs (c-MOOCs) because they combined both scale and innovative teaching and learning approaches, where learning would be more student-directed and teachers would play more of an expert facilitator role.

The more recent (or x-MOOCs named after the edX consortium) have an even larger scale but, in contrast to c-MOOCs, they have adopted a traditional pedagogical approach. This reflects their different objective, which is to provide (at scale) open access to existing institutional resources. Regardless of the type, the scale of MOOCs[56] has led some commentators to view them as possible 'game changers' for higher education (Contact North, 2013).

Recent developments have expanded the MOOCs model and some of these are shifting them away from a fully online towards a more blended delivery (Grush, 2013). Other recent developments include:

- caps on no-fee students enrolled in MOOC-like credit offerings ("Little Open Online Courses", Kolowich, 2012)
- platform providers attempting to generate alternative revenue to maintain no-fees access (Kolowich, 2013)
- an institutional evaluation of tuition fees because OOCs are reducing some teaching-related costs (Kolowich, 2012)
- various efforts to translate MOOC participation into credit in higher education programmes (Jaschik, 2013; Kolowich, 2013).

These developments move MOOCs further away from their original objectives around quality, access and cost (Watters, 2013). The very low completion rates in MOOCs could be because many students simply have no intention of completing the course (Hill, 2013).

The dominance of MOOC provision by elite institutions ignores previous failures and also that research reputation does not necessarily translate into teaching quality (Loverude, 2003; Daniel, 2012). And by increasingly adopting conservative pedagogical approaches, MOOCs could lead to learners' capabilities not being fully developed.

Various predictions have been made about MOOCs, from their leading to a wholesale commodification of tertiary education to needing to adopt or adapt them to ensure institutional viability; or their ability to allow institutions to focus on their areas of speciality and attract increased revenue because they can aggregate demand on a much larger scale. Despite the

[56] Coursera has 2.4 million students from 196 countries (Smale, 2013).

difficulties of predicting the extent and nature of the impact of MOOCs, a consensus is developing that fully online learning has crossed an imprecisely defined threshold.

Aligning support with the student's individual learning needs

Many staff and students resist MOOCs because of their high student-teacher ratios and the subsequent reduction in learner-teacher interactions. However, these critics tend to overvalue traditional delivery and are unaware of the value of peer-peer and student-content interactions. But successful learners in MOOCs are atypical because they tend to be more self-directed and self-motivated.

Regardless of MOOC type, there is potential for low-cost options for students through the unbundling and differentiation of services. Cost savings generated by providing online support at scale can be used to provide the more intensive, on-campus support for the smaller numbers of students who require it.

Reaching global learners and traditional students

One early criticism of MOOC providers was their apparent ambivalence in seeking visibility for provision they did not want to accredit because it was seen as being suitable for their traditional student body. But MOOCs are now being explicitly used by these institutions to both increase their global presence and benefit their on-campus students. And other institutions, including community colleges, can also use MOOCs to serve their traditional students better.

The increasing visibility of instructional design

Failures in the MOOC environment become highly visible. It is unclear whether or not MOOCs' successes will be as visible. Much of the focus on MOOCs has been on the internet's impact on higher education. But another, less well publicised, aspect of scaling up teaching is the collection and mobilisation of teaching knowledge at scale.

Reputational capital from and for online learning

Much of the initial (and rapid) uptake of MOOCs by elite institutions raised fears that their chief motivation was not to be left out of an 'exclusive club'. But the increasing participation by other institutions has shifted the focus of MOOCs away from this exclusive club concept.

As a result of this widening of participation, apprehensions about non-participation in MOOCs have now shifted to whether or not institutions are visible to the wider public (including potential international students) and their positioning as innovative institutions. For example, the FutureLearn consortium of 17 UK universities led by the Open University has as one of its primary drivers 'writing the next chapter in the history of British higher education' (FutureLearn, 2012) and to compete more effectively with the US-dominated MOOC partnerships (Olds, 2012).

According to Hill (2012) 'the real significance of x-MOOCs…is that they are (leading to) the end of the status quo'. The key method in this transition is an acceptance that online learning is as good as traditional delivery. This transformation, though, will likely be fully realised by alternative developments of the existing x-MOOCs model that are currently being explored.

The challenge of scale

Reed (2012) believes that there should be a system-wide investment in MOOCs because of the expense and effort required for effective experimentation with them. Funding for US MOOCs has come from both private and government sources. Many US community colleges are sharing their existing resources or their development within a consortium and distribution across its members using commercial MOOC platforms. These efforts are supported by grants (of up to US$50,000) from the Bill and Melinda Gates Foundation.

Alternatively, three community colleges are partnering with the Western Governors initiative supported by a US$12 million grant from the US Department of Labor. These investments are regarded by the funding agencies as pilots from which many institutions can benefit by using the resources and learning from the results of the initial innovators. These types of 'system'

benefits are at the core of emerging state strategies to leverage emerging developments across public higher education institutions.

These include the University of Texas system, which has established the University of Texas Institute for Transformational Learning to serve as a catalyst for a state partnership with edX for MOOC experiments. The FutureLearn initiative is also supported by the UK government because it views it as an initiative of national importance (FutureLearn, 2013).

Implications for institutions

According to Weitzer (2012), MOOCs 'offer institutions the opportunity to realign their costs so that they can apply resources to strategic priorities'. Weitzer, Staton (2012), and Marks (2012) argue that, while MOOCs cannot provide rich and frequent teacher-student interactions, they do offer the ability for classroom time to be used solely for interactions that achieve teaching and institutional goals.

Despite these benefits, the consensus from this environment scan is that what cannot be achieved at scale and with technological mediation are the most critical aspects of higher education (Marks, 2012; Staton, 2012; Weitzer, 2012), including teaching highly complex tasks and models of thinking and doing that are demonstrated by the teacher to foster student development (Staton, 2012).

The crisis in higher education

Author: Carr, N.

Reference number: 28

Date of reference: 2012

Introduction

Like their paper-based distance education predecessors, MOOCs are seen as providing a superior educational experience compared with traditional delivery. MOOCs are also seen as being able to dramatically increase the access to tertiary education for students who previously were excluded. According to their proponents, MOOCs will also increase the quality and productivity of teaching.

The excitement over MOOCs coincides with growing dissatisfaction in the US with degree-level education, from mounting concern about costs for institutions and students to low retention rates, as well as whether or not it actually enhances core skills including critical thinking. But many remain unconvinced about MOOCs. Their critics argue that, at best, MOOCs will distract institutional leaders, and at worst will lower the overall quality of provision. They also point to previous hype and largely unmet expectations of paper-based distance education, where many did not complete and the quality of teaching was lower than anticipated.

Rise of the MOOCs

Initial enrolments in MOOCs have so far exceeded even the most optimistic institutional estimates, which has resulted in several consortia being created to exploit this growing demand. These consortia typically involve elite US institutions including Harvard University, Massachusetts Institute of Technology, Stanford University, Princeton University and the University of California.

Professor Robot

As well as being superior to traditional delivery, it is believed that MOOCs will deliver a superior experience to 'old style' e-learning, which consisted largely of videotaped lectures, because MOOCs provide activities that reinforce learning and increase student engagement. In addition, costs have fallen dramatically and much MOOCs content is freely available.

But delivering a course simultaneously to thousands will require a great deal of machine-generated automation. This includes grading, tutoring and moderating interactions. It will need to make use of learning analytics to gain insights into learning styles and teaching strategies. However, the benefits of more automated teaching and learning processes remain largely theoretical. Moreover, the essence of a university education lies in the subtle interplay between students and teachers that cannot be simulated by machines. And the full richness of face-to-face conversations is also not possible to capture online.

Flipping the classroom
MOOCs allow the possibility for on-campus lectures to become the venue for follow-up and deeper interactions. This is because the students will already have viewed the lectures online. But the high dropout rates associated with MOOCs make this proposition seem doubtful. The initial MOOCs had a course completion rate of approximately five percent. This highlights the difficulty of keeping online students attentive and motivated.

Many fear MOOCs will be incorporated into on-campus delivery without full consideration of their drawbacks, which means that they will not be rectified. These challenges will only increase if MOOCs are used to offer liberal arts courses where often teacher intervention and guidance are critical.

Making sense of MOOCs: Musings in a maze of myth, paradox and possibility

Author: Daniel, J.

Reference number: 39

Date of reference: 2012

Introduction
Daniel notes that there is a dearth of literature on MOOCs because of their immaturity and that much of what is available is often thinly disguised promotional type material (e.g. Koller, 2012), is practitioner-specific, or focuses on earlier efforts.

History of MOOCs
The term MOOC originated in Canada to describe an online course at the University of Manitoba. It was intended to be open to all who wished to participate, provided content through RSS feeds, and allowed students to use their own devices. Recent MOOCs have little to do with this vision and implementation. Daniel speculates that the recent upsurge in MOOCs-related activity may be the result of a 'herd instinct', with universities implementing x-MOOCs out of fear of being left behind by their peers and competitors.

The Massachusetts Institute of Technology (MIT) has recently used MOOCs as useful experiments that can establish how to improve teaching and learning overall. Stanford University is adopting a similar approach (Weissmann, 2012). But other institutions view MOOCs as a sideline rather than core business. This has led to a lack of attention to pedagogy, which is reflected in their poor course design and underlying teaching practices and processes. The desire to improve MOOCs is driven by a fear of loss of revenue rather than meeting student needs better (Young, 2012).

Low completion rates, completers, and cheats: early results
Initial course completion rates for the latest wave of MOOCs have been very poor. For example, in a MOOC run by MIT, which had 155,000 registrations, only 7.157 passed the course. And Coursera has had extensive student cheating within their MOOCs, which is caused in part by the peer grading system used (Gibbs, 2012). But the MOOC proponents point to these raw numbers and see success, because they believe it would take a significant number of years for this many students to pass these courses by traditional means.

Can x-MOOCs make money?

Publicly available documents from the Coursera consortium indicate that there is no clarity about how they will attract revenue. Potential revenue streams suggested include: students paying for some services, employers paying to obtain student performance records, selling the MOOC platform to other organisations to use for their own training purposes, and sponsorships.

According to Young, the options being most actively pursued are charging students for certification, and employee recruitment. But regardless of which option(s) are implemented, the most striking feature in these suggestions is that the organisation that is least likely to make money is the partner university. In fact, many are incurring additional costs to prevent plagiarism by signing agreements with Pearson to use their global network of testing centres (Kolowich, 2012a).

And Justin (2012) suggests that monetisation of the MOOCs is likely to have an adverse impact on the student experience. But publishers are more enthusiastic as they see an opportunity to increase both their reach and revenue.

Modest MOOCs that work

The Academic Partnerships (AP) programme launched in 2008 is an initiative from Best Associates (a merchant bank based in Dallas, Texas), where they work with about 20 public universities across the US to convert their traditional degree-level provision to an online format (Academic Partnerships, 2012b). For the services they provide they take 70 percent of the tuition fees, which are set by the members.

These online students now make up as much as 30 percent of their partner universities' total enrolments (Academic Partnerships, 2012a). And the success rates are substantially better, while students obtain a credible qualification. AP attributes their success to close collaboration with key institutional personnel, effective recruiting techniques that have allowed the participants' provision to be taken to scale, and robust student retention strategies.

MOOCs in perspective

While it is unrealistic for the current MOOCs commentary to examine trends from the late 1990s and early 2000s (or earlier), it is surprising that little reference has been made to the adverse experiences of some elite US schools with online learning in the mid-2000s. Vast sums of money were lost in these ventures, which were underpinned by an assumption that additional income could be generated by offering non-credit courses online (Walsh, 2011). The failure of these ventures was largely because they did not offer an opportunity to obtain a credible credential or even offer interactions with faculty.

Myths and paradoxes

One of the myths relating to MOOCs is that a university's brand is a surrogate for teaching quality. Many of the institutions involved in MOOCs gained their reputations in research, not teaching and learning. Quality assurance agencies internationally are typically concerned with course and qualification completion to protect students from poor practice and to ensure value for taxpayer funds.

Against this background, the course completion rates of around 10 percent for the current x-MOOCs would be considered disastrous in any other context. As Daniel notes, this is in part because of their novelty factor, which attracted large numbers of students who were not considering completion. However, this is unlikely to remain the case with a more purposeful cohort participating as the number of x-MOOCs increases.

In Daniel's view, the MOOC providers are not concerned about the high attrition rates. In contrast, well-established distance education providers are much more concerned about student retention, largely because of regulation and supervision by external bodies.

Certification

The central paradox in relation to x-MOOCs is the fact that even if a student is successful they do not get a formal credential or even credit (Hardesty, 2012; Touve, 2012). Daniel sees the most likely short-term solution to this problem as being learning analytics because they will allow students to have a complete record of what they have learned and mastered. According to Daniel, this means it would be 'intellectually reprehensible to make recognition of mastery conditional on unrelated processes'.

While holders of MOOC certificates can increasingly trade them for credit elsewhere, this can be expensive and is in addition to their efforts to obtain the MOOC in the first place. However, outside the US, conversion of non-university recognised learning to formal credits is much easier (Pannekoek, 2012). And the OERu initiative is also looking to address this problem (Taylor, 2011; Wiki Educator, 2011; Hill, 2012; OERu, 2012).

Pedagogy

Good distance education provision relies on teams of specialists assisting the subject matter experts (Bates and Sangra, 2011). With this support and the amount of content available, MOOCs could provide their students with better and more varied teaching than individual instructors could by themselves.

But as Bates (2012) points out, x-MOOCs' underlying pedagogies are based on outdated behaviourist pedagogies, which rely primarily on 'information transmission, computer-marked assignments and peer assessment'. Computers do not personalise learning. To do this in online learning environments requires active interventions and presence in the form of discussions, encouragement, and an understanding of a student's individual needs. Unsophisticated use of 'big data' is not learning analytics (Koller, 2012) but an effective means to rectify errors that should not have been in the course in the first place (Bates, 2012).

MOOCs: for what purpose?

According to Koller (2012), MOOCs are intended to make quality higher education available to the 'masses'. But Bates (2012) argues that MOOC providers may view MOOCs as 'second class' education that is suitable only for the 'masses' (Bates, 2012). According to Daniel, it is a myth to think that providing not-for-credit open online learning from the US will address the challenges of expanding higher education in the developing world.

Possibilities

While MOOCs could fail, as earlier similar ventures did, their scale is such that they are likely to survive in some form. Daniel envisages that MOOCs will have an important impact in at least one important respect, which is improving teaching. The x-MOOCs' underlying pedagogies are likely to change rapidly because of the diversity of approaches and experimentation that will occur.

And the media, student groups, and educational researchers will soon be publishing assessments of MOOC courses, which will quickly become league tables (Uvalić-Trumbic and Daniel, 2011). According to Daniel, this is the real revolution of MOOCs, because it means that institutions will need to put teaching and learning at the core of their missions. And these 'league tables' will mean that institutions that rate poorly will need to either exit or improve their performance.

The impact of MOOCs on higher education

Author: Dennis, M. J.

Reference number: 41

Date of reference: 2012

Introduction
Coursera includes institutions from the US, the UK, and Canada. It offers 200 courses to nearly 1.5 million students from 196 countries. Only a third of these students live in the US, with the majority living in India, China and Brazil. It is not inconceivable that MOOCs could increase university enrolments, because they are offered by globally recognised institutions.

The scale of these ventures means they have the potential to dramatically alter the academic landscape. This will be more likely if employers recognise MOOC credentials. However, even a completion certificate from a course offered by globally recognised institutions may have more value than a formal degree from less well known providers. And the author argues that newer branch campuses may already be under threat. Some students may also value the significant costs savings by completing a MOOC rather than a relatively expensive degree.

Agencies and governments
MOOCs do not fit into current accreditation models, but some states are already recognising and funding MOOCs, including Wisconsin and the Western Governors University initiative.

Conclusion
The efficacy and impact of MOOCs are unclear, as they are in an experimental stage. Questions remain, particularly around awarding credentials and cheating. Pearson is being used to mitigate the risk of cheating by undertaking assessments for MOOC providers.

MOOCs will supplement rather than replace higher education institutions. But they can solve some of the big problems in the sector such as unsustainable costs and business models, declining or static student participation, retention, and achievement, and increasing international competition. The author argues that this is why governments and their agencies should support MOOCs. They also need to be involved because MOOCs are likely to disrupt the traditional way institutions are managed and students have been taught.

Using m-learning and MOOCs to understand chaos, emergence, and complexity in education

Authors: deWaard, I., Abajian, S., Gallagher, M. S., Hogue, R., Keskin, N., Koutropoulos, A., and Rodriguez, O. C.

Reference number: 46

Date of reference: 2011

Methodology
This study adopts a case study approach. The researchers used data from the final survey of a MOOC that ran for six weeks and focused on m-learning. They were also participants in the MOOC. While they had 556 participants, only 40 completed the course and final survey. The authors define MOOCs as a complex system because they use external feedback to interact and self-organise (Bertuglia, 2005).

Transformation of the MOOC system
MOOCs can empower learners by giving them the ability to make decisions. They can also work on specified personal and professional projects and easily customise their learning environments. This is in stark contrast to tertiary education as it is currently offered, which is

focused on ‘centralization and bureaucracy and standardization (or uniformity)’ (Reigeluth, 2004, p. 8).

Emerging phenomena in MOOCs

The participants shared a common language of discourse (English), a common interest in m-learning, and a baseline digital literacy. This fostered diversity and allowed complex co-activities to be undertaken. The MOOC supported free interaction amongst participants, which established a critical point of idea interaction and a place for knowledge creation. Most survey participants obtained their m-learning knowledge from their peers in other fields of expertise. This suggests that a MOOC format involves learner groups who do not typically interact.

The MOOC had decentralised control because participants were in control of their learning and could put forward discussion topics for wider consideration. It was also demonstrated by participants establishing collaborative projects without external guidance or authority.

M-learning in the MOOC

Participants preferred using mobile devices to interact with the course materials because it meant they could do this at a time and location of their choosing. M-learning also allowed the learner to embed their own context, which personalised the learning path. Social media is central to a MOOC because without it students cannot co-create knowledge. The variety of web tools used to achieve this further underlines the complexity inherent in a MOOC.

Further research

The authors suggest further research could:

- investigate whether MOOCs are attracting a specific learner profile by examining the ethnic and socioeconomic breakdown of their participants and their intrinsic and extrinsic motivations
- determine design principles for MOOCs so they can effectively maximise their self-organising, self-referencing and knowledge-producing capabilities
- investigate the affordances of using m-learning and social media in a MOOC environment.

Whole lotta learnin’

Author: Doesburg, A.

Reference number: 47

Date of reference: 2012

Introduction

While MOOCs have been around since at least 2008, it was not until the elite institutions became involved that they gained widespread attention. Well-known consortia offering MOOCs include:

- Coursera – led by Stanford University but with more than 30 institutional partners
- edX – a joint venture between Massachusetts Institute of Technology, Harvard University, and the University of California’s Berkeley campus
- Udacity – run out of Stanford University.

The main rationale for MOOCs appears to be to make tertiary education more widely available to meet expected student demand. The MOOC at this point does not lead to a credential. But students can now sit tests (administered by Pearson) that will lead to this for a ‘modest’ fee.

While much MOOCs provision is in the computer sciences area, they are expanding rapidly. This is partly to do with their potential to reduce costs, which are escalating rapidly in higher education, particularly in the US. This trend is also part of a bigger picture whereby technology is increasingly seen as providing a potentially more student-centred learning experience.

The digital future

One of the key questions MOOC-related initiatives pose is why would/should students sign up for an expensive degree that is prescribed and delivered on-campus when its content is (largely) freely available online? The major counter-argument is that the traditional route is necessary to gain a credential. But increasingly the MOOC consortia are offering a credential that is generally in the form of a completion certificate or equivalent for a full qualification. 'Badges'[57] issued for completing a MOOC are now being recognised by some employers. But there are issues, in particular their non-interactive pedagogies and low completion rates.

New Zealand's MOOC movement

New Zealand university responses vary. The University of Auckland is committed to a blended approach where e-learning supports on-campus learning. At the time of writing, it was not considering a foray into MOOCs.[58] In contrast, Massey University[59] and the University of Canterbury are seriously considering either offering or participating in MOOCs.

But New Zealand institutions are participating in other online education initiatives. For example, the OERu initiative includes the University of Canterbury, Nelson Marlborough Institute of Technology, Northland Polytechnic, Otago Polytechnic, and the Open Polytechnic of New Zealand.

Its course content comprises Open Educational Resources, and partner institutions commit to coordinating tests and issuing credentials for each other. The Universities of Auckland, Waikato and Otago, as well as the Southern Institute of Technology, are using iTunesU (a tertiary education content repository hosted by Apple).

The success of MOOCs and online learning generally depends on their underlying pedagogies. Appropriate pedagogies obtain good results, but inappropriate pedagogies do not. Online learning requires a different and more specialised set of pedagogies. Established distance and online institutions have these sorts of support and teaching readily available, which gives them an advantage and makes them superior to current MOOCs provision.

Learned luddites

Author: The Economist

Reference number: 51

Date of reference: 2013

Summary

Some commentators hope that the internet will revolutionise higher education by making it cheaper and more accessible for the masses. But others fear this prospect. There are also fears that teachers in traditional delivery will be supplanted by video. And MOOCs are seen by these groups as being vastly inferior to traditional delivery.

Online provision reached 6.7 million students in 2011, and a third of students at traditional colleges took an online course as part of their degree programme. MOOCs are broadly similar: they cater to learners outside traditional structures, generally only offer certificates of completion, and can be used by, and assess, large numbers of students simultaneously.

In 2013 staff at Amherst College (which specialises in liberal arts) refused to teach MOOCs. Their peers at San José State University lodged a letter or complaint because they were encouraged to use a Harvard University MOOC, and even at Harvard, which has invested US$30 million; many staff are concerned about MOOCs.

[57] These also confirm the skills and knowledge students have obtained on the course.
[58] Although by the time this report was published it was in discussions to join FutureLearn, the UK-based consortium led by the Open University and supported by the UK government.
[59] Massey has now joined the Open2Learn MOOCs initiative being run by Open Universities Australia.

For example, in May 2013, 58 professors wrote to the dean of arts and sciences demanding greater oversight of MOOCs. This specific example is backed up by a recent study of faculty attitudes which found widespread scepticism about MOOCs, but also that staff who had taught them were far more positive about their quality. One of the major problems is teachers do not want to teach courses they have not created. And they are concerned about 'academic marginalisation'.

But some think academics are overreacting and liken MOOCs to an interactive textbook. While not every professor writes a textbook, all use them. And pre-recorded lectures and multiple-choice questions can lighten lecturers' workloads and act as a 'force multiplier'. While professors will eventually get used to MOOCs, according to these commentators they must first get over the 'fear factor'.

What campus leaders need to know about MOOCs

Author: EDUCAUSE

Reference number: 52

Date of reference: 2012

Who is offering MOOCs
Twenty-two of the institutions in the US News top 25 best colleges' rankings offer MOOCs. And prestigious institutions in Canada and Australia are also offering, or planning to offer, MOOCs.

How MOOCs work
MOOCs are online courses where lectures are typically pre-packaged and quizzes and testing are automated. Their large scale is achieved by reducing teacher contact and relying more on peer support. In some MOOCs, students can become official teaching assistants. While MOOCs were initially focused on areas that lend themselves easily to quantitative assessment, they are becoming applicable to all fields as their platforms provide better support for qualitative assessment methods such as peer review. MOOCs data can be used to personalise the learner's experience based on their performance.

The current value proposition
MOOCs can highlight the institution by featuring renowned professors. They can supplement or replace existing course materials and extend their reach and reputation internationally on a massive scale. Many institutions are experimenting with MOOCs to inform teaching for large undergraduate courses. Sophisticated use of MOOCs data can improve learning effectiveness.

What remains to be seen
It is unclear how MOOCs will generate revenue. Currently institutions and MOOC platform providers bear their own costs and split revenue. Revenue opportunities include: charging students and/or employers for ancillary services; sponsorship; selling the entire course or parts of it to other institutions and businesses; and licensing institutional use of the MOOC platform.

The MOOCs' pedagogy works best for self-directed learners. Typically only a fraction of students complete the course and an even smaller subset actually pass. This is likely to improve as the MOOCs' pedagogy and supporting technologies mature.

Issues to consider
Existing copyright provisions are likely to be breached in an open context, and few can afford to license content when students number in the hundreds of thousands. MOOCs can potentially involve substantial, ongoing investment in additional infrastructure, particularly if institutions do not have a sophisticated, highly scalable Learning Management System-like platform.

Institutions considering self-hosting MOOCs will need to be able to market the courses effectively, and to offer technical support remotely and at scale. MOOCs should fit within an

institution's overall provision, but do they complement or replace current course models? If MOOCs are not an option, will highly performing staff go outside the institution to offer them?

Not all MOOCs should be assumed to be 'open', because some commercial MOOC platforms have highly proprietary terms and conditions that claim ownership of course content and prohibit sharing or remixing of material. If students are to receive course credits, they need to be identified. This could be achieved through offline assessments or use of their data. At the moment, MOOCs do not lead to formal credentials. As a result, alternatives are being explored, including certifying prior knowledge.

Vassiliou welcomes launch of first pan-European university MOOCs (Massive Open Online Courses)

Author: European Commission

Reference number: 55

Date of reference: 2013

Initiative details
The European Association of Distance Teaching Universities (which has institutions from 11 countries including the UK) has recently launched a MOOC-based, pan-European university. Each partner provides courses via their own learning platform and at least in their native language. All courses will be recognised through a completion or credit certificate, or a 'badge'. These may count towards a degree. Students have to pay for a credit certificate, with charges depending on the hours of study involved (course size) and the host institution.

MOOC latest trends

Author: Ferriman, J.

Reference number: 57

Date of reference: 2013

What are the latest trends in MOOCs?
In contrast to the Allen and Seaman report (see reference 2 above), the author notes that only 10 percent of institutions are not planning to offer an online course. But this is contradicted somewhat by the fact that 44 percent of institutions do not have any formal plans to offer MOOCs.

Sixty-seven percent of the survey's respondents believe that MOOCs will never replace traditional delivery. And 84 percent think that MOOCs complement traditional delivery rather than compete with it. This perspective makes sense because of the amount of money invested in traditional delivery.

Part of the appeal of MOOCs is the fact that they are being offered by elite institutions that have high-quality teaching staff. However, if they shifted all of their provision to a MOOC-type model, it is unlikely they could continue to attract and retain these quality teachers. And they need a viable revenue model if they are to become much more widespread.

MOOCs are not widely seen as being suitable for all provision; rather they are viewed as being more suitable for non-degree provision, continuing education, technical training, and elective courses. The main value identified for participating in MOOCs was keeping up with the latest developments, and raising institutional profiles. Few believed it would improve their teaching quality.

The two biggest barriers identified for MOOCs were the lack of a consistent review and grading system for providing competencies, and the high associated development and implementation

costs. Most institutions have no plans to offer credit for their MOOC provision, and the majority of institutional responses indicate that they would offer MOOCs through existing consortia such as Coursera, edX and Udacity.

The technological dimension of a Massive Open Online Course: The case of the CCK08 course tools

Author: Fini, A.

Reference number: 58

Date of reference: 2009

Background
A survey was conducted among the MOOC's participants to garner their views about the multi-tool environment used to support the course. The survey respondents all self-reported as having adequate skills and most were experts or 'power' users. Most were teachers and took the course without expecting to gain formal recognition; rather, they participated for professional and/or personal development.

The MOOC can be considered a special type of OER that solves the problem of their lack of interaction. The real potential of a MOOC is to be found in the emergence of participant learning networks underpinned by peer-peer interactions rather than the traditional student-teacher exchanges.

Results
Very few informal students passed compared with almost all the formal learners. The main reason for their non-completion was lack of time. This suggests that, in the absence of a stronger motivation, other non-study commitments are often prioritised to the detriment of their coursework. It is also possible that students simply did not intend to complete the course and only signed up for particular components of it.

There were contradictory responses to the course environment. While a majority of learners found it clear, intuitive and friendly, there were more who found it confusing and overwhelming. For example, while many valued the course's Learning Management System, others criticised the course's lack of coherence and discussion forums.

Older technologies were clearly preferred, and the majority of social media tools were not seen as useful by respondents. Web conferencing tools were not widely used because of technical difficulties and time zone and (to a lesser extent) language constraints. But most respondents believed that these tools assisted their learning.

These highly varied responses could be due to various factors, including participants' learning styles, personal objectives, and time availability. And the course did not provide clear guidance to participants about which tools they should or could use.

Further research
Further research is needed on MOOCs' participant profiles. And issues related to sustainability and workload of teachers should be studied in depth to better understand the cost and effectiveness of these initiatives.

MOOCs: The future of education or mere marketing?

Author: Funnell, A.

Reference number: 62

Date of reference: 2013

Summary of article

Whether they are the future of education or a giant marketing scam, MOOCs are the most talked about initiative in tertiary education and universities are rapidly entering this market. While at their core MOOCs are simply another form of online education, their scale sets them apart from their predecessors. What also sets them apart from earlier, similar, ventures is the fact that MOOCs are offered by globally recognised, elite institutions including Harvard and Princeton Universities and the Massachusetts Institute of Technology.

Coursera (originating from Stanford University), one of the major MOOCs consortia, with over 60 institutional partners, has in just 12 months signed up over three million students. Coursera's founder sees this as revolutionary and predicts that in 10 years' time 'students will not be taught in the same way as (we) were taught when we went to school'.

But not all agree with this view or its underlying rhetoric. They point out that despite massive registrations MOOCs completion rates are very low (about 15 percent). And they do not lead to formal accreditation or offer the totality and complexity of a major university degree. Others view MOOCs as nothing more than corporate marketing for private providers and dismiss the hype as being merely a form of technology anxiety – a general fear of falling behind.

In short, the critics view MOOCs as a technology, not an education, trend that is being encouraged and developed by IT entrepreneurs who want to move into education as an area of investment and development. They argue that MOOCs are unlikely to replace traditional delivery, partly because they do not support personalised student-teacher interactions. However, they might be well suited to simple assessments or replacing large, first year, lectures or at least replacing or supplementing core materials for these large lectures.

Despite these shortcomings, MOOCs proponents believe they can be used in courses that require more complex assessments and personalised interactions. This is because they expose students to 'the wisdom of the crowd'. The 'crowd' can also undertake more complex assessments. This enables a greater number and range of peer reviews to be undertaken on written work.

The critics believe that MOOCs will be used by institutions to obtain increased revenue. They will also, according to the critics, be used to make additional cuts to staff-related costs and further shift tertiary education from a public to a private good. This is because they are being developed with the express purpose of being on-sold to the public. The projected return on investment for these ventures is typically 500 to 1,000 percent and this return is expected in the minimum time frame possible using the fewest resources possible.

Disruptive education: Technology-enabled universities

Authors: Gallagher, S., and Garrett, G.

Reference number: 63

Date of reference: 2013

Executive summary

MOOCs are a response to the heightened competitiveness and cost pressures facing universities. But MOOCs statistics are impressive. Since 2012 more than 6.5 million students have enrolled in over 800 courses (many of which are in the humanities) produced by about 200 universities.

MOOCs make high-quality content widely available and make a Harvard education much cheaper and more accessible.

MOOCs provision is dominated by US universities, with only one Australian university in the top 20. But the bulk of students are from outside the US, with India and Brazil ranking second and third respectively in terms of originating MOOC enrolments. Course development costs vary considerably from US$200 to US$500,000.

Harvard and the Massachusetts Institute of Technology have committed US$30 million each to their edX MOOCs consortium. Coursera, their main competitor, a for-profit consortium, has made similar investments, but Coursera is much larger, with edX on most measurements only being about a quarter of its size. And 18 of the top 20 MOOC providers are Coursera participants. This could lead to edX transforming into an open Learning Management System which would succeed the current dominant players, Blackboard and Moodle.

The main UK consortium, FutureLearn, is led by the UK's Open University with 21 institutional partners, including an Australian and Irish university.[60] It also has non-institutional partners including the BBC and the British Museum. It will also use self-selected peer leaders for student support. Its provision is sub-degree at a lower cost to new students who cannot access a traditional UK university.

Both critics and supporters see MOOCs heralding the end of tertiary education as it is currently taught and delivered. But more balanced commentary believes both views are widely exaggerated. The sceptics have evidence on their side: very low completion rates (Coursera's own figures indicate a rate of about five percent) and very immature business models.[61] And it is unlikely that MOOCs will be widely accepted for formal credit in the near future. The most likely business model is low-priced certificates of completion for individual MOOCs.[62]

Georgia Tech in the US is using a MOOC in direct competition with its more expensive on-campus counterpart, in the hope it can attract 10,000 extra students. Swinburne University in Australia has attracted 7,000 students to its online provision, and their satisfaction and achievement are similar to their traditional delivery peers.

But even if MOOCs cannot attract sufficient revenue, they are likely to remain in place because universities are willing to spend lots of money producing high-quality content as classic loss leaders for their businesses. This is because administrators hope that MOOC success on the global stage will inspire more innovation on their own campuses.

MOOCs allow universities to project their brands globally and to identify the best students, irrespective of location. They allow experimentation in innovative pedagogical approaches and, in particular, real time experiments at massive scale, showing what works best for student learning and using data for continuous improvement to support a more personalised learning experience. And the MOOC environment can adapt its content, learning paths, and assessments to provide more targeted and intensive support and allow more self-paced and personalised approaches.

MOOCs can be viewed as the 'iTunes' of higher education, where the music remains the same, but the way it is delivered and the ability to customise have changed radically. And this model has not hurt traditional concerts. Similarly, MOOCs should not harm traditional delivery. In fact, MOOCs could encourage students to enrol on-campus and be willing to pay more for the privilege. However, there are two major differences: MOOCs have not made much money, but institutions are willing participants.

[60] Monash University and Trinity College, Dublin are the non-UK partners, as well as the University of Auckland, which, while not listed here, has recently joined.

[61] Although Coursera's Signature Track business model, which involves student identity and credential verification as well as course data that can be shared with third parties including employers for US$30 to US$100 per course, is showing promising early signs with up to US$800,000 in 2013 from only five MOOCs.

[62] Deakin University in Australia is also experimenting with peer credit badges. Those wanting their learning formally recognised would need to pay AU$495, which is only available if the student enrols in a formal postgraduate programme.

Universities can benefit, but they will need to change their business models and at a pace to which they are unaccustomed. MOOCs should be used for making efficiency gains in large undergraduate or bridging classes and then focusing on the things that cannot be done online. While an elite university education is unattainable for most students, a well-rounded campus experience, provided more affordably, and enriched and made more efficient by technology, is not.

MOOCs are compelling universities to focus on their core competence, which is to instil a passion for learning in their students. This is important because students will only pay real money for a university degree if they gain value over and above what can be obtained from cheaper and more convenient alternative experiences and credentials.

California considers credit for MOOCs

Authors: Gardner, L., and Young, J. R.

Reference number: 64

Date of reference: 2013

Proposed legislation and rationale
The Californian state government is considering Senate Bill 520, which would establish a state-wide platform through which students who have trouble entering into low-level, high-demand courses could take approved online alternatives offered by providers outside the publicly funded system. The projected capital for the supporting platform is US$10 million, with the respective public and private contributions yet to be determined. The founder of Udacity was closely involved in establishing Bill 520.

Legislation details
This legislation (if enacted) would apply to all of the state's tertiary education systems. A faculty council would identify the appropriate courses to be offered on the platform. However, the wider faculty remain sceptical about this initiative.

Current online provision, further rationales and details, and some challenges
The community colleges system states that at least 25 percent of its students are enrolled in an online course. In contrast, the University of California's online programme has struggled to attract students.

MOOC Research Initiative

Author: Bill and Melinda Gates Foundation

Reference number: 66

Date of reference: 2013

Summary
There is a lack of peer-reviewed research on MOOCs. This combined with their proliferation means that there is a need for a concerted and urgent research agenda. The Bill and Melinda Gates Foundation has established a MOOC Research Initiative that makes small grants available to explore the potential of MOOCs to extend access to tertiary credentials through more personalised and more affordable pathways. The initiative is supported by a steering committee that comprises institutions from Australia, Canada and the US, as well as existing MOOC consortia.

The pedagogical foundations of Massive Open Online Courses

Authors: Glance, D. G., Forsey, M., and Riley, M.

Reference number: 67

Date of reference: 2013

Introduction

For the purposes of this study, MOOCs are based on the representative formats from the largest providers (i.e. Udacity, Coursera and edX). These MOOCs share common defining characteristics including massive participation; online and open access; video lectures supported by formative quizzes; automated and/or peer and self-assessment; and online forums for peer support and discussion. To qualify as massive, the participation at any point during the MOOC should be large enough that it could not be achieved through traditional delivery.

The format of these large-scale MOOCs has been so widely copied it suggests that it has some merit. And the structure and format of MOOCs are being adapted as more experience is gained with their delivery, so it is important to understand in a systematic manner their benefits and shortfalls.

Methodology

The authors used desk-top research. Studies were only included if they provided empirical evidence (not self-reported data such as student surveys) on the impact of the characteristics and pedagogical foundations under study. A total of 138 articles were deemed suitable for this analysis.

The efficacy of online learning

The principal feature of MOOCs is that they largely take place online. The consensus is that online courses are at least as effective as traditional delivery (Gagné, 1985; McKissack, 1997; Russell, 1999; Wegner, Holloway, and Garton, 1999; Joy and Garcia, 2000; McDonald, 2002). Means, Toyama, Murphy, Bakia, and Jones (2010) argue that with class sizes increasing as universities seek to rationalise their provision, only online delivery can maintain the quality of learning outcomes with the available resources of space and teaching staff.

Peer and self-assessment

The sheer scale of the MOOCs means that peer or automated assessment is essential. Lewin (2012) found that there was a high degree of correlation between peer and teachers' assessments. However, there is less agreement on the learning benefits of peer assessment. Some researchers find no difference in performance between peer and other forms of assessment (Topping, 1998; Bloxham and West, 2004; Slujismans, Brand-Gruwel, van Merriënboer, and Martens, 2004).

Much of the literature supports the assertion that peer assessment realises additional learning benefits (Crooks, 1988; Topping, 1998; Falchikov, 2001; Stiggins, 2002; Strijbos, Narciss, and Dünnebier, 2010; Lu and Law, 2012). And in addition to learning benefits, the ability to self-assess is considered one of the most important skills that students require if they are to be effective lifelong learners and for future professional development (Stefani, 1998; Taras, 2010).

Online forums and video discussions

Forums play a vital role in online courses because they help establish a learning community through which students generate knowledge (Li, 2004). Thomas (2002) argues that students learn as much from each other as from the course materials. Young (2012) has shown that peer assistance is an effective way of dealing with student questions and issues.

Some researchers have found that online forums can lead to higher order thinking and have better results than traditional delivery (Cartwright, 2000; Jeong, 2003; Han and Hill, 2007; Walker, 2007; Darabi, Arrastia, Nelson, Cornille, and Liang, 2011). Others argue that it does

not lead to the acquisition of these types of skills or is inferior to traditional delivery (Kanuka and Anderson, 2007; Walker, 2007).

While there was agreement about the importance of teacher presence in these forums and discussions, there is not as much consensus on what the optimal amount is. Mazzolini and Maddison (2007) argue for a minimal presence. In contrast, Dysthe (2002) advocates for a more interventionist approach; but Guldberg and Pilkington (2007) stress the importance of course design in determining how much teacher involvement is required.

Coursera proves that MOOCs can make money with $1 million in 'certificate' revenues

Author: Greenberg, M.

Reference number: 71

Date of reference: 2013

Summary
At the time of writing, Coursera had just announced that it had made its first US$1 million from students paying for accreditation of its MOOCs. While this is not a large sum, it does provide some evidence that MOOCs could be profitable.

Coursera uses a robust verification process to identify students and charges them between US$30 and US$90 to obtain a certificate to confirm their completion of a MOOC. Coursera has 25,000 students signed up to its verification package, which is the first to be offered by any of the MOOC consortia. And edX recently announced plans that it was partnering with Google to develop a new open source learning platform for their MOOCs provision. This platform allows non-edX participants an opportunity to offer their courses via a MOOC.

The maturing of the MOOC: Literature review of Massive Open Online Courses and other forms of online distance learning

Authors: Haggard, S., Lawton, W., Katsomitros, A., Gore, T., and Inkelaar, T.

Reference number: 73

Date of reference: 2013

Methodology
One hundred pieces of literature, including formal and grey literature, were used to inform this review and 50 were formally summarised. They are often highly partisan and tend to cover MOOCs from institutional and learners' perspectives. However, there are also formal and comprehensive surveys underpinned by methodological approaches.

Executive Summary
MOOCs arise from distance learning and the Open Educational Resources movement. This is important as it calls into question how innovative they actually are. And it also highlights their potential failure, as many online learning initiatives that were launched with equal fanfare in the dot.com boom quickly went bust or stepped back from their original aims.

MOOCs can be split into two broad categories: c-MOOCs, which are based on connectivist theory and are run on open source platforms with an underlying pedagogy of peer learning; and x-MOOCs, which are online versions of traditional delivery that are hosted on proprietary platforms and are run by private enterprises. x-MOOCs are the dominant model because they are being offered by the major consortia that involve elite institutions which are Coursera, edX, and Udacity. As at May 2013, Coursera had 70 institutions and over 3.5 million enrolments,

edX had 27 institutions and about 900,000 enrolments, and Udacity had a single institution with approximately 400,000 enrolments.

Many elite institutions are participating in MOOCs because they see opportunities for brand enhancement, pedagogic experimentation, recruitment, and business model innovation. While a few institutions have actively disengaged, they are the minority. The MOOC advocates have been conspicuous in promoting their benefits within the hosting institutions. However, there are dissenting voices within these hosting institutions who are mounting equally strong and well-publicised arguments against MOOCs.

Smaller and less prestigious institutions are not typically participating in MOOCs consortia or providing them on their own accord because of a lack of interest, a lack of capacity, or a lack of opportunity. They have major concerns that MOOCs will significantly impact their recruitment and market share. They believe MOOCs are ill equipped to deal with students that have complex learning needs; but these concerns are less visible in the literature.

There are increasing moves to broaden the participation of MOOCs beyond elite institutions. For example, Coursera is partnering with the state of Tennessee, which will use its platform for their online provision. And the State University of New York will allow its students to reduce the time it takes to complete their studies using MOOCs. The US community college sector is more active in MOOCs than the UK's Further Education sector.

FutureLearn, the UK's MOOC platform, was due to launch its first courses in September 2013. This consortium has no formal government support or funding. Its primary drivers appear to be as a response to US developments and its potential to reduce costs by achieving economies of scale. Its platform, however, will also support non-MOOC content and courses and will partner with non-tertiary organisations including the British Library. While it will not offer credit for its provision, it is clear that the participating institutions see this platform playing a key role in their recruitment of international students.

Staff generally fall into two broad camps when considering MOOCs. The advocates welcome the disruption to established teaching and learning and assessment models. They highlight the innovative pedagogies and positive learning experiences and note the empowerment, access, and community building aspects of MOOCs. They are well represented in the mainstream media.

The sceptics think that MOOCs lack innovation and are merely building on previous online learning initiatives. They see MOOCs as a triumph of packaging over content. They also note MOOCs' weaknesses including poor pedagogy, the quality of learning, inability to assist weaker learners, and exclusion of those without good networking skills. This also calls into question, for the sceptics, how accessible MOOCs really are.

Some commentators think that MOOCs are over-hyped and have serious weaknesses including their financial viability and accreditation. But they also note that initiatives are already underway to address these and they consistently identify MOOCs as a tipping point for higher education.

This supports the general consensus of the formal literature, which is that MOOCs bring an impetus of reform, research and innovation to institutions. The main divergence in opinion appears to be over when this will occur. On balance, the literature does not think that this will occur in the short term. However, there is a sub-group of highly credible writers who think that MOOCs will lead to dramatic, imminent change.

While there is general agreement that MOOCs will be disruptive, there is less agreement over how this will impact higher education. One, benign, view is that MOOCs could drive innovation and experimentation, which would ultimately lead to improved learning and lower costs through a managed restructure. At the other end of the spectrum, however, is that all institutions will be

forced into radical transformation, and failure to do so will see them being closed down; as a result there is the prospect of a 'chaotic rout' of the sector.

There is an emerging agreement in the literature that non-active participation is a valid learning activity in MOOCs, and that non-completion in this format is not a serious issue. However, they are not suitable for most learners because they lack the requisite skills and capabilities in online social networking to be successful. While obtaining credit is not a major driver of student participation in MOOCs currently, there are clear signs that this is about to change. As yet, there is no agreed satisfactory system of measurement for assessing the quality of MOOCs from the learners' perspective.

The major issue confronting MOOCs relates to appropriate business models and the associated challenges of scale, sustainability, monetisation, accreditation and openness. The literature suggests that after a phase of broad experimentation, a process of maturation is in place. The view of the literature, however, is that MOOCs are poised to become a significant and possibly standard element of credentialed university education, which exploits new pedagogical models, discovers additional revenue, and lowers costs.

Media reporting is emerging as an increasingly important component in MOOCs literature. This is because it shapes public expectations, which is leading to much hype and could be a contributing factor to the herd mentality to produce or participate in MOOCs. Much of the early reporting was positive and saw MOOCs as the high-tech engine of transformation that would remake education as a highly engaging, open and low-cost activity. But the negative commentary that is hostile towards the hype, sees any benefits as illusory, and believes that MOOCs harbour undesirable and inappropriate behaviours is becoming more prominent.

'Star' Coursera prof stops teaching online course in objection to MOOCs

Author: Heussner, K. M.

Reference number: 77

Date of reference: 2013

Summary

In a setback for the MOOC movement in general and Coursera in particular, one of its 'star' professors has resigned. Professor Mitchell Duneier reported that this was done out of concerns that MOOCs could undermine public higher education because they are being used as an excuse by state governments to cut funding for public state universities. He also doubts the pedagogical effectiveness of MOOCs. The issue that forced this decision, however, is reportedly Coursera's desire to license his MOOC for teaching as part of a blended delivery model at participating state secondary schools.

This is part of a growing attack on MOOCs, which has included Amherst formally rejecting a partnership with edX and staff at San José State University refusing to teach an edX MOOC because of concerns that it could reduce perspectives for students and lead to two classes of university. Duneier's defection is different, though, as he was benefiting from MOOCs, rather than being threatened by them.

This is further evidence that, while MOOCs have captured the media and wider public's attention and imagination, their future is still uncertain. Duneier's views on the ineffectiveness of the MOOCs' pedagogical approaches is also shared by other professors in a recent Chronicle of Higher Education survey. But Duneier would consider teaching another MOOC under the right circumstances and notes that his recent experiences were one of his career highlights.

The impact of MOOCs on smaller universities: A blessing or a MOOClear disaster?

Author: Katsomitros, A.

Reference number: 97

Date of reference: 2013

Introduction
Several commentators, including Moody's and Pearson, argue that MOOCs pose a threat to smaller institutions because they favour elite institutions. The founder of Udacity (a major MOOCs consortium) has gone further by predicting that by 2060 there will only be 10 universities globally. But a more plausible approach is to suggest that MOOCs create opportunities for smaller institutions because of their potential to increase international visibility and create new revenue streams.

A crisis
Elite institutions appear to have an advantage in online provision because it lowers their barriers to entry, allowing students to study there who may otherwise have not been able to do so. MOOCs also reduce the financial barriers, which deprives smaller institutions of a substantial number of students. When this is combined with their brand power, elite institutions could dominate.

These pressures will increase if employers recognise alternative forms of certification to degrees. This is because students (including international ones) could use this as an alternative pathway. Institutions that base their business model on international student recruitment will be threatened; and smaller universities that do not specialise in specific subject areas may suffer the most.

MOOCs were motivated at least in part by a mission to widen and increase access to higher education. But if the rise of alternative credentials lags behind an increase in provision, a two-tier system (where some students get on-campus degrees from traditional institutions and others get an online or blended qualification) could develop. However, this may be the price of taking the massification of higher education to new levels.

And an opportunity
Smaller institutions will succeed if they design their own MOOCs, focus on what they are good at, and develop an entrepreneurial disposition. A key factor for a successful MOOC platform is to focus on employability and connecting students with employers. There is a market gap where the skilled workers are often in different locations to the businesses, so universities can act as intermediaries to connect students and employers. Udacity and Coursera both do this and charge fees to hiring companies.

The medium is the message: Small can be big online
Mid-tier universities should also try and harness the viral nature of the internet. University leaders could use MOOCs to make particular strengths visible globally. This strategy would serve three purposes: equipping students with practical experience for employability; creating new revenue streams via student start-ups; and building global reputation in niche areas. While this will be challenging, it is feasible. However, the critical short-term issue is how to integrate MOOCs into credit-bearing degree courses in order to develop new institutional revenue sources.

Towards the 'university-entrepreneur'
Student data generated on MOOCs can provide institutions with new revenue sources. Crowd funding where MOOCs are used to obtain monies from the public or more specialised communities could also be a new revenue source. MOOCs can also generate monies for students by developing apps for online stores through to start-ups.

Shifting ground: Technology begins to alter centuries-old business model for universities

Authors: Kedem, K., and Puchalla, J. E.

Reference number: 98

Date of reference: 2012

Introduction

Many leading North American and European universities are participating in consortia offering MOOCs. MOOCs represent a fundamental shift in strategy by institutional leaders, who are leveraging the MOOCs' globally recognised brands to get ahead of fast moving changes caused by technology. However, these rapid technological changes could in the long-term destabilise their on-campus provision.

Will MOOCS bring an image upgrade for online education?

Earlier online learning ventures had mixed results. But MOOCs enable institutions to experiment and refine their delivery methods, evaluate scalability, identify the most suitable staff, gauge the quality of student learning outcomes, experiment with pedagogical approaches on a much larger scale than was previously possible, and assess demand. The scale and reduction in costs through not having to develop course content clearly differentiate MOOCs from earlier online provision.

This scale will lead to substantive growth in online course enrolments. Even with massive failure rates, the largest MOOCs have more enrolments than most private providers. And online education will become much more acceptable because of elite institutions' involvement in MOOCs provision.

Benefits for institutions

Institutions will increase awareness of their 'brand' and garner favourable publicity. However, MOOCs could also damage institutional brands if universities rush to join without undertaking appropriate quality control on their content. MOOCs allow for improved operating efficiencies and new revenue streams including the selling of content to new or existing network participants.

Institutions that already have a national market or presence and that are selective in terms of their provision and student body are likely to obtain the greatest benefit from MOOCs. This is because the MOOCs platform can help these national universities build a global presence more quickly than a traditional marketing and recruiting strategy.

New online provision will (in many cases) reduce or eliminate the need to establish an offshore satellite campus. And partnering with other universities enables national universities of modest means to leverage financial and human capital resources and remain competitive in a way they could not on their own.

Whether these benefits will accrue for locally or regionally based institutions is unclear because, if their provision is largely low cost, generic and/or they cannot participate in the MOOCs networks, they would lose market share, in the long term, to institutions with a national market and more recognisable brands. And the higher quality the MOOC is, the greater this risk becomes. These risks outweigh the benefits to these institutions of being able to leverage existing infrastructure and increased efficiencies and pedagogical innovation.

The for-profit sector has grown by offering provision in areas in which traditional institutions have chosen not to. For-profits will need to enhance their student services and demonstrate positive outcomes for them in study and work if they are to avoid a reduction in learner demand.

But even if they take these measures, there is likely to be a reduction in enrolments in the for-profit sector because of the duplication between MOOCs and for-profit provision. And the

low-cost nature of MOOCs also adversely impacts the for-profit sector's pricing structures. These impacts will be greater if MOOCs are formally accredited and if new networks are created based around leading not-for-profit and public institutions.

MOOCs and open courses – what's the difference?

Author: Kernohan, D.

Reference number: 99

Date of reference: 2013

Summary

The term Massive Open Online Course (MOOC) is increasingly being used generically to refer to all online provision at scale. But this makes a number of unsafe assumptions around intent and pedagogy. Not all online learning is a MOOC and not all MOOCs are the same. As part of the evaluation and synthesis conducted around the UK's Open Educational Resources programme, MOOCs have been disaggregated into more discrete categories – x-MOOCs, c-MOOCs and Open Boundary.

x-MOOCs are the ones most commonly offered via well-established consortia including Coursera and EdX. Their primary delivery mechanism is video lectures that use peer assessment and the ability in some instances to obtain (normally at cost) a certificate of completion (or equivalent). Most courses in this category have poor underlying pedagogies with limited student-teacher interactions.

c-MOOCs, in contrast, have a largely decentralised structure, where the emphasis is on fostering and building a community. c-MOOCs can offer considerable benefit for more confident and advanced learners, but require a great deal of effort and understanding in order to be successful. In contrast to the MOOC, an Open Boundary course is based on a traditional delivery course. Open and fee-paying students study alongside one another and both obtain benefit from wider collaboration and access to a huge variety of resources.

American Council on Education recommends 5 MOOCs for credit

Author: Kolowich, S.

Reference number: 101

Date of reference: 2013

Summary

In February 2013 the American Council on Education endorsed five MOOCs from Coursera for credit. The Council is an association that operates a credit recommendation service that evaluates individual courses and advises institutional leaders if they should offer credit for them. The Council has received funding from the Bill and Melinda Gates Foundation to study how MOOCs could improve access to, and achievement in, tertiary education. It is currently reviewing another major MOOCs consortium, Udacity, for possible credit recommendations.

But it is up to each individual institution whether they act on the Council's recommendations. And many institutions may adopt a conservative approach to offering formal credit for MOOCs because of fear of undermining their own revenue streams. There are also pedagogical concerns, such as Excelsior College not accepting the Council's recommended MOOCs for formal credit because they are not comfortable with Coursera's assessment methods.

Why some colleges are saying no to MOOC deals, at least for now

Author: Kolowich, S.

Reference number: 102

Date of reference: 2013

Summary

Amherst College's decision not to join edX was surprising, because most institutions are making strenuous efforts to join edX and other MOOCs consortia run by elite institutions. But most decisions to join have not involved staff. Amherst's rejection, which was based on a staff vote, may see institutions in the future adopt a more conservative approach to signing up with MOOCs consortia.

The growth of MOOCs has been rapid and substantive. edX has 12 institutional partners but has had enquiries from over 300, and Coursera has experienced similar growth and interest from non-participating institutions wishing to join. But many institutions are now starting to realise that there are real costs involved in signing up with these (and other) MOOCs consortia. For example, edX charges for assisting with course development at a base rate of US$250,000 per course, and then US$50,000 for each additional time the course is offered. And they take a cut of any revenue that the course generates.

There are also significant labour costs that come with offering MOOCs. A recent Chronicle of Higher Education survey found that professors typically spend at least 100 hours in developing a MOOC and then eight to ten hours per week running it. This commitment amounted to a major drain on their normal campus responsibilities. These known costs, combined with uncertainty about whether the MOOCs will make sufficient money for institutions to realise a return on their investment, might be enough to deter some institutions, particularly public providers facing budget cuts, from joining.

A university's offer of credit for a MOOC gets no takers

Author: Kolowich, S.

Reference number: 103

Date of reference: 2013

Introduction

Colorado State University's Global Campus is the first institution in the US to grant credit to students who pass a MOOC. This reduced costs for students from US$1, 050 to US$89. But at the time of writing, no students had taken up this offer. The institution's spokesman pointed out that the initiative only applied to one specialised MOOC and might only be useful for those who were considering completing their degree at their Global Campus.

No students at the time of writing had tried to obtain credit for their MOOCs through the Council of Adult and Experiential Learning's Learning Counts programme, which is specifically designed to help adult students assemble evidence of non-campus learning into portfolios that can be redeemed for credit at some institutions. This might be because many MOOC participants may already have degrees, as data from providers suggests.

Broader efforts

Florida has amended its proposed bill (which would have required its state university systems to accept MOOCs for credit) to encourage institutions to set rules that allow for the acceptance of MOOCs for credit. And in California a similar bill has been revised (see reference 64 above for further details) to give faculty much greater control over which MOOCs would be eligible for credit.

While all MOOCs are potentially eligible for credit, institutions ultimately determine which courses will be accepted and how many credits they will allow to be transferred from them. Many are choosing not to. However, as part of a research project run by the University Professional and Continuing Education Association, six institutions and one system were identified that were willing to award credit for MOOCs.[63]

The challenges to connectivist learning on open online networks: Learning experiences during a Massive Open Online Course

Author: Kop, R.

Reference number: 104

Date of reference: 2011

Methodology
The National Research Council of Canada's Institute for Information Technology is undertaking a design-based research project to create a PLE referred to as Plearn. As part of this project the Institute is exploring connectivist MOOCs.

Surveys (containing both qualitative and quantitative questions), observations, discourse analysis and learning analytics data were used. A focus group of less active participants (lurkers) was also conducted. The Learning Management System (LMS), wiki, participant blogs, and Twitter posts were the main data sources. The blog posts, Twitter posts and LMS environment were subject to a limited quantitative analysis with the qualitative analysis being restricted to the LMS environment and a sample of the participant blogs.

Results
Most participants indicated that the resources supplied were sufficient to give them an understanding of the course before it started. But those who had not participated in a MOOC before found its distributed nature confusing and the high level of resources and participant contributions overwhelming. Facilitator and peer support did help learners overcome this sense of disorientation. And specialist tools helped participants extract the core messages or priorities from the vast array of available resources.

The consensus view was that peer and facilitator feedback and engagement were important. But it was clear that it was impossible to sustain the high level of reading, thinking, and engaging with peers and content that happened at the beginning of the course because it was too time-consuming to participate in a course with a high number of activities and participants.

The most active participants were students who were experienced in MOOCs. A much larger number of participants, while involved in the MOOC, did not actively contribute. They preferred to read, view, or 'dip in and out of' the course discourse.

There were conflicting views about how active participants should be, with some clearly expressing a preference for more involvement. However, others disagreed and focused instead on the benefits that accrued to them such as developing their own personal learning environment, being introduced to social media, and extending their personal networks.

The lack of active participation may reflect different ways of sharing and also the predominance of English, even though there was a sizeable minority of participants who did not have this as their first language. Participants were least active in the creation and sharing of resources.

To increase social presence, regular communications could be used. Others thought that the increasing sophistication of the technologies would assist and some thought a community was the solution. The two important issues identified were the enculturation in the network and the

[63] The system was the American Public University System and the institutions were: Central Michigan University, Kaplan University, Regis University, Empire State College, the University of Maryland, and Western Carolina University.

technologies that can support this. Learners agreed that critical thinking skills were required, but they should be part of a wider set of literacies.

Participants self-reported that the skills and abilities they were least likely to gain or obtain during the MOOC were those relating to organising and managing learning. The skills and abilities most likely to be gained or obtained were those relating to critical thinking, collaboration, research, creativity, and especially writing.

Further research
Further research is needed to identify exactly how the challenges associated with connectivist learning might best be overcome.

A pedagogy of abundance or a pedagogy to support human beings? Participant support on Massive Open Online Courses

Authors: Kop, R., Fournier, H., and Mak, J. S. F.

Reference number: 105

Date of reference: 2011

Methodology
The study's MOOCs were connectivist and based around four learning activities: aggregation, remixing, repurposing, and sharing. They used a number of surveys and adopted virtual ethnography where a researcher was an observer during the course, collecting qualitative data through the observation of activities and engagement and also carrying out a focus group in the course's final week to gain a deeper understanding of particular issues related to the active participation of learners. The functionality of existing course tools was used to collect and analyse data on learner activities.

Findings
Typically people participated in the MOOCs to learn more about certain topics and technologies while at the same time building personal networks. MOOC participants set up communities outside the course structure using social media. But these communities only comprised a minority of total participants. Some did not join for privacy and personal security reasons.

Others lacked the confidence and competence to participate effectively or did not have sufficient trust in these communities. Another group used the course Learning Management System discussion forum instead because they were able to learn more about the background, ideas and beliefs of other participants. While participants needed and sought out opportunities to increase social presence, they did this on their own terms.

Deficiencies were identified in the MOOCs support structures. The student/facilitator ratios were too high, which led some students to raise concerns about the lack of participation and interaction by facilitators. However, this is not an easy challenge to overcome, because the open nature of MOOCs means the number of students (and therefore the number of required facilitators) is unknown prior to commencement.

Other identified barriers to learning included time zone and language differences, difficulties in connecting with others in different spaces, insufficient skills to use the tools, challenges in connecting with peers and/or facilitators, and a lack of time to participate. And different learning objectives and varying life contexts of learners lead to different levels of participation and subsequently to different learning outcomes.

Novice learners were expecting direction from the facilitators to overcome the lack of a coherent and centralised structure. Novices need to go through an approach where activities are used to build confidence and self-efficacy, so they will feel confident and competent in technology use and are supported throughout the course.

While the choice of tools did increase learner autonomy, it also led to fragmentation of the course discourse. But some tools were seen as valuable support. It was also difficult for participants to assess their learning outcomes. This was compounded by the fact that the objectives were set by the learner rather than by the teacher or institution.

In contrast, more experienced learners were more likely to be successful because they could manage the MOOCs lack of structure better. The significant role of expert peers is to share part or all of the facilitator roles and support other students.

Students' perceptions of how much support they received were greatly enhanced by effective teacher presence that was achieved through course design and the type of facilitation provided. While participants realised the importance of connections with their peers and of relationship building to advance learning, they found this extremely difficult in a MOOC. How difficult this was depended on the confidence and willingness of learners to participate in small groups supported by web-based tools.

Horizon scanning: What will higher education look like in 2020?

Authors: Lawton, W., Ahmed, M., Angulo, T., Axel-Berg, A., Burrows, A., and Katsomitros, A.

Reference number: 109

Date of reference: 2013

MOOCs, innovation, and the impact of technology

There has arguably been more hype about MOOCs than any other higher education initiative. While they were launched in 2008, they gained real prominence after a Stanford University MOOC attracted a global audience of 160,000. While the MOOCs debate is already polarised between 'boosters' and sceptics, the impact will be as real as the hype because MOOCs are the 'handmaid' for profound shifts in higher education, including greater flexibility, the development of low-cost models and government support for these, and the 'unbundling' of teaching provision from the qualifications gained.

Coursera has already signed up 3.8 million students from 81 partner institutions. They along with edX are led by elite institutions. This has led some agencies, such as Moody's, to suggest that some smaller and for-profit institutions could disappear in the future. But this is unlikely by 2020 and, even if it were to occur, it is more likely for institutions that cannot carve out a niche in a specific subject area.

The upside of this elitist bias is that it legitimises online education and MOOCs. This is particularly important in developing countries. And as they are legitimised, the incentives to incorporate them into traditional education structures will increase. Awarding degree credit is the next step and there are already examples of this occurring. This is also driven by the ability of MOOCs to provide a much lower cost option for degree-level study.

Some institutions are offering a free, non-credit-bearing MOOC alongside credit-bearing, fee-paying alternatives. The credit version offers 'interaction with an instructor, additional assignments, readings and multimedia material'. Students can 'upgrade' to the credit version from the free version. The report believes that a mere fraction of the enrolled students would need to take up the credit option for it to be financially viable. And Academic Partnerships has developed a MOOCs platform through which universities offer free and open courses as precursors for fee-paying online degree programmes.

But the rate at which these new business models will develop depends on political and economic interests rather than what enthusiasts think the rate should be. California, for example, was forced to shelve a bill that would have required their state university systems to award

credit for MOOCs and to use their platforms for high-demand, mandatory undergraduate degrees because California State University simply bypassed the scheme.

Some believe that MOOCs could lead to the loss of large numbers of teaching jobs. But many may be able to be redeployed to provide specialist support and input to students undertaking MOOCs. Teachers may also find it easier in the new environment to establish non-institutional companies to proffer their services. Students may also use MOOCs to make money by generating content and establishing channels, as currently occurs on YouTube.

Georgia Tech in the US already has plans to create two categories of teachers: one to deal with student-related issues via Udacity and teaching assistants, who will be professionals rather than graduate students. Georgia Tech professors will be paid US$30,000 for each online course they create. However, there has been considerable internal opposition to these proposals.

Concerns have been raised that, if copyright issues are not satisfactorily resolved, being a professor will not be a viable career option and they would be working in a service industry. And some faculty believe MOOCs will destroy the diversity of provision by students going only for this option rather than differing perspectives outside the MOOC platform.

With the proliferation of MOOCs, it is likely there will be still low or zero cost options in 2020. However, it is clear that there will be charges associated with MOOCs as institutions experiment with new ways of obtaining revenue. John Daniel notes that the two revenue channels most attractive to universities – certification and tuition fees – have the logistical problem of collecting fees from almost every country. And while MOOC consortia could become degree awarding providers in their own right, this could cause conflicts with existing provision or if revenue shares are not acceptable.

Universities and MOOC platforms are likely to face problems currently being encountered by large internet-based companies like Google for allegedly compromising users' privacy because institutions are increasingly using MOOCs' student data for advertising, HR services, and market research to third parties.

Content will increasingly come from non-institutional sources including large and small businesses, museums, and libraries. FutureLearn is already accessing content from the British Museum and the British Library. This is part of a larger potential future trend where MOOCs create value by 'getting rid of middlemen'. However, formal study will still require staff and institutional input because self-directed web-based learning is not an academic education.

Some commentators think that MOOCs represent the most radical phase of the internationalisation of higher education and part of this will see branch campuses threatened. But others see MOOCs and branch campuses as independent internationalisation strategic options. MOOCs would only supersede international education and branch campuses if 100 percent of students and employers consider online education to be the equal of traditional delivery which is unlikely ever to occur. And students value the social capital and networking opportunities obtained through travelling and studying in another country, which a MOOC cannot provide.

Most institutional leaders believe that MOOCs do not improve finances or quality. The most beneficial use of MOOCs in their view was in developing innovative pedagogies. MOOCs could also be used to pool research resources and talent en masse. While MOOCs provide increased collaboration opportunities, institutions will at the same time also need to differentiate themselves and offer unique provision.

For most institutions, MOOCs are 'brand projectors' and recruitment tools; but by 2020 their business models will be mature. Even now edX receives US$50,000 for each course it hosts and splits the difference with the institution. Non-members pay US$250,000 for the same arrangement.

Coursera has a more diverse business model, where revenue is obtained from alternative accreditation, examinations, job services to students and employers, tutoring and mentoring, and sponsorships. They are also Amazon's affiliate programme for recommended textbooks and access to academic content. And they are in partnership with academic publishers, which could pave the way for academic content to be much more widely available. FutureLearn is also likely to charge for alternative accreditation, examinations and mentoring. Crowd funding is another potential revenue source.

Will MOOCs have alleviated the student debt problem in the US, the UK and Australia by 2020? Some commentators think that governments will adopt low-cost private sector models and student loans would be part of this. MOOCs can also help fill the emerging and growing skills deficits in the developing world. For example, in Tanzania the World Bank is partnering with the University of Dar es Salaam, local businesses, and Coursera in an attempt to achieve this.

Move over professor

Author: Laxon, A.

Reference number: 110

Date of reference: 2013

Summary

Massive Open Online Courses (MOOCs) make courses from elite institutions such as Harvard available to a global audience. They typically attract large numbers of students and incur no fees. Online discussions are the main interaction and assessment is automated or undertaken by peers.

Although the first was launched in 2008, they first came to prominence in 2011. The success of the 2011 version led to the creation of large-scale consortia to offer them, including Udacity (a for-profit consortium run by former Stanford University faculty), edX (a non-profit consortium founded by Harvard University and the Massachusetts Institute of Technology), and the largest, Coursera, a for-profit venture involving 87 universities including non-US institutions. The UK has launched a similar effort with its FutureLearn consortium led by its Open University and involving 21 other UK universities.

Coursera had US$43 million in private monies for its start-up funding. But they and other participants are struggling to realise a return on this investment. Coursera has introduced an optional paid subscription for participants. Another solution is to offer cheaper options as Georgia Technical Institute is doing in the US, where a much cheaper computer science degree can be gained, as only core student services are charged for, such as support and examinations. Alternatively, students can do an unrecognised MOOC on the subject.

New Zealand has been slow to participate, partly because of fears that this latest development could be a replay of the late 1990s dotcom bubble. As was the case then, there has been a lot of hype, with 2012 labelled the year of the MOOC and many predicting MOOCs would lead to a radical transformation of tertiary education.

Nonetheless, Waikato University has just launched its own MOOC. And Massey University is partnering with an Australian initiative, Open2Study, to offer its MOOCs. However, Otago University has made a decision not to participate because the vice-chancellor does not see them being financially sustainable or as suitable for teaching critical skills. Otago also notes the very low completion rates for MOOCs.

But questions remain, including: why would students do a MOOC instead of a recognised qualification? Is their quality sufficient? And how will providers make money when the courses are free? These questions are being urgently addressed in the US because MOOCs are seen as

the solution to an increasingly unaffordable tertiary education system and the country's massive and rapidly increasing student debt.

However, many faculty and staff are resisting their introduction, in part because they think that governments are supporting them as part of a wider agenda to privatise tertiary education. They also question their pedagogies, which they see as outdated and not conducive to good learning outcomes. They also see MOOCs as allowing jobs to be shed and pay reduced. Others disagree, noting that MOOCs can increase provision and demand by offering courses to workplace learners and students in developing countries, which does not displace traditional delivery.

To address these concerns, measures are being taken to introduce more support for students and more appropriate pedagogies are being introduced. Some commentators note that the benefits of traditional delivery should not be overstated. MOOCs also allow lectures to be used for discussions rather than their current primary focus on lecturing. Student data can be used for a myriad of purposes including better support and peer assessments, which has attracted wide criticism, but some research has shown to be consistent with teacher grading.

MOOCs: A systematic study of the published literature 2008-2012

Authors: Liyanagunawardena, T. R., Adams, A., and Williams, S. A.

Reference number: 114

Date of reference: 2013

Methodology
Relevant papers were identified through a series of search efforts, using an approach based on the methods used in other systematic reviews (Gao, Luo, and Zhang, 2012; Williams, Terras, and Warwick, 2012). Papers were included if: their primary focus was to explore the concept of MOOCs or their implications for higher education; report on experiments with MOOCs, or compare MOOCs with other educational approaches; and they were published between 2008 and 2012.

Forty-five articles were included, which was insufficient to construct a meta-analysis (Fink, 2010). So papers were qualitatively classified using open coded content analysis (Gao et al., 2012; Williams et al., 2012), which identified a number of categories including introductory, conceptual, case studies, educational theory, technology, and focused on participants or providers.

Discussion
While there was an increase in the academic literature related to MOOCs, the most rapid growth was in the mainstream media. There is also a concentration in particular authors who tended to work as part of research teams, including Kop, deWaard, Hogue, Koutropoulos and Rodriguez. There appears to be some confusion about how MOOCs are classified, particularly the more recent versions developed by the international consortia. This systematic review has shown that there is a gap in the scholarly literature in identifying these different types of MOOCs.

Most of the MOOCs research has investigated the learner perspective, with significant (but smaller) attention paid to institutional threats and opportunities. The lack of published literature on MOOC facilitators' experiences and practices represents a significant gap. Due to the volume of data, certain sources, such as postings on a formal Learning Management System, have been privileged over others. This leaves out much potentially useful data, particularly from social media sources such as weblogs and Twitter. This is important, because much of the MOOCs' critical interactions and communications occur in these social media environments (Liyanagunawardena, 2012).

Few papers have considered the ethical aspects of using the MOOCs' publicly available data. This opens up a new avenue for research. Most MOOC participants were from North America

or Europe. There were few, if any, students from Asia and Africa (deWaard, Abajian, Gallagher, Hogue, Keskin, Koutropoulos, and Rodriguez, 2011; Kop, 2011; Koutropoulos, Gallagher, Abajian, deWaard, Hogue, Keskin, and Rodriguez, 2012).

One of the topics most commonly explored in the literature is the challenges and tensions experienced by students trying to deal with the vast amounts of data. One of the key issues in this context is whether to have information available on a summary or filtered basis to save time, or whether to have unfiltered access (Fini, 2009).

One key insight is the fact that many active MOOC participants have previously participated in one (Milligan, Margaryan, and Littlejohn, 2013). The confidence gained from successful participation in a MOOC and the networks and communities developed as a result may lead to more previous participants taking up other MOOCs.

It is generally accepted that MOOCs have very poor completion rates (Koutropoulos et al., 2012). According to Jordan's (2013) collated completion rates for 24 MOOCs, the highest rate was only 19.2 percent, with the majority having completion rates of less than 10 percent. However, MOOC completion rate data is not readily available.

Very little is known about the experiences of those who do not complete MOOCs (Koutropoulos et al., 2012) and this is another new research area that could be explored. Despite the importance of motivation in increasing student engagement in MOOCs (Milligan, Margaryan, and Littlejohn, 2013), this has yet to be explored.

Recognition for MOOCs and their accreditation is a contentious area. MOOCs run by consortia led by elite institutions such as Coursera and edX provide the option to pay for certification. Others offer badges or more formal completion certificates. The American Council on Education has recommended five Coursera courses for credit (Coursera, 2013), and a bill is being considered in California that would allow credit for students taking faculty-approved courses online (Levin, 2013). But given the fact that 'closed book' examinations are subject to cheating (Shimbun, 2011), the challenges of validating MOOC assessments is clear.

Limitations

Grey literature was not included due to concerns about its credibility because it is often highly subjective and has rarely been critically reviewed by peers. Only English language literature was included.

The emergence of MOOCs

Author: Mak, S. F. J.

Reference number: 115

Date of reference: 2012

Overview

The major MOOC tertiary providers are institutional consortia and the best known are: Udemy; edX (founded by Harvard and Massachusetts Institute of Technology); Udacity (which originated from Stanford University faculty); and Coursera (which involves a number of elite institutions including Stanford University).

MOOCs can be massive, with thousands of participants. But some are much smaller and have only a few hundred participants. While they are typically free, fees may be payable if the participant is working towards a form of accreditation. Content is available from institutional and formal web-based networks as well as personal and informal internet-based locations. Scheduling is largely informal although participants are expected to adhere to rough guidelines.

The popularity of MOOCs can be attributed to several factors. Firstly, as technology evolves, the online learning experience is constantly improving. Secondly, the increasing costs of tertiary

education are forcing some students to look for less expensive alternatives. Finally, MOOCs allow students to build professional and personal skill sets in their own time.

A number of benefits accrue to students participating in MOOCs. These include: they are generally free of charge and open to all; learning is more informal and self-paced; there is no requirement to be enrolled in the hosting institution; and high-quality teachers and business people can interact with students on a global basis. And for students in developing countries, MOOCs provide opportunities that were not previously available.

However, there are also some issues and these include: students are unable to engage in real-world interactions; there can be technical difficulties; students may be less familiar with a MOOC's structure; and students need to become responsible for their own learning. While many institutions and staff have integrated MOOCs into their normal business development and growth, others are highly sceptical.

What are the paradoxes in MOOCs?

Two main paradoxes are listed in this paper: firstly, most MOOCs are offered by elite institutions that do not need to expand their student base; and secondly, highly successful MOOCs are a threat to the core business of the hosting institutions. These paradoxes might be explained by the elite institutions needing to maintain their global leadership position in distance, online, and open education. Online education is also a very lucrative industry. And there is a need to explore and research how students learn online, which will enable the institution and its staff to improve the teaching for their on-campus learners.

Increasing enrolments without a rise in costs is desirable for institutions, but it also means a key revenue stream is compromised. And students may have no intention of completing a MOOC. However, this is a problem in a system that privileges pass rates and funds institutions accordingly.

What are the most significant problems in MOOCs?

One of the most pressing problems confronting MOOCs is their attrition rates. The author presents three hypotheses for why these rates are so high. Firstly, there may be a mismatch between the course offered and needs and expectations of the students. Secondly, it could be that students lack time, motivation, and the requisite skills in online learning, or have family or work commitments. Finally, students may drop out because of a perceived lack of support. These hypotheses are supported to a certain extent by Kop, Fournier and Mak (2010).

What would be the future of MOOCs?

The current x and c MOOC models are unlikely to fundamentally alter, with x-MOOCs focusing more on revenue and less on teaching and learning. c-MOOCs would be based squarely on a connectivist learning model and teachers would negotiate the learning with students in a networked environment.

It is likely that x-MOOCs will be the dominant model for the next decade or so. This is because they are the least disruptive to traditional institutional structures and processes. However, even though they are more disruptive and potentially transformative, some institutions will adopt either a c-MOOC or a blended model that combines these two dominant models, where the focus would be on the education process, with technology and social media/networks as an enabler.

Further research

Mega-research of MOOCs and critical reviews into the current pedagogies adopted by higher education institutions are urgently required, as well as research into the educational values and value proposition of MOOCs.

Learn to love the MOOC

Author: Manawatu Standard

Reference number: 116

Date of reference: 2013

Overview
MOOCs are characterised by video links, interactive learning, and discussion forums. Grades and feedback tend to be done by students and they can be completed in weeks. But participation in a MOOC will not lead to a degree as they do not offer formal credit for completion. However, this is not an issue according to some commentators, who see the real niche for MOOCs in providing professional development for those currently in the workforce or for adult learners tackling areas of personal interest.

Some commentators argue that criticisms of MOOCs are driven by fears that teachers will be replaced by virtual versions. For example, New Zealand's Tertiary Education Union has criticised institutional forays into MOOCs because they believe they are a threat to jobs and traditional academia. In contrast, Otago University is unlikely to participate because its vice-chancellor does not think MOOCs are viable in the longer term.

Massey University's MOOC plans
Massey is the first New Zealand institution to participate in MOOCs by joining Australia's Open2Study initiative. But with no obvious return on investment and the costs of participation unknown, why is Massey doing it?

According to Mark Brown (who is responsible for Massey's MOOCs programme), Massey can use the MOOC to attract additional students to both its online platform and existing campus-based operations. And it benefits the students by giving them a preview of what is on offer so they can make a more informed assessment about its suitability for them. It also allows teachers to enhance their professional standing through their ability to attract a large international audience.

Some MOOC statistics
The Chronicle of Higher Education's 2013 survey reveals that 79 percent of the professor respondents thought the hype around MOOCs was justified. While their median class size was 30,000 learners, the largest attracted more than 100,000. But the median number of passing students was just 2,600. Professors spent more than 100 hours preparing for the course. EdX and Harvard paid NZ$75 million for their MOOC platform. Coursera received NZ$42 million in initial funding from the University of Pennsylvania and California Institute of Technology to develop MOOCs.

Open Universities Australia MOOCs attract 100,000 students

Author: Maslen, G.

Reference number: 118

Date of reference: 2013

Summary
In seven months, Open Universities Australia (OUA)[64] has attracted 100,000 enrolments from more than 180 countries. Sixty percent of its enrolments are from outside Australia, with the US and UK among those that are well represented. While their completion rates of about 25 percent are low, they are considerably higher than the average of about seven percent (see reference 152 below for further details). However, these low completion rates remain OUA's biggest

[64] OUA originated from a government-backed distance education provider.

challenge in a MOOCs context. It has made efforts in course design and pedagogical approaches to improve student outcomes.

OUA has partnerships with at least a dozen Australian institutions, and in July 2013 Massey University from New Zealand became its first international partner.

The MOOC model: Challenging traditional education

Author: Mazoue, J.

Reference number: 120

Date of reference: 2013

Introduction
MOOCs represent the latest stage in the evolution of open educational resources. The next stage is likely to be a free online curriculum that will lead to a formally recognised degree. Students could have to pay for the certification of the credential but not for acquiring it.

The end of nuclear institutions
The emergence of MOOCs as an alternative to location-bound, proprietary forms of campus-based learning undermines the individually crafted course model that sustains the current institutional 'credit monopoly'. MOOCs are also increasingly being accepted for credit by accredited institutions. MOOCs as currently designed address two of the three challenges facing tertiary education: access and cost.

MOOCs: Quality matters
The major obstacle to the acceptance of MOOCs is their quality. Current MOOC models can be accurately described as 'self-serviced learning and crowd sourced teaching'. Most MOOCs are designed in a way that favours more advanced learners. Novice learners are likely to be as well served by large-scale traditional delivery. Most MOOCs currently lack a sophisticated learning architecture that effectively adapts to the individual needs of each learner. And only 28 percent of Chief Academic Officers surveyed by the Babson Research Group believe that MOOCs are a sustainable method of course provision.

Instead of simply using scholarly reputation and institutional prestige as quality standards, MOOCs should be judged by how well they enable the conditions that optimise learning for each student. However, MOOCs should not be dismissed as vastly inferior to traditional delivery, because their short-term quality issue does not inhibit their potential to improve.

MOOCs as precision-built courseware
MOOCs can be designed to continuously improve educational practice through application of the learning sciences and effective use of learning analytics so they become precision-built courseware. For example, the Community College Open Learning Initiative (OLI) offers a data-driven courseware development model that individualises learning on a massive scale.

A new business model
If they incorporated the above course design changes, MOOCs' principal advantage would consist not simply in their being less expensive and more convenient, but in their being more effective in producing better learning outcomes. They would also be scalable. Effectively designed and organised into a coherent curriculum, MOOCs would have the potential to introduce an entirely new higher education business model. This is because all teaching and learning would be optimised for each individual.

The illusion of safety from disruption
Traditional delivery institutions believe they are immune from any potential disruption from MOOCs because, in addition to providing information and credentials, they also offer an extensive range of socialisation, networking and career opportunities. However, Coursera is already offering career services by using their MOOCs to identify and channel students to

high-tech companies. Through these types of schemes, MOOCs students can market their educational achievements before they obtain a formal credential.

MOOCs can support these schemes more effectively if they are precision-built, because that will make it easier for them to customise their provision to what employers want, as well as identify students that are more skilled and competent in desired areas. Precision education therefore underlies the rationale for MOOCs both as academic exemplars and as an effective mechanism for identifying those who possess relevant job-related competencies.

A post-industrial model of teaching and learning

Traditional institutions will face the following dilemma: should they compete directly with MOOC-based curricula or should they begin to assimilate MOOCs into their own curriculum? For non-elite institutions, participation in the for-profit MOOC model would be problematic, as they would be less likely to attract and retain the talented students they most desire. In contrast, elite public and private institutions might choose to offer MOOCs on the basis that they would not pose a threat to their on-campus operations.

But a precision-built teaching and learning model that optimises outcomes for all students would eventually compromise even the on-campus operations of the elite institutions. Students who continued to pay a premium for an on-campus experience would likely be at a competitive disadvantage if their curriculum was localised instead of being precision-built. Therefore MOOCs represent a post-industrial model of teaching and learning that has the potential to replace the business model of all institutions that depend on recruiting and retaining students for on-campus studies.

Webinar: Open Educational Resources and MOOCs: What is the evidence?

Author: OECD

Reference number: 142

Date of reference: 2013

Summary

There are many potential benefits arising from MOOCs and Open Educational Resources (OER) for the tertiary sector, including better access to quality resources, reduced costs, more innovative teaching and learning practices, the encouragement of informal and lifelong learning, and the showcasing of excellent provision to assist institutions in their international education efforts. But there are also some risks, such as quality assurance, sustainability of the associated business models, and impact on physical campuses.

It is noted that while MOOCs purport to be about widening access, most of the efforts so far have involved the search for new business models and competitive positioning. And MOOCs are not necessarily able to meet the widening access challenges for those who have never participated in higher education. But the consensus was that MOOCs provide a low-cost option to access quality tertiary education irrespective of location.

The more extensive use of Web 2.0 technologies (including social media to support their peer-peer learning and assessment), increasing student debt, and learner demand in the developing world were the major factors behind the success of MOOCs. But these factors do not necessarily determine what the outcomes will be; the outcomes will increasingly be determined by political and economic interests, not just technology.

While over time MOOCs may become like mainstream degree-level provision, their scale will still set them apart. The unbundling of services is an important development that MOOCs make possible. There could also be a league table based on what students think of MOOCs. Another likely future scenario is the increased use of data to provide a much more personalised learning

experience than is currently the case; and machine learning will begin to replace some other forms of assessment.

One of the main challenges facing MOOCs is who will quality assure them? The report notes that the UK's Quality Assurance Agency for Higher Education is conducting research on the quality assurance of MOOCs; and in the US, the Council for Higher Education Accreditation is seeking their members' views on this.

Despite the transformative rhetoric around MOOCs, in reality they are based on conservative views of traditional delivery, with their emphasis on unidirectional transmission of information and crude forms of assessment. And MOOCs would more likely lead to incremental, rather than radical, change. There is a lack of robust evidence to support the supposed benefits of OER.

Concerns were also raised that MOOCs might simply be an e-learning experimental platform for institutions that have not previously been present in this space. This could lead to them making similar mistakes that other more experienced institutions have made with their earlier e-learning efforts. While MOOCs can and are being used for marketing purposes, there are also emerging examples, such as Georgia Tech in the US, where they are now part of the mainstream provision and curriculum.

Copyright and access to academic materials are critical issues for MOOCs. Some interesting developments are occurring in this context, where, for example, Coursera is partnering with five academic publishers as well as a major online platform for textbook rental and sales. While MOOCs and OER are predominantly English language, there are increasing examples of non-English provision and resources. MOOCs could gradually legitimise the use of online education in countries where it is immature or viewed as inferior to traditional delivery.

Google engineers to pump up MOOC.org website from edX

Author: Owano, N.

Reference number: 146

Date of reference: 2013

Summary
Google is joining edX. It will leverage its Course Builder project to enhance the edX platform. This new platform, referred to as MOOC.org, will go live in 2014. MOOC.org will allow any institution (including schools), business or individual to create and host online courses.

The year of the MOOC

Author: Pappano, L.

Reference number: 148

Date of reference: 2012

Introduction
While MOOCs have been around since about 2008, 2012 was the year many wanted to participate. For example, elite institutions are rapidly signing up to Coursera, including Princeton, Brown, Columbia and Duke Universities.

One of the ideal visions of the MOOC is that it can provide high-quality university-level education to a global audience, many of whom would not otherwise have the opportunity. And some MOOCs do have a large audience outside the US. But how to make massive courses more intimate is arguably the MOOCs' main problem and all consortia are attempting to resolve it.

What is a MOOC?
MOOCs are typically large, free, and non-credit-bearing. As they are fully online and very large, extensive teacher-student interactions are not feasible, so course design and peer support are critical. Udacity courses are designed either in-house or with companies like Microsoft or Google.

Unlike its open courseware predecessors, MOOCs combine education, gaming, and social media. While MOOCs are online adaptations of traditional delivery, their 'look and feel' are very much like Facebook. Feedback is electronic, teaching assistants may monitor discussion boards, and there may be homework and a final examination.

The MOOC undoubtedly presents challenges. Can learning be scaled up to this extent? Cheating occurs and in response two consortia, Udacity and edX now offer proctored examinations. Some students are ill-prepared for university work. And few students complete. But given the massive enrolments, even these low completion rates represent a large number of students.

Student feedback indicates that they are more likely to complete if they have peer support including study groups. Many participants already had a degree and most preferred the MOOC to traditional delivery. But the diversity of MOOC participants means that students lack a common knowledge base and educational background. Students who are out of their depth can adversely impact online discussions, especially those associated with highly technical courses. The prerequisites for success in a MOOC are also unclear, which is in sharp contrast to traditional delivery.

But most importantly, what do students get for their efforts – a formal credential, a job interview, or personal satisfaction? Acquiring knowledge is one of the benefits of MOOCs, but students looking to obtain formal credentials are much less likely to be satisfied. Despite these challenges, the line between MOOCs and traditional delivery is already blurring, with institutions starting to combine the two.

Peer assessments
Where automated assessments cannot work, some consortia such as Coursera are replacing this with peer assessments. To ensure these assessments are high quality, Coursera is developing software that will flag students who assign very inaccurate grades and give their assessment less weight. Research is also being conducted to compare peer assessments with teacher (and teacher assistant) assessments.

MOOC completion rates 'below 7%'

Author: Parr, C.

Reference number: 150

Date of reference: 2013

Summary
An Open University doctoral study examined 29 MOOCs. Their average completion rate was less than seven percent. The highest completion rate of the MOOCs surveyed was 19.2 percent. However, the lowest was a mere 0.8 percent. Courses that were graded by peer assessment, rather than automated methods, had lower performance. The average completion rate for MOOCs using automated assessment was 7.7 percent; but the average for MOOCs using peer assessment was only 4.8 percent.

Coursera founder: MOOC credits aren't the real deal

Author: Parr, C.

Reference number: 151

Date of reference: 2013

Summary

The certification offered for MOOCs will never be as valuable as a traditional degree from a prestigious university, according to the co-founder of Coursera (Andrew Ng). Mr Ng does not want MOOCs to compete with other types of education because 'universities provide a great service'. In his view, MOOC certificates might be more attractive for older graduate students because it will allow them to upskill without the time and expense associated with a traditional campus-based degree.

The fee-based pathway for certification will be rolled out across all of Coursera's provision, as it is their biggest potential revenue stream. Pricing will vary depending on the length of the course. Financial aid will be offered to students who cannot afford these fees. In order to verify their identity, fee-paying students will be required to supply two photographs: one personal and one from a government-issued identity document including a passport or driving licence.

Students will also be asked to enter a passage of text so their typing style can be assessed. This will be used to 'prove' that the person submitting the work is the person taking the course. This is important because more effective verification processes could make it easier for universities to start offering credit to students who have completed MOOCs.

FutureLearn is go, but it is not quite the finished article

Author: Parr, C.

Reference number: 152

Date of reference: 2013

Summary

Ten months after FutureLearn was formally launched, it is now offering its first MOOC courses. However, some have argued that capping student numbers for these courses at 10,000 means they are not true MOOCs because they are neither massive nor open. But this is a deliberate strategy, as FutureLearn sees itself in a development phase, with its initial MOOCs being used to assess where efforts should be made to improve the learning experience. It also allows them to assess learner demand. They also note that student numbers to date are very large for the institutions offering the MOOCs and had exceeded initial expectations.

Available data shows that participants are from 129 countries, with a slight majority (54 percent) being female. Only 17 percent are in the 25 and under age group, with most being aged between 26 and 35. A larger majority (62 percent) are in full-time employment, with only 16 percent working part-time and an even smaller number (9 percent) being unemployed. A small majority (52 percent) hold at least a degree-level qualification and 27 percent hold a masters degree. This is more than those educated to secondary school level only (18 percent).

MOOCs not a threat to universities – policy seminar

Author: Paun, C.

Reference number: 156

Date of reference: 2013

Summary

One of the main reasons that MOOCs are not a threat to universities is because their students are typically older, employed, and already holding a degree-level qualification, so the MOOCs are additional not replacement provision. MOOCs cannot replace the on-campus social experience or the staff support, they do not serve disadvantaged students or those from the developing world, and only students with an internet connection can access them.

Most European MOOCs are in Spain, but in second place is the UK. The cost of establishing a MOOC cited here is between US$27,000 and US$47,000. MOOCs provision is dominated by US consortia such as Coursera, edX and Udacity, but the number of European initiatives is increasing rapidly. In contrast to the US, most of these are national initiatives, including FutureLearn from the UK.

The reputation of the consortia members rather than the quality of the platform appears to be critical in determining their success. This could spell trouble for FutureLearn, as the UK's leading universities, including Oxford and Cambridge, are not members because they fear damage to their institutional brand if they offer MOOCs. But this may be good news for smaller institutions that fear losing their students to MOOCs being offered by top international institutions.

Despite the fact that MOOCs are cross-border, their effect on regional higher education systems is not yet completely understood. It is also not clear what impact they will have on existing initiatives that encourage student mobility. But it may be the case that MOOCs are being taken up by students who would not travel overseas in any case. MOOCs, however, do provide virtual mobility where institutions are coming to students rather than vice versa.

There are initiatives in Europe to have MOOCs recognised for credit. But it remains to be seen how big student demand would be for credits obtained through MOOCs, because most MOOC students are not seeking credits.

Online courses a 'game changer' for uni

Author: Pearl, H.

Reference number: 157

Date of reference: 2013

Summary

Waikato University was planning to offer its own MOOC in 2013. If students pass two tests they will get an official certificate and they will not be charged for its ancillary services.

But some staff are not supportive because they see MOOCs as 'edutainment' advanced by people with extensive social media skills, but not necessarily teaching ones. MOOCs also have implications for academic jobs, with a lot of their support being provided by non-academic staff. As a result, the Tertiary Education Union fears that the MOOC will lead to greater casualisation of tertiary staff.

When will college truly leave the building: If MOOCs are the answer, what is the question?

Author: Pence, H. E.

Reference number: 158

Date of reference: 2012

MOOCs in higher education

MOOCs originated in 2008 and several consortia now offer them, including Udacity, Coursera and edX. Harvard University and the Massachusetts Institute of Technology committed US$60 million to launch edX. One of the major MOOC models is the original one based on connectivist learning theories. This model tends to be less formal and runs on a massive online game type basis. The other model is run largely along the lines of a traditional delivery course.

An in-depth study of the first one found that for inexperienced users its two major challenges were the lack of social presence and the high level of autonomy that is required (Kop and Fournier, 2010). This leads to high dropout rates. The key factors contributing to effective participation were time management, availability, and goal setting.

Discussion

Can MOOCs provide a less expensive substitute for traditional delivery? And do they represent a substantive enough change that they will eventually replace traditional delivery? The institutions most heavily involved in MOOCs do not present a clear model of how they will become financially sustainable (Kolowich, 2012).

One solution being proposed is to offer badges or certificates to students who have completed the course. This would allow students better access at lower cost than traditional institutions, while keeping the non-MOOC provision from the sponsoring provider independent.

Data generated by MOOCs provides an opportunity for institutions to better understand why their students succeed or fail. This data, which is referred to as 'learning analytics', would, for example, alert appropriate staff when a student's performance falls outside of a defined threshold. It would also allow institutions to save costs by circumventing Learning Management Systems data which is owned by external providers.

It is more difficult to determine how disruptive MOOCs might be. The earlier MOOCs certainly have the potential to be disruptive. However, most MOOCs more closely resemble traditional delivery courses. While their scale is obviously much greater, does size alone make this model disruptive?

Using survey data from a Coursera MOOC, Kolowich (2012) found that only a third of participants were graduate or undergraduate students. Udacity reported even larger numbers of non-student participants. Across all Coursera courses, 74 percent of all participants resided outside the US. Udacity also has a large number of its students participating from outside the US. This data suggests that MOOCs will be more disruptive to foreign, rather than US, institutions.

While institutions need to be wary of being captured by the hype of MOOCs, they also need to be aware of the challenges they present. They need to steer a middle course between those who overinflate what the MOOC means for higher education and demand instant and radical change and others who reject any change whatsoever. While being too important to ignore, MOOCs are not yet well defined enough to justify rapid implementation.

Beyond MOOC hype

Author: Rivard, R.

Reference number: 162

Date of reference: 2013

Summary

The ‘mania’ over MOOCs may be slowing down. This is because even their strongest advocates are acknowledging that critical questions remain unanswered, and are urging further study. MOOCs are going through what Gartner refers to as the ‘hype cycle’, where overly hyped products go from a ‘peak of inflated expectations’ to a ‘trough of disillusionment’ before institutions figure out how to effectively use and benefit from a new technology.

The current stage of this hype cycle – the ‘trough of disillusionment’ – is coming from many different sources. Faculty are concerned they may lose their jobs and intellectual property and that MOOCs will not educate students. Administrators are worried that MOOCs will mean corporations, not universities, end up controlling the future of higher education. And even their strongest supporters now believe that they will not replace traditional delivery.

Critics also point to the low-quality pedagogy of MOOCs. But MOOCs can also support the ‘flipped classroom’ concept, where the classroom becomes the tutorial and the lecture is delivered using digital technologies. Many institutions are now taking a much more rigorous approach to whether or not MOOCs are suitable for them. And there is a possibility of regulation to limit MOOCs provision so it does not threaten traditional delivery.

But despite these concerns, Coursera is now partnering with institutions in nine different states, including Texas and New York, to test new business models and pedagogies. This network of universities will be creating or using and buying or selling course material from each other, with Coursera acting as a content broker, consultant and host.

And some state systems, including New York, Colorado and Tennessee, will use Coursera to offer MOOCs, including credit-bearing courses, for free to their students. In Tennessee’s case, students will pay their standard fees with some of this going to Coursera to put the course on its platform. In addition Tennessee would devote US$50,000 to course development so they can be offered via this platform.

MOOCs and the AI-Stanford like courses: Two successful and distinct course formats for Massive Open Online Courses

Author: Rodriguez, C. O.

Reference number: 163

Date of reference: 2013

Methodology

The study examines two types of MOOC – AI offered by the major MOOC consortia (two representative courses) and c-MOOCs (Connectivist Massive Open Online Courses, four representative courses) – and is underpinned by an action research methodology. However, for the two larger c-MOOCs, surveys and research papers were also used as the information sources. This study was undertaken to address the misconception that these two models are equivalents or evolutions from one to the other (typically from c-MOOC to the AI type MOOC) (Rodriguez, 2010; Kolowich, 2012; Levin, 2012; Weller, 2012).

Key findings

The c-MOOC participants were mainly employed professionals in education-related fields, male, and over 25 years of age. The main difference between the c-MOOC and AI type MOOCs participants was that AI participants were graduate students.

c-MOOC survey responses indicate that many of its participants were not concerned about course completion. Participants' involvement was dependent on personal objectives and time availability. A small number of participants were responsible for the majority of course-related interactions and correspondence. But all participants' participation declined over time.

Most c-MOOC participants were non-active. However, this does not necessarily mean they would drop out. In contrast, the participants in highly structured AI type MOOCs were either actively involved or completing the prescribed activities and assessments or they dropped out.

The c-MOOCs used a vast array of social media and digital technologies and tools. In contrast, the AI MOOCs had a central web page with video lectures and quizzes. The AI MOOC also had regular homework and formal assessments including examinations. Students who received more than an established grade obtained a signed letter of recognition from the tutors.

For c-MOOCs the first challenge is how to assess or give credit when not all participants are doing the same work. Most of the surveys indicate that many c-MOOC participants do not even think it is necessary to have any form of accreditation.

In a c-MOOC it is more likely that the teacher's role will change rather than that they will become unnecessary. This view is supported by Cormier and Siemens (2010) who note that 'educators continue to play an important role in facilitating interaction, sharing information and resources, and challenging assertions'.

Educators should also draw attention to important ideas and concepts, organise content to support learning, assist students with social networking, filter information, demonstrate successful information and interaction patterns, and be present. In contrast, in the AI type MOOCs, teachers had no direct interaction with the students and any feedback was via a predetermined set of questions from a pool proposed and voted on by participants. And this only occurred during 'office hours'.

The primary innovation of the AI type MOOC is scaling, as they are basically online manifestations of traditional delivery (Siemens, 2012a). The main point of c-MOOCs is interaction with peers; in contrast, in AI type MOOCs the primary interaction is between learner and content (Quinn, 2012). In a c-MOOC context, 'open' means that novices and experienced people can interact with each other. But in an AI MOOC context, 'open' is more related to the fact that the courses are open for anyone to take.

c-MOOCs establish a many-to-many relationship to develop massive interconnectedness. However, AI type MOOCs have a one-to-many relationship to reach massive numbers. c-MOOCs are much more distributed and diverse in terms of their supporting technologies, tools and environments. AI type MOOCs centre all their course material on a single platform.

In c-MOOCs, students need to have some prior knowledge, and be able to learn independently and think critically. But students in AI type MOOCs require no prior knowledge. However, the two different MOOC models share some common features: the geographical spread of participants; large dropout rates; and massive numbers of participants.

The concept of openness behind c and x-MOOCs (Massive Open Online Courses)

Author: Rodriguez, O.

Reference number: 164

Date of reference: 2013

Introduction

MOOCs are different from established online provision in two key respects: their scale and openness. They are global, rather than regional, and being digital means they are not constrained by space or resource availability. The c and x in the MOOC was coined by Downes because they are based on very different pedagogical frameworks – c refers to the connectivist learning theory while the x derives from edX.

Methodology

In expanding on the previous study (reference number 166 above), more x-MOOCs have been included from both edX and Coursera, but the same action research methodology was retained.

Description of x-MOOCs consortia

edX is a non-profit venture co-founded by Harvard and the Massachusetts Institute of Technology. Participating institutions will use the MOOCs to research how students learn and how technology can transform learning on-campus and globally. Students enrolled through edX have the option of getting their learning validated with a proctored final examination administered by Pearson, which has a global network of testing centres.

In contrast, Coursera is a social entrepreneurship company founded by Stanford University faculty that partners with other elite institutions in and outside the US and provides an online education platform. Coursera does not offer credit for its courses; rather, it typically provides a certificate of completion or equivalent and a grade. However, it is now being proposed that students could obtain credit for a fee, doing extra assignments, and working with a teacher. It has a much wider international reach than edX, including Europe and Africa.

Coursera's participating institutions design and produce their courses and decide whether or not to offer credit. The partnership is established so that Coursera does not pay the universities nor do they pay Coursera. At present, both incur substantial costs. Their agreement is that if a revenue stream emerges, Coursera and the universities will share it.

But exactly how x-MOOCs will become financially sustainable is unclear. It could be by charging students for credentials, providing premium services, or charging corporate recruiters for access to the best students. This lack of clarity about future revenue remains a pressing concern for those involved.

Theoretical and conceptual underpinnings and the concept of openness behind c and x MOOCs

c-MOOCs are connectivist courses whose underpinning characteristics are autonomy, diversity, openness, connectedness and interactivity (Downes, 2005). They operate on a true 'teacher as learner as teacher' model (Siemens, 2006). And because there is no central organisational structure, credentials, which tend to put limits on participation, do not exist in c-MOOCs. As a result, c-MOOCs are much less restrictive than x-MOOCs.

Most x-MOOCs are based on behaviourist pedagogy. They rely primarily on information transmission, automated marking of assignments, and peer assessment. While it has its strengths, this teaching approach also has significant limitations, including the difficulty of teaching higher-order skills of critical, creative and original thinking (Bates, 2012).

c-MOOCs establish a many-to-many relationship to develop massive interconnectedness. In contrast, x-MOOCs establish a one-to-many relationship to reach massive numbers. x-MOOCs

can be viewed as Learning Management Systems bundled with high-quality content. And c-MOOCs are underpinned by what learners do for themselves with digital tools in a networked environment.

But despite their differences, the technological advances, which include the quality of the online delivery platforms, the ability to personalise material, and the capacity to analyse massive numbers of student experiences to see which approach works best, mean that both c- and x-MOOCs can substantially increase access to tertiary education.

Innovating pedagogy 2012

Authors: Sharples, M., McAndrew, P., Weller, M., Ferguson, R., FitzGerald, E., Hirst, T., Mor, Y., Gaved, M., and Whitelock, D.

Reference number: 170

Date of reference: 2012

MOOCs

MOOCs are attempts to create open access online courses with no constraints on class sizes. Unlike Open Educational Resources, MOOCs are self-managed by groups of learners and teachers and have a prescribed duration of typically six to 12 weeks. There are no formal restrictions to entry so learners can participate as they choose. MOOC approaches range from informal to opportunities for independent learning aligned with a formal course, or semi-formal courses offered by an institution for informal certification.

While early MOOCs were much less structured than traditional courses, the more recent iterations offer existing materials, with formal (but computer-marked), copyrighted assessment exercises and certificates of completion, and some have attracted over a hundred thousand participants. Through this more structured approach and the establishment of supporting consortia such as edX, Coursera and Udacity, MOOCs are increasingly characterised by a corporate institutional approach.

While the financial models had not been revealed at the time of writing, the most obvious approach was to sell accreditation and additional services around the course. Key benefits of MOOCs for institutions include an increased profile and a potential increase in student numbers. MOOCs also provide an experimental space for exploring new pedagogy, models of support, and use of technology.

But there are also disadvantages for institutions and learners. With their less formal structure a MOOC could also damage an institution's reputation. And giving away the course for free as well as the on-campus student experience could decrease learner recruitment. From a learner perspective, there is some frustration and confusion at the mix of technologies required for greater independence.

A study by McAuley, Stewart, Siemens and Cormier (2010) found that student attrition in MOOCs is much higher than in traditional delivery courses. This could be the result of the lack of financial commitment, frustration, or simply because learners have gained what they needed at an earlier stage of the course. As a topic and approach the MOOC is gaining currency. Key issues to be resolved will be in accrediting the outputs of MOOCs and in making them financially sustainable for institutions.

Massive Open Online Courses: Innovation in education?

Author: Siemens, G.

Reference number: 171

Date of reference: 2013

What are MOOCs?
MOOCs offer a middle ground between the traditional and structured classroom and the chaotic open web of fragmented information. The defining characteristics of MOOCs are that they are **massive**; but this is relative because some are only the size of large on-campus undergraduate courses, while the largest have over 100,000 participants. An important benefit of these large numbers is that students have the opportunity to form sub-networks, which allows learning to become more personalised.

MOOCs are **open**; although many have their content only available under licence, students can access it without paying fees. They are exclusively **online**; while students can arrange face-to-face interactions, all the core course content and interactions occur online. They are **courses** because they have a set start and finish and the supporting content is somewhat structured and sequenced, even when multiple sources are used.

MOOC formats
x-MOOCs are offered in a traditional university model via large for-profit (Coursera) and non-profit (edX) consortia. The pedagogical model that underpins these courses is one of 'teacher as expert' and 'learner as knowledge consumer'. Their typical delivery method is video lecture. Because of the large numbers of participants, assignments are computer-graded. Except in discussion forums, interactions with teaching staff are not common. Coursera encourages participants to form regional study groups to connect with their peers.

c-MOOCs are based on a connectivist pedagogical model. Knowledge is generated in a networked environment. Personally created artefacts are critical as a means of sharing and developing this knowledge. In contrast with x-MOOCs, c-MOOCs have limited structure so are largely open in terms of the activities that students can pursue related to the topic. c-MOOCs emphasise the importance of learner autonomy.

This means that student choice is critical and as a consequence c-MOOCs are typically supported by a vast array of digital tools and technologies. The teacher's role is to provide the overall structure and framework and facilitate interactions and discussions.

Challenges of MOOCs
The major challenges facing MOOCs are: high dropout rates, the lack of an economic or sustainable model, plagiarism, and the risk of de-skilling academic staff. MOOCs have poor completion rates compared with traditional delivery courses. But dropouts in MOOCs may occur for different reasons from in traditional delivery courses. For students in traditional delivery courses, failure to complete has implications for future study. And they have numerous incentives to complete, including having to pay fees regardless of the outcome, the desire to obtain credit, and the requirements for obtaining qualifications.

In contrast, MOOC students rely heavily on 'internal' factors such as personal interest or motivation. While some may experience a sense of personal disappointment at not completing, others may only want to undertake specific components and have no intention of completing.

At the time of writing, MOOCs did not have a sustainable revenue model although Coursera is at the early stages of experimenting with business models, including career placement services (Young, 2012b). Developing, delivering and updating online provision is a resource-intensive undertaking. Until a revenue model is established, concerns will exist around the viability of MOOC providers and the MOOC model of learning.

One potential impact of ‘super professors’ from top universities providing recorded lectures to other institutions is the progressive de-skilling of academic staff (Basu, 2012). Plagiarism is a growing concern for university providers of MOOCs (Young, 2012b). These concerns about plagiarism require attention in order for universities to consider MOOCs for credit or transfer.

MOOCs ecosystem and impacts
Even at this early stage, the broad outline of a MOOCs ‘ecosystem’ is emerging. This is because they are a platform on which various service offerings are provided. And as is the case with other social media platforms like Twitter, there are already indications that a similar suite of products and tools will be built on top of existing MOOC platform offerings.

One impact of the MOOC is a power shift toward increased equity between teacher and student. And they are increasing interest in, and awareness of, online learning.

The OER movement’s response to MOOCs
The OER movement faces some important challenges in responding to MOOCs. For example, MOOCs may have broader appeal because of their ease of use and access, as opposed to just making openly licensed content widely available. Additionally, how do small institutions participate in MOOCs? The prominent x-MOOC model has not yet provided an opportunity for less elite systems to teach courses on their platforms.

MOOCs are no education panacea, but here’s what can make them work

Author: Smutz, W.

Reference number: 173

Date of reference: 2013

Summary
Many think MOOCs will revolutionise higher education, and possibly even put traditional institutions out of business. But MOOCs are not likely to solve the fundamental student learning challenges that institutions face, and they will not replace a university education. MOOCs make vast amounts of content available to massive numbers of students. But a university education is about more than content. Students should not be misled into thinking that getting a university education is as easy ‘as downloading a song from iTunes’.

MOOCs provide opportunities for the growing numbers of students who are looking for alternatives to the traditional university experience. However, the real challenge facing higher education, irrespective of delivery mode, is helping students to successfully complete university degree programmes to meet the future demands of the US economy.

But MOOCs have very high dropout rates (as high as 90 percent in some cases). This is acceptable when classes are free and students suffer no consequences as a result of discontinuing their studies. However, degree-granting institutions have to take a different approach.

One key factor in improving student retention and completion in MOOCs is the provision of intensive support by institutions and staff. This support must also include technical support that involves interactions with human, not machine, experts. However, technology does allow student support measures to be much more targeted, rapid and effective. And MOOCs should be designed to maximise teacher-student and peer-peer interactions.

US Department of State and Coursera partner to offer enhanced learning opportunities

Author: US Department of State

Reference number: 190

Date of reference: 2013

Summary

The US Department of State has recently announced a partnership with Coursera to expand learning opportunities globally via MOOCs. This is part of the State Department's 'MOOC Camp' initiative, which hosts facilitated discussions around MOOCs at US embassies, consulates, American spaces, and other public spaces in more than 30 countries. This is part of a wider drive to promote and inform international students about study opportunities in the US. Coursera is providing training materials and additional support for course facilitators as part of its Global Learning Hubs programme.

Providers of free MOOC's now charge employers for access to student data

Author: Young, J. R.

Reference number: 198

Date of reference: 2012

Summary

Coursera is obtaining revenue by selling students' information to employers. But only students who opt into the service will have their data shared with employers and they can also choose what information is disclosed. Each institution offering a course through Coursera can also opt out of this service, meaning that not all their students would participate. And it is only available for a limited sub-set of courses. Udacity is also offering its students' data to employers.

Coursera's scheme works by supplying a list of potentially suitable students to an employer. If the employer is interested, the student is asked if they would like to be introduced to them. If the student agrees, the employer pays a flat fee to Coursera, with the host institution typically getting between six and 15 percent of this fee. As part of this service, Coursera and Udacity also note 'soft' skills for employers, like students who frequently help their peers in discussion forums.

California State U. will experiment with offering credit for MOOCs

Author: Young, J. R.

Reference number: 199

Date of reference: 2013

Summary

The California state government is considering whether or not its university system should work with Udacity and Coursera. This is driven by the governor's concerns about student debt and believing that online provision is part of the solution.

From a Udacity perspective, a crucial component of these developments is trying to get a critical mass of students completing their MOOCs because massive dropout rates of up to 90 percent are a major concern. This might be because of the 'novelty' factor, where students sign up out of curiosity, but have no intention of completing. Udacity is trying to prevent such large dropout

rates by hiring mentors to check up on enrolled students and assist them with any questions they may have. These mentors would most likely be fellow students.

Will MOOCs change how professors handle the classroom?

Author: Young, J. R.

Reference number: 200

Date of reference: 2013

Summary

Despite the rhetoric around MOOCs, their teaching approaches may not be high quality. Traditional delivery type lectures are increasingly being challenged for their relevance and effectiveness in assisting today's learners to achieve their own and wider outcomes. One of the key reasons Harvard and the Massachusetts Institute of Technology have invested US$30 million each in the edX MOOCs consortia was to use this platform as a laboratory to test new methods that could be transferred to their on-campus provision.

It is hoped that these new teaching methods will not just 'upgrade' lectures, but also free up classroom time for increases in the quantity and quality of peer-peer and student-teacher interactions. One of the problems encountered in trying to mainstream innovative teaching approaches is a lack of incentives and priority given by institutions to research, rather than teaching performance.

Several MOOC experiments involve more direct collaborations, with professors teaming up with colleagues to jointly produce courses. For example, Udacity has adopted a team-based approach, where subject matter experts work alongside colleagues who have more expertise in making the content engaging for students, and often they also deliver the lecture, rather than the subject matter expert.

Some observers are concerned that MOOC consortia and other education technology companies could gain unprecedented power over the education process if MOOCs become de facto standards for delivering education. And their access to MOOC data and lack of transparency about how this might be used would also give them more power than has previously been possible. MOOCs can also reduce the diversity of information, in the same way that Wikipedia has reduced the number of competing and different perspectives from having multiple encyclopaedias.

A standards-based approach would prevent any one company or consortium gaining too much influence. edX was established in part as a counterpoint to its 'corporate' competitor, Coursera. These moves arise from concerns that teaching approaches are (or could be) dictated by for-profit companies.

MOOCs and open education: Implications for higher education

Authors: Yuan, L., and Powell, S.

Reference number: 201

Date of reference: 2013

Open Educational Resources

The UK's Open Educational Resources (OER) programme has successfully made a significant amount of new and existing teaching and learning resources freely available under an open licensing scheme (JISC, 2012). But a sustainable approach to OER has not as yet been developed. Given the substantive monies invested, a criticism of OER is that they have not yet affected traditional business models or daily teaching practices at most institutions (Kortemeyer, 2013).

Methodology
The MOOCs reviewed here are from North America. The report is underpinned by a literature review that also includes 'grey' literature such as weblogs and press releases. The theory of disruptive innovation is used to help form the questions of policy and strategy that higher education institutions need to address.

Making sense of MOOCs
While MOOCs are a relatively recent phenomenon, they can be seen as an extension of existing online learning approaches. They also offer an opportunity to disaggregate teaching from assessment and accreditation for differential pricing and pursuit of marketing initiatives. However, concerns have been raised that despite their origins in the OER/open education movement they may lead to a situation where free is prioritised over open.

Analysis of MOOCs initiatives
edX is a joint venture between Harvard University and the Massachusetts Institute of Technology, who between them have contributed US$60 million to it. In contrast, the for-profit ventures, Coursera and Udacity, have only contributed US$22 million and US$21.1 million respectively.

But despite their different funding origins and amounts, all of these ventures offer only limited provision in terms of amount and disciplines covered. edX and Coursera charge students for obtaining credit, unlike Udacity. Other major MOOC providers or consortia noted here are FutureLearn (the UK's response to MOOCs, which has been launched by the Open University), Udemy, P2Pu and the Khan Academy.

A growing number of institutions have been involved in engaging and experimenting with MOOCs for the purposes of expanding access, marketing and branding, as well as the potential for developing new revenue streams. Part of this marketing and branding is a desire by institutions to extend their reach and reputation internationally.

Governments are attracted to MOOCs because they can help resolve budget constraints by lowering the cost of degree-level provision through inexpensive, low-risk experiments in different forms of higher education provision (Carey, 2013). And the private sector (including large publishing and technology companies like Pearson and Google) is attracted to MOOCs because they provide a means for them to enter the higher education market.

Recent surveys on MOOC learners indicate that their motivations fall into one of four broad categories: 1) to support lifelong learning or gain an understanding of the subject matter, with no particular expectations for completion or achievement; 2) for fun, entertainment, social experience, and intellectual stimulation; 3) for convenience, often in conjunction with barriers to traditional delivery; and 4) to experience or explore online education (Belanger and Thornton, 2013).

Many learners struggle to engage with courses and stay motivated in MOOCs. The market value of MOOCs has yet to be determined. Other potential business models are being developed, but need further work to establish them. The most common of these is charging students fees to obtain certificates. Others include selling student information to potential employers or advertisers; fee-based assignment grading; advertising for sponsored courses; and tuition fees for credited courses (Educause, 2012).

Issues and challenges for MOOCs
The proliferation of MOOCs as an educational approach means there is a risk that the current enthusiasm is being driven by a self-selecting group of highly educated, IT-literate individuals who are able to navigate their sometimes complex, confusing and intimidating structures and processes. The inability to charge fees and their lack of credit are major challenges for the MOOC model. However, a lack of credit may not be an issue for students who are using MOOCs as evidence of professional development for employers.

In general, there are concerns about the pedagogy and quality of current MOOCs, with a clear distinction between process-based (i.e. c-MOOCs) and content-based (i.e. x-MOOCs) approaches. x-MOOCs tend to adopt traditional delivery type pedagogies and are dominated by for-profit providers. x-MOOCs provide only limited interaction among institutions, staff and learners.

In contrast, c-MOOCs, based on connectivist pedagogies, tend to be offered by non-profit providers and tend to have far more teacher-student and peer-peer interactions. The motivation for some MOOCs is a philanthropic one and for others a business proposition. But in both cases, there is the challenge of finding a viable model that allows for the sustainability of MOOC provision.

MOOCs have no formal quality assurance framework and tend to rely on informal evaluations from course participants. The dropout rates are very high. This may not be a problem if the primary purpose of MOOCs is to provide access to free, high-quality courses from elite institutions. But most agree that it would be useful to improve MOOC retention rates by finding out why and at what stage students drop out. The overreliance on peer assessment is causing concerns as is the potential for cheating and plagiarism to occur in MOOCs. In-person examinations are one solution being adopted.

MOOCs as disruptive innovations

The theory of disruptive innovation (Bower and Christensen, 1995) raises a significant question for higher education institutions to address: are MOOCs heralding a change in the business landscape that poses a threat to their existing models of degree-level provision? MOOCs may not be disruptive, because they are serving a different market from traditional institutions.

However, there is a possibility that MOOCs could be disruptive because of the combination of wider societal adoption of internet technologies, changing funding models, students wanting better performance, the potential for an alternative pathway if they become credit bearing, and the development of new business models that leverage this opportunity. If this is the case, then the theory of disruptive innovation suggests that institutions establish an autonomous business unit to escape the host organisation's culture and associated systems and processes so they can make an appropriate and timely response to MOOCs.