

# E-LEARNING—A CHANGE AGENT FOR EDUCATION?

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## Abstract

**THE AIM** of this paper is to explore e-learning's potential as a change agent for higher education using an e-learning project, E-College Wales (ECW), as a case study. E-College Wales was a large scale, four-year, longitudinal project which provided a good opportunity to evaluate the potential of e-learning as an institution-wide change agent in higher education practices. The findings of this case study are reported via the five dimensions for sustainable implementation of e-learning, namely learning and teaching, organisation, technology, culture, and strategy and management. The methodology used was qualitative and the data collection methods included interviews and focus groups with the tutors and management of the University at both the beginning and the end of the project. These included looking at their attitudes in their own teaching and learning practice, as well as the way e-learning was managed as part of the University's strategy, in order to compare their expectations with what they experienced. The findings from the ECW project showed that e-learning triggered some initial but vital changes to the University—such as pedagogical discussion that has long been absent—and introduced a more student-centred learning model, new organisational structure and procedures to support technology-enhanced learning, and a clear vision and culture that are more responsive to change.

**Key words:** Change, e-learning, higher education.

## Introduction

**THE HIGHER** education (HE) marketplace is becoming much more competitive with applicants having an abundance of performance information from which they can select their preferred university, not only from their local areas but across the globe with the development of technologies, ie virtual and distance education. Higher education is becoming 'internationalised', facing not only local but global competition. Additionally, there is increasing pressure from central government for universities to achieve ever-higher levels of performance and improved value for money. Educational patterns are also changing rapidly: there are many more part-time students, mature students and students from more diverse backgrounds. The diverse groups of students in today's higher education institutions (HEIs) are no longer the people our educational system was designed to teach. The rapid development and dissemination of technologies over the last decades also resulted in a new generation of students who grew up with computers and other digital tools, which Prensky (2001) referred to as "digital natives". These digital natives are likely to have a fundamentally different approach to learning compared with their predecessors. As there are little signs of these

social and technological developments abating in the future, the need for change in higher education is unavoidable.

The availability of technology and the need to reach a wider audience to stay competitive in HE is leading many HEIs into e-learning. Many believe that e-learning is the change they need to stay competitive. Many universities therefore utilised technology to develop what they consider to be e-learning. However:

*...many of these implementations are costly and yet superficial, in terms of learner engagement and activity. They provide a content repository and in many cases limited active learner participation. For many students, this results in endless reading of screen based text. In addition, as staff members are directed down the e-learning route as a consequence of management strategies and mission statements, and the creation of sound pedagogic practice has often become flawed or missed completely and activities constructed*

*service the technology rather than the student or learner progression or association.*

O'Neil et al (2004, p313)

The required changes in teaching and learning are often hardly present. This first generation of e-learning as described by Darby (2004) should not be seen as 'the' change that would provide answers to the challenges HEIs are currently facing. As Jones (2004) stresses, university leaders should view Information Communication Technology (ICT) as a lever for re-engineering a curriculum based on new pedagogies, which are collaborative and constructivist. In other words, e-learning should act as a catalyst to changing the traditional HEIs fundamentally. This, however, is not easy, as:

*...while e-learning in higher education is now considered (indeed, sometimes welcomed by many staff) for its potential, real development beyond projects initiated by innovators has so far been modest. Most HEIs are still struggling to engage a significant percentage of students and staff in e-learning. All HEIs are vulnerable to a wide variety of pressures but have a high resistance to change.*

Salmon (2005, p205)

Koper (2000, p7) sums up the situation of the first generation e-learning by saying that: "...in education quite a lot of energy is wasted on chasing solutions that have everything to do with chance technical possibilities, and nothing to do with fundamental renewal." It is the fundamental renewal of the educational system, not a mere adjustment in delivery method to the existing system that is needed. This is not easy, as it can be seen from many of the large scale e-learning project failures that more research is needed. Weller (2002, p21) warns that: "...in order to successfully deliver an online course, it requires a strong pedagogical strategy. This may require much more thought and reflection than is perhaps given to a traditional lecture series." Derntl and Motschnig-Pitrik (2005, p112) explain that: "much remains to be done in re-engineering learning processes such as to exploit technology to a degree that surpasses mere representation, sharing and delivery by offering radically novel learning scenarios."

The aim of this paper is to explore e-learning's potential as a change agent for HE using a four-year e-learning project, E-College Wales (ECW), as a case study and identifying examples of the emergent change agenda. This paper will highlight how the emergence of new demands through an e-learning project resulted in a university adapting, undergoing and sustaining significant changes and evolved to a new teaching and learning framework after the project ended.

Schonwald (2003) in an attempt to find out whether e-learning is just a temporary 'hype' or will become a catalyst for university teaching and learning, identified five dimensions that are crucial for sustainable e-learning (based on a survey among 25 e-learning experts). The findings are presented under Schonwald's five dimensions:

1. learning and teaching;
2. organisational structure;
3. technology;
4. strategy and management; and
5. culture

## The context

**THIS CASE STUDY** is based in a new university, the University of Glamorgan (UoG), with a strong vocational history. The university, like others, is still facing immense challenges to respond to fundamental changes in teaching and learning. Toffler suggests that significant organisational change only occurs when three conditions are met:

*First, there must be enormous external pressures. Second, there must be people inside who are strongly dissatisfied with the existing order. And third, there must be a coherent alternative embodied in a plan, a model, or a vision*

Toffler (1985, p14)

The first condition for change identified by Toffler (1985) is met easily as a result of enormous external pressures on universities not only from governments and stakeholders but also from global competitors. Bonk (2004) describes four major external pressures for e-learning, including the emergence of innovative learning technology, increasing demand from learners, the availability of collaborative and interactive technology and the cutbacks in budgets. The second condition for change—insiders dissatisfied with the existing order—is being driven both by changes in the external environment such as those described by Bonk (2004) and also by internal debates on the nature of learning and teaching and the development of lifelong learning by a small but increasing number of champions across the globe. More importantly, the changes in student demand also mean that students within the university are increasingly becoming dissatisfied with the current provisions within HEIs. This is clear from the results of the last few years' National Student Survey. Universities across the globe are similarly facing the first two conditions, and e-learning, for many, is being seen as the

impetus for the third condition identified by Toffler (1985), a vision that would lead to changes in learning and teaching and improve the student experience. Many universities' e-learning however 'got stuck at a project level' and has (yet) to change the teaching in higher education in a fundamental way (Schonwald, 2003). The next section of the paper introduces one such project, a European-funded project: E-College Wales.

The E-College Wales project was led by the University in collaboration with six of its Further Education Colleges (FECs) across Wales. The project, which uses online courses to deliver entrepreneurial learning to individuals and organisations within Wales, has been managed in two phases. The first phase of E-College Wales (ECW1), concentrated on the design and piloting of online learning materials and was completed in 2003. The second phase of the project, ECW2, started in 2003 and focused on the delivery of online courses at the University and six of its FECs via a blended learning model. These courses were delivered across the network through the Blackboard virtual learning environment (VLE) along with face-to-face, local support.

The three key courses offered online were the Foundation Degree of Arts (FdA) in Business Administration, Bachelor of Arts (BA) in Enterprise and Master of Arts (MA) in Professional Development. More than 2,000 students have studied on these courses. The project ended in 2005, and the University feels that many of the changes made during the project are of significance to its overall learning and teaching agenda. The project therefore acts as a good case study on how e-learning acted as a change agent for higher education.

## Methodology and data collection

**THIS CASE STUDY** project was carried out in a spirit of "collaborative inquiry" (Heron, 1996) and focused on learning based in dialogue (Freire and Sor, 1987). The approach allowed the researchers and stakeholders to enter into an exchange of knowledge through dialogue, involving a process of reflection and action for all parties. The evaluations for the project involved the use of both quantitative and qualitative methods. Niglas (2004) in an evaluation of the combined use of qualitative and quantitative methods in educational research concludes that combined designs enrich the methodology of educational research.

The data collection for the ECW project involved focus groups, questionnaires and observation to engage the total population of stakeholders. For some of the focus group sessions self-selection sampling was used. It was important to

try to incorporate the widest experience to obtain the impact or non-impact of disruptive technology. All stakeholders were encouraged to critically reflect on their experiences and identify the major challenges. The staff questionnaires contained closed and open questions to capture their experience to date, their personal attitudes to technology, attitudes to their role, student issues, staff development and their feelings about e-learning and its potential. During the ECW project, student questionnaires required students to reflect on their learning experience. In parallel, data was also collected from focus groups with representation from all stakeholders that were fully transcribed and thematic analyses were carried out to pursue issues in more depth.

Given the longitudinal nature of the project, extensive data were gathered from this project throughout the four years. It is very difficult in one paper to cover all the findings. This paper therefore focuses mainly on the qualitative data collected and provides an overview from a change management perspective of how the ECW project acted as a change agent.

## Discussions—the changes

**EXAMPLES** from the change agenda in each of the five areas identified by Schonwald (2003) and discussed in the introduction can be seen as closely related to the University's overall organisational structure.

### 1. Learning and teaching

#### Pedagogy

At the time when the ECW project was first initiated in 2001, the first generation of e-learning was at its height. E-learning was technologically focused and was given little, if any pedagogical consideration. This is perhaps not surprising as some researchers like Stiles (2006, p8) argues that HE's priority has never really been pedagogy: "...its priority has always been and continues to be, research and the subject discipline...pedagogy has traditionally barely figured in planning or professional development in HE". It was not until the large-scale failures of the first generation of e-learning that some HEIs awoke to the need for pedagogical discussion and to move away from conventional type of education.

Freire (1972), Dewey (1938) and Vygotsky (1978) have long argued for a move away from the conventional type of education where the educator's task is to fill learners with the contents of their thoughts through mass lecture to an emphasis on dialogue, reflection and communication to encompass the praxis. This idea has been further promoted and developed by others such as Dewey's and Vygotsky's stand on constructivist learning. The learners' role in Vygotsky's view is one of active partners in all socio-cultural interactions. In other

words, there should be a move away from the traditional teacher-centred model to a learner-centred model.

The ECW project, with its target audience of lifelong learners, has taken on this learner-centred view and its courses were developed with an overarching constructivist view in mind. There were no lectures for students to attend and the key task for students was the participation in online discussions. Students were required to complete weekly tasks online and social interactions were seen as a key part of learning. Course materials were presented in the VLE in a linear structure, and the navigation allowed students to choose their own study sequence and to rapidly move from topic to topic. The flexibility of online delivery and the ability to move between materials, tasks, forums and resources within the VLE gave students control of their own learning and this was well received by the students.

Online discussions, collaborative online activities and interactive course materials (such as used in ECW) are seen by Laurillard (1994), Mason (1998) and others as ways of promoting constructivism in online pedagogy. What the project did not consider was that by making online participation compulsory, students who preferred to 'lurk' were in effect being punished (Gulati, 2008). Many students expressed their dislike of the compulsory online participation and requested more choice in the learning pathways. This finding highlights the project's perhaps naïve initial assumption that decisions to participate, share and challenge ideas online are neutral and online learning would lead to constructivist learning.

The full implementation of a constructivist approach was further hampered by the persistence of traditional learning and teaching practices. A good example of this was the assessment process for HE courses. As the courses offered by ECW had focused on entrepreneurial skills, continuous assessment and work-based assessment were suggested as the key assessment methods. Examinations were not seen as the best approach to assess these types of knowledge and skills. Due to validation procedures and external examiner's recommendations, the ECW project was unable to remove exams as a form of assessment for their students.

These findings from the ECW project have resulted in the university moving away from a completely online delivery to a blended learning model, where students can experience both online and face-to-face support in learning and teaching. The importance of a human element is supported by Cooper (1999, p26) who remarks: "...electronic contact cannot currently sustain the qualities and multi-dimensionality of the kind of tutor-student relationship that real learning seems to require". The blended learning model provides the ideal climate in which the best of the old ways can be adapted to

meet the new demands that are required for successful innovations in teaching and learning.

It is reasonable for many to question how far the university has moved towards constructivist, student-centred learning. Further research will need to be carried out in order to provide some answers. As Ramsey (2003, p93) suggested: "...active student-centred learning will always be hobbled while tutor-owned and directed learning, with lecturers dispensing part-digested, bullet point knowledge, remains the norm in Higher Education". It would be unrealistic to expect the implementation of e-learning to have an immediate result in changing teaching and learning. Ramsey (2003) comments that the effort is worthwhile even though the development of such fundamental change will not be achieved in the short term. We concur with this observation. The ECW project has definitely initiated the pedagogical discussion that has long been absent. Tutors involved in the project all agreed that they had gained a better understanding of different learning styles and pedagogies, which is a vital first step towards changes in teaching and learning.

### **Tutor's role**

Another significant change was the role of the tutors. As McFadzean (2001) stresses 'traditional teaching and learning skills need to change in order to get maximum benefit from virtual learning' (O'Neil *et al*, 2004, p319). In the ECW project, the traditional tutor's role as a transmitter of knowledge was challenged to evolve into a more supportive role that facilitated student's learning. This was no easy task. The majority of tutors involved in the ECW project reported that their new role was challenging at first. An e-moderator course based on Salmon's (2000) model was developed to provide training and support to the tutor. The course introduced tutors to their new role, explained that they need to move away from treating students as passive objects and create a co-generative learning relation not only between tutor and students, but also between students themselves (Ramsey, 2003). In other words, their role is to moderate and not to 'spoon-feed'. While it can be argued that lecturers immersed in good learning and teaching already act as moderators in their face-to-face teaching, the use of technology provided a rare opportunity for them to reflect on their roles. In addition, the course was delivered online via the Blackboard VLE. This allowed the tutors to become online learners themselves where they not only learnt how to use the VLEs but gained valuable experience as online learners.

The introduction of the new role of tutors which emerged from the ECW project was hugely beneficial to the University as a whole. This was because many of the ECW tutors felt that they were better placed to face the challenges and demands for increasing student-centred learning in a face-

to-face setting. They are now also much more familiar with the idea of online teaching and learning, and many of them have since championed new and innovative ways using technology as well as incorporated these approaches into their own teaching practices. This is extremely important as Webster and Hackley (1997) explain that a tutor's attitude towards technology—and his/her control of the technology—is crucial to the student's learning experience in a technology-mediated environment. In order to spread this experience, the e-moderating course is now established as a key part of staff development across the University.

### Student support

Traditionally, student support often resides in student services or individual schools/faculties. But for the ECW project, the University developed a centralised customer service centre located at the UoG that focused solely in dealing with all ECW students' enquires. The centre aimed to act as a 'one-stop-shop' for all students' enquires. Enquiries directed to the customer service centre—such as basic IT questions or administrative queries—were resolved by staff in the centre, while academic questions were forwarded to course leader or module leaders of that specific institution. This is vital for students, as Stiles (2006, p45) highlights in his research on embedding e-learning: "learners are often unsure if their problem is academic, administrative or technical...learners needed a single point of contact who would ensure the problem was handled and escalated effectively...". This single point of contact is equally important to offline or online delivery. As Christie *et al* (2004) stated in their research about university's early leavers, many students often did not seek help and support from the university professional because of the lack of awareness and a perceived poor accessibility of the services available.

In order to support the non-traditional learners, the ECW project recognised that the Customer Support Service (CSS) team needed to provide support outside normal University working hours. The CSS operated a 9am to 9pm service over a five-day week, and also provided weekend support. The CSS recognised the need to provide choices to learners; they therefore offered multiple contact methods for students, ie via phone, e-mails, mail and in person, and a customer support officer was available online for asynchronous chats every Wednesday for a few hours to answer any student queries. Other services such as learning resources were also accessible online. The project worked closely with student services in providing counselling and advisory services. In addition, e-moderators also played an important part in providing pastoral support for the students.

The customer focus and innovative support for students was identified by the Vice Chancellor as an example from which

the university needs to learn. This clear focus on student service, student administration and student support as part of a joined-up student experience process is an example of good practice that has now been embedding in the University in the form of faculty-specific advice centres across the University.

## 2. Organisational Structure

### Blurring of the boundaries

A significant feature of ECW was the development of a collaborative approach to e-learning. Developing an e-learning course demands a range of expertise from across the university. Whereas, in traditional course development, a module is commonly developed by one academic working alone, this is not the case in e-learning development. Developing an e-learning module requires subject expertise, technical expertise, design expertise, production expertise, and learning resource expertise. This is a combination which was available to the project, but has not previously been the primary model for course development at the University.

What is evident in ECW is that the experience of collaboration between the different groups has enabled there to be a significantly improved understanding of different professional groups (Jones and O'Shea 2004). For example, learning resource advisors had not previously understood the contribution of academics, nor had academics known what was involved in managing the information infrastructure. The project created a framework for effective collaboration across the University.

All of the team managers interviewed at the University emphasised the need for this type of collaboration in any future e-learning developments. They also recognised that this blurring of boundaries would enhance course development and delivery in a traditional environment. As one respondent from the interviews said:

*The project has been a great gelling exercise. People have been willing to share experiences and we're all trying to work together, trying to make sure that students are supported.*

### Structure and procedures

At the beginning of the project, the project management recognised that new teams and roles were needed for the project. Two new teams, namely, the CSS and the quality and research unit were created to ensure better support to both students and staff and to document e-learning development within the project. As mentioned earlier, the Customer Support Service is now part of the general University support services even though the project has ended. The University also recognised the importance of student-focused research

throughout the project; the research unit is now part of the wider University learning and teaching department. The Centre for Excellence in Learning and Teaching (CELT) was set up after the ECW project ended to capture the experiences which had been gained and to take the University into a new blended learning agenda. In addition, an eSupport Team (eST) was also set up after the project ended; eST comprised experienced staff from the ECW project, covering technological, pedagogical and editorial input, and now plays a vital role in providing support for staff throughout the University in implementing the blended learning agenda. In addition to these new teams, new appointments were made to respond to the emerging needs of e-learning delivery. For example, new appointments in the Learning Resource Centre (LRC) were made in recognition of their significant role in the project and dedicated online teaching posts were created in the Business School.

### Quality Assurance

At the start of the project it was recognised that new quality assurance procedures were required. In the validation events at the start of the project it was felt that some aspects of the modules were not looked at in enough depth. The ECW1 evaluation revealed some dissatisfaction regarding the QA approach for e-learning. This process has improved as the University's understanding of e-learning has developed. The current process (2006) reflects our better understanding of e-learning. Harvey and Knight (1996, p1) warn that: "Taken for granted concepts of quality have to be reassessed in the light of the changing rationale and purpose of higher education." Taking heed of Harvey and Knight (1996), continuous reassessment of quality is in place (Connolly *et al* 2005).

### 3. Technology

The project has given the University and the FECs an opportunity to experiment with VLEs and other forms of technological support for learning. Before ECW, the University and the FECs were doing very little e-teaching. The project has now produced teams of people experienced in all facets of technology enhanced learning to support non-traditional students. The project has therefore provided an opportunity for the University especially, to embed aspects of technology-based learning into the teaching and learning strategy for all learners. In addition, as a result of the ECW project, the University now possesses an experienced team of technical staff and a stable technical infrastructure. The project has given the University an opportunity to expand the use of Blackboard and developed a comprehensive and innovative online learning environment geared toward learner needs rather than technological elegance. These are vital for the University's move towards more student-centred learn-

ing. As Volery and Lord (2000) report, malfunctioning hardware, software configuration, servers which are slow or down, busy signals and lack of access are all barriers which can cause frustration for students and ultimately affect the learning process.

Most importantly, from the teaching and learning perspective, the ECW project has resulted in staff becoming more pedagogically aware when using learning technology. With the increasing availability of technological development, such as blogs, wikis and podcasts, the ECW experience has made a start in giving the majority of staff a better understanding of how pedagogy rather than technology should lead the learning experience.

### 4. Strategy and management

The strategic plan of the University (2000) began to place emphasis on innovative teaching and learning methods and identified the necessity to invest in appropriate technology to meet the future needs and expectations of students and staff. At this stage however staff were concerned that there was a lack of strategic direction with regard to e-learning (Jones and O'Shea, 2003). The ECW project has impacted on the strategic planning of the University and the strategies for the adoption of e-learning emerged during the project. This is a good example of Mintzberg's emergent strategy:

*Strategies can form as well as be formulated. A realized strategy can emerge in response to an evolving situation, or it can be brought about deliberately, through a process of formulation followed by implementation.*

Mintzberg (1989, p30)

Strategic planning since its inception at the University in 1999 has changed and the project has helped drive that change. As Jones and O'Shea (2004, p394) conclude: "Strategic planning in a period of turbulent change such as that brought about by the introduction of a new delivery mode (e-learning in this case) is about organisational self-learning". It has become as much a voyage of self-discovery for staff at all levels, as it is about directing the University's destiny.

#### Institutional management

Perhaps the most significant factor that made the ECW project a strong change agent for the University is that it created a management structure that is capable of supporting changes in teaching and learning. Elton (1999, p215) suggests that: "The process of change must be initiated from both 'bottom up' and 'top down', with the bottom having the knowledge and the top the power... The top must use its power, not overtly and directly, but to facilitate the work from

the bottom and to provide conditions under which it can prosper". The ECW project created a bottom-up initiative with a strong knowledge and experience in changing learning and teaching via technology. The University's Vice Chancellor felt strongly that the knowledge and experience gained from the ECW project should not go to waste and should be used to improve the University's core business. As a result, the Vice Chancellor has made the following statement:

*The University is...committed to the delivery of a first class learning environment incorporating the highest standard of e-learning, tutor facilitation and use of cutting edge learning facilities.*

Professor David Halton,  
Vice Chancellor,  
University of Glamorgan (2005)

This statement gave the University a clear direction and as Garrison and Kanuka (2004, p104) state, while HEIs are "notorious resisters to change", once there is clear policy and strong leadership, evolution could happen quickly. Stiles (2006) stresses that senior management commitment to real change at strategic and operational levels is a 'must', if changes are to be sustainable. It is important to note that whilst the ECW project created teams of people with the enthusiasm and knowledge to change learning and teaching, this paper does not claim that the project has eliminated all resistance to change. These teams of people however have played a crucial role in stimulating change amongst others. They are the key people that helped spread the adaptive model of change and create:

*...local dialogues (that) allow localised versions of the innovation to spread downwards, customised versions to spread sideways to peer groups, and generalised versions to travel upwards to managers and leaders.*

Laurillard, 2006

## 5. Culture

While it would be an unrealistic claim to conclude that the ECW project has changed the University's culture completely, the ECW project did start to change the way things are done around the University: as it can be seen from the sections above, the ECW project introduced new ways of thinking about structures and procedures in teaching and learning. There is now an increased awareness of student-centred support, pedagogical discussions and technological innovations stimulated by the project that are supported by top management, which would not have been in existence without the ECW project. The changes made throughout the ECW project in terms of

teaching and learning, technology and management introduced the university to what Kanter (2001) describes as "living with e-culture". Kanter suggests that to live with e-culture is to live with change:

*...not just isolated, one-time, occasional changes, but ongoing, continuous, ubiquitous, never-finished change.*

Kanter (2001, p255)

The project has also gathered together a small group of champions that helped create a 'funnel' model to promote an institutional-wide culture in technology-enhanced learning. The University is able to focus on a small, interested group and gradually engage a wider group. The challenge now is how to engage more academics in staff development opportunities, rather than merely preach to the 'converted group'. At the moment, the University is finding it difficult to penetrate outside the group of 'converted' staff. Nevertheless, the project has made a start at pressing for the need for "a strong and flexible culture" (Burnes, 1996, p120).

## Conclusion

**IN THIS** case study, e-learning acted as a change agent for the University in the following ways:

- It initiated pedagogical discussion that has long been absent and introduced a more student-centred learning model for academics, support staff, and senior management at the University.
- It introduced new organisational structures and procedures to the University with boundaries between academics and support departments starting to be blurred, which together have encouraged collaboration.
- It established sustainable and stable technological infrastructure for technology-enhanced learning.
- It provided the University with a clear vision along with a bottom-up management structure that helps support changes in teaching and learning.

It is likely that the impact of e-learning will require universities to rethink their current beliefs and their strategies in a whole range of areas. The areas for change have been analysed in the paper. This case study provides a rich picture of the changes brought about as a result of an e-learning project and reveals the impact the project has made on many of the established educational practices. The evaluation

reveals unequivocally the importance of both cultural and pedagogical factors in the development of sustainable e-learning in universities. The learning attached to this case study could be used to help other universities respond to the change agenda brought about by e-learning.

In our research hitherto, we concur with the conclusions of Connolly *et al*:

*'If e-learning is a disruptive technology then the next two decades will require a dramatic restructuring of higher education. We would prefer to see a planned transition in which universities planned to learn how to implement e-learning, than to wait for universities to be put*

*out of business by new organisations that have been quicker to understand what e-learning can be used for'.*

Connolly *et al* (2007, p47)

This paper recognises a university's unique experience to provide insights which can be compared and contrasted with the experiences in other institutions to inform others who are attempting this development. This longitudinal study captures a journey that started in 2001 and reports on the way in which e-learning changes the learning and teaching, organisation structure, technology development, culture, strategy and management of universities. E-learning no doubt does make a difference to the learning and teaching experience; how big a difference will need to be continually evaluated.

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