

# eLearning as change agent

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## **Abstract**

*eLearning can be used to do better what we are already doing, or it can enable us to do things that would not otherwise be possible. In British universities most effort is expended on support for students who are already studying on campus, as they constitute today's core business. However technology is at its most powerful when used to enable people for whom regular attendance at a campus is not feasible to become students. This paper explores how eLearning has been used to fundamentally change the way a number of British universities are seeking to meet a widening range of educational needs.*

## **1 Introduction**

The final report of the Weatherstation Project of the Learning Alliance, *Thwarted Innovation: What Happened to eLearning and Why* (Zemsky and Massey, 2004) analyses the impact of eLearning in universities across the US and in the process explodes three common assumptions:

- If we build they will come (not so)
- The kids will take to eLearning like ducks to water (not quite)
- eLearning will force a change to the way we teach (not by a long shot).

The report concludes

*“In retrospect, the rush to eLearning produced more capacity than any rational analysis would have said was*

*needed. In a fundamental way, the boom-bust cycle in eLearning stemmed from an attempt to compress the process of innovation itself. The entrepreneurs' enthusiasm produced too many new ventures pushing too many untested products – products that, in their initial form, turned out not to deliver as much value as promised. . . .The hard fact is that eLearning took off before people really knew how to use it.”*

This is perhaps a rather downbeat note on which to start a paper but this is not the first time that a learning technology has failed to meet the expectations placed on it. Indeed failing to meet expectations has been the norm. It was true of videodisk technology in the 70s, computer-assisted learning in the 80s and interactive multimedia in the 90s.

The question this paper addresses is “Why has the impact of eLearning on higher education been so slight and how can the sector come closer to realising eLearning's full potential?”

## **2 Information technology and organisational change**

One of the largest investigations ever undertaken into the impact of information technology on organisations was the *Management in the 1990s Research Programme* (MIT 90s) by the Massachusetts

Institute of Technology Sloan School of Management (MIT, 1990). The study looked at the relationship between the application of information technology and the degree of business transformation. Figure 1 shows the five levels of business transformation that they identified. The study concluded that significant benefit from the application of information technology could only be achieved through the introduction of new business processes and not through evolutionary change to existing processes.

A study by a group of UK academics and staff from the company International Computers Limited sought to test the relevance of the MIT study to higher education (Ford et al, 1996). The UK study concluded that the MIT analysis based on corporate America was also relevant to higher education. It observed that few if any British universities had moved beyond evolutionary levels of business transformation and, as a consequence, were realising only limited benefits from their investments in information technology. To achieve maximum benefit universities would need to undertake "Business scope redefinition".

*"This, the highest level of business transformation, calls for a full reassessment of the role of HEIs [Higher Education Institutions]. Such a reassessment might take as its starting point that the fundamental aim of an HEI is to meet the educational needs of individuals, groups and societies. There is no predetermined way of serving this aim, though there are various constraints, including the need for HEIs to function effectively as businesses."* (Ford et al, 1996: 32)

This intimate connection between information technology, organisational change and realised benefits applies equally to eLearning. Evolutionary approaches which seek to bring in eLearning to support and complement established methods of

teaching may well help students to learn, but the level of investment required is likely to be more than the results can justify.

### **3 A generational analysis of eLearning**

A difficulty when discussing eLearning is the broadness of it as a concept and the difference in meaning that individuals attach to the term. My generational analysis of eLearning seeks to clarify the different ways in which eLearning can be applied.

#### **3.1 First Generation eLearning**

In this mode of use online courses are viewed as direct analogues of conventionally delivered courses (campus based or paper-based distance learning) and the process of creating such online courses is viewed as an exercise in "porting" to a new medium.

First Generation eLearning courses:

- replicate the course structure, elements and delivery mode of the originating course (so for example each lecture is replaced with either a Webcast version of a live lecture or a written transcript)
- incorporate existing materials wherever they exist (though they may be modified or augmented)
- are dependent on the course originator for delivery (each course remains the "property" of a single lecturer)
- are not scalable (the class size is limited to the number that the lecturer can manage).

Such courses can be quite quick to produce, and therefore cheap, but their quality is always inferior to the originating course. This is because any medium of education has in-built limitations and imperfections. Copying without revision from one medium to another transfers all the limitations of the originating medium, but then introduced further limitations because the translation is not perfect. For example a course text that has been prepared as part of

a paper-based distance learning study pack will become harder to learn from if transferred directly to screen without modification. There are many examples of first generation courses in use. Indeed I would estimate that 80% to 90% of online courses offered from UK and US universities are First Generation. First Generation eLearning is the equivalent of the horseless carriage era in the evolution of the motor car.

### **3.2 Second Generation eLearning**

Second Generation eLearning retains comparability with to other equivalent courses in terms of high-level learning objectives but the route to achieving those objectives is completely different. The course is built from components that seek to achieve an optimal match between the technical vehicle employed and the specific intended learning outcomes. Just as the building blocks of traditional education (lectures, tutorials, assignments, etc) are used to optimal effect to construct balanced courses (at least that is the aim), so with Second Generation eLearning the components (texts, audiographics, online discussions, multiple choice questions, etc) are chosen to provide a balance of different types of learning activity and reflect the pedagogic principles that have been adopted.

Second Generation eLearning courses:

- remain equivalent in terms of qualification to corresponding conventionally delivered courses (students successfully completing the course emerge with broadly the same set of competencies as those taking the course by other means such as on-campus or via paper-based distance learning)
- are constructed through the application of an educationally derived, precept-driven design methodology (an explicit set of pedagogic beliefs is required to drive

the selection of eLearning components)

- are designed and constructed by multi-skilled teams rather than individual lecturers (the size of the task becomes too great for an individual and also requires specialist skills, such as learning technology, alongside academic inputs)
- when complete require mentoring not teaching (the teaching is designed into the course)
- are fully scalable (multiple parallel tutor groups can be created within a cohort as there is no requirement for those responsible for course delivery to have also been involved in course creation).

At Oxford University, in the late nineties, a number of Second Generation courses were prepared, built from the ground up for adult learners studying at a distance. One such course was an Advanced Diploma in Local History which used facsimiles and transcripts of actual historical documents to support students working collaboratively in groups in undertaking original historical research. Such an approach accorded with the course team's research-based learning ethos and would not have been possible without the use of computers.

### **3.3 Third Generation eLearning**

Third Generation eLearning is predicated on the premise that courses and education are not synonymous. The course is a means to an end and not an end in itself. We have become accustomed to providing education through the medium of courses as this has been the most practical way up until now to educate large numbers economically. While eLearning has probably just as many intrinsic constraints as campus-based education, these constraints differ in many respects and do not lead to the conclusion that the course is the only viable way to educate large numbers. Third Generation

eLearning is thus any application of eLearning that moves outside the conventions of the course. Examples include:

- learning pathways through knowledge management systems
- personalised curricula
- just-in-time education.

Third Generation approaches are particularly powerful when used to support Continuing Professional Development (CPD). Here the potential student may be in a position to articulate their requirements with a fair degree of precision. The challenge to educators is to create Third Generation learning systems that can provide for each student a “course” that is tailor-made for their needs. At Oxford University the Oxford Professional Updating System project addressed this challenge by building a prototype that allowed users to specify their own curriculum. This is an area that will require substantially more research and development effort before it will become an everyday reality, but the potential benefit to organisations of being able to precisely configure education and training to each individual is huge.

#### **4 Being student-centred in an eLearning environment**

Moving beyond First Generation approaches requires the adoption of a methodology driven by pedagogic principles. One such principle is to work in a way that is student-centred. A common approach in eLearning is to seek to control each student’s learning by a variety of means, including using the results of multiple choice questions to determine the order of presentation of subsequent materials (adaptive sequencing). This approach seeks to use data derived from the student’s behaviour to manage learning in the direction the course creator believes will be in the student’s best interests. While this is superficially attractive to both student and teacher it undermines the student’s sense

of responsibility for their learning, since key decisions about their progression through the course are being taken for them. Being student-centred requires instead allowing the student full control over how they access the course components

- dipping in or studying in detail
- working through the course in a linear manner applying an iterative approach
- using the course for initial concept building, or for reference or for revision.

Students can only take full control over courses and their studies if the eLearning has been designed to make this easy. Good eLearning places attaches a high priority to mapping the elements of each course in a way that is easy for students to grasp and navigate.

#### **5 A construction kit for eLearning**

In 2001 the British Government established UK eUniversities (UKeU) as an organisation that would help universities in the UK develop high quality online courses for delivery to a global market. A task that the author faced as Chief Architect of UKeU was establishing a practical approach that any university could use that would enable them to develop rapidly, and to a high standard, Second Generation eLearning courses. The approach adopted was to develop courses through a process of stepwise refinement, breaking down the course into small activity components. Each activity was categorised in terms of its educational purpose and then implemented as a learning object. The types of learning object were:

- Information
- Conceptual Material
- Problem
- Example
- Task
- Discussion
- Reflection

- Application
- Evaluation
- Discovery
- Scenario
- Investigation
- Assignment
- Questionnaire.

The medium used for each learning object (HTML, audio, video, MCQ, threaded discussion, etc) was a secondary property. This learning object approach, based as it was on the notion of learning objects as units of activity rather than content, proved to be a powerful and practical method for managing the complexity of the various media and techniques available, while allowing all of the activities that made up the course to be presented to the student in a consistent manner. Equally important; however, to the make up of the learning objects was the way in which they were presented to the student. The UKeU Learning Environment used metadata from each learning object, such as Title and Description, and constructed from them a “spinal document” that introduced each learning object and placed it in context. By providing significant information *about* each learning object prior to its selection students were able to traverse the course rapidly and make informed decisions about their use of it. The UKeU Learning Environment facilitated multiple learning strategies and recognised the differing learning preferences that students brought to their studies.

UKeU had been set up as a for-profit company and in February 2004 it was concluded that as a business it was unlikely to become profitable in the timescale that had been allowed. It was therefore wound up as a company but the eLearning approach that it promoted has been taken up by around 20 universities in the UK. The eLearning toolkit is being reworked to support platforms other than UKeU’s own.

## 6 The impact of eLearning on education

As the MIT 90s study showed, the greatest benefits come to organisations that are prepared to implement revolutionary levels of business transformation. UKeU challenged accepted views of eLearning, establishing new team-based and pedagogically-driven processes to develop next generation eLearning products. This has led to significant changes in outlook and practice in many of the universities with which UKeU partnered. It has even stimulated thinking about the very purpose and mission of a university in the new millennium. eLearning does indeed break down borders and barriers but its effect is tightly limited by our imagination. The pace of change may well be slower than the proponents of eLearning expected but new models such as that of UKeU are starting to challenge the established conventions of all sectors of education.

### References

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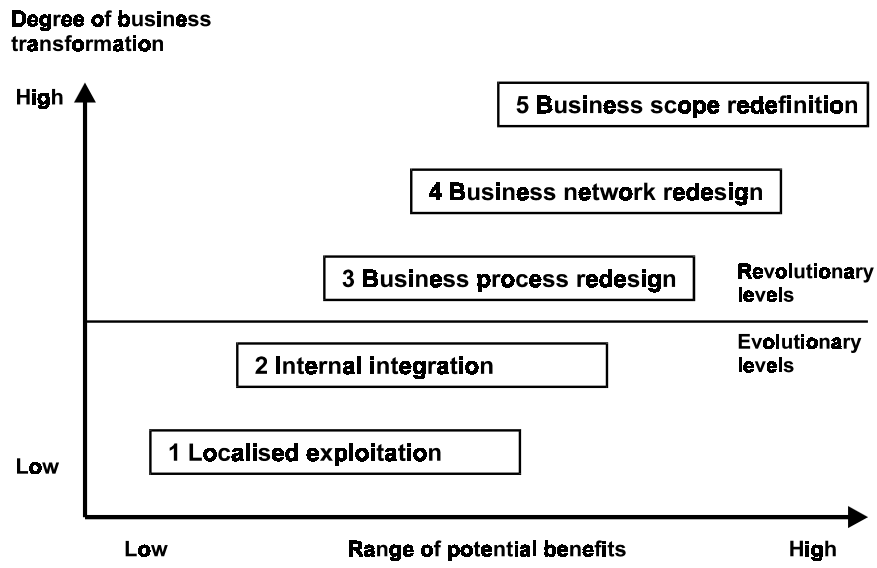


Figure 1: Business process transformation (MIT, 1990: 107)