e-Learning and pedagogy

In any list of the problems of e-learning – and there are plenty of them – two issues stand out. The first is that many e-learning materials are unattractive and non-compelling. The second, is the poverty of pedagogies for e-learning. These two issues are not unrelated. What is perhaps surprising is the limited attention paid to the issue of pedagogies for e-learning. Dazzled by the technology we hope the problem will somehow sort itself out whilst we mutter the mantra of constructivism.

Of course pedagogy cannot be separated from technology. Whilst there is nothing inherent in the technology to limit pedagogic approaches, the development of complex Learning Management Systems has closed down on those possibilities. One key issue for me is that many technology developers – take the people behind the SCORM standard for an example – claim that their e-learning applications are pedagogy free or pedagogy neutral. I would dispute this. All learning technology development – consciously or otherwise – supports or inhibits the deployment of particular pedagogical approaches to learning (Attwell, 2004a).

In this short paper I will look at the history of the development of pedagogies for e-learning and will suggest directions for future exploration and development. In so doing I will try to explore the three way relationship between technology development and implementation, pedagogic approaches and the management and organisation of learning. I will also look at some of the present controversies in e-learning development and particular at the debate over learning objects.

The history and development of e-learning pedagogy

In the early days of e-learning we did not have the web – or even the term e-learning. Learning materials were distributed by disc and later by CD-ROM. There were some experiments with interactive satellite television.

Pedagogies tended to be dominated by the paradigm of previous learning practice. ICT supported learning was initially seen as an extension of distance learning –as a new means for distributing materials which had previously been sent in a print form by post. Students read the material, completed an assignment and returned it to a tutor for marking. The accent was on facilitating access to university level education by those disadvantaged for social, economic or geographical reasons. Whilst in the US distance learning colleges and certification flourished, in Europe the approach was more often what we would today call blended learning, with telephone and face to face meetings with tutors.

In the 1980s, following the oil crisis and the start of the latest wave of technological revolution in industry, there was a new focus on the need to support innovation in industry and to generate the new skills and competences required by workers in industry (Dondi, 1997).

In pedagogic terms the idea was to essentially by-pass the teachers through programmed learning. Learners would interact directly with the learning materials through completing a sequence of programmed exercises. Did it work? The behaviourist or ‘Skinner-box’ training approach has had impact and influence, especially in larger enterprises and industries, for example in car manufacturing or in the aircraft industry. However, it has not been successfully translated or transferred to state or vocational or higher education systems. Firstly it is very expensive and secondly it only works within the limitations of the specific industrial applications for which it is developed. Even then, I

would contend, it only works when embedded within the community of practice of the particular trade and industry.

Technology shook up the e-learning world with the arrival of the web. It was an era of promise. The web would allow e-learning to move out of its previously specialised markets and become a mainstream part of education. With the widespread availability of Personal Computers and the development of the Internet and, (in particular) the world wide web, technology became ubiquitous. Technology development was for the administrators and managers and even the metaphor of teaching and learning applications was that of administration or control. Hasebrook, Herrmann and Rudolph (2003) say: "Web based training should … be used to introduce a modern controlling approach which comprises exact calculation of financial investments and gains, optimal planning of organisational processes and goal-oriented definitions of strategic and operational learning objectives".

The new learning management systems (LMS) were essentially concerned with content-push, with facilitating access to traditional learning materials. Pedagogy was subsumed within the doctrine of Instructional Design (ISD) – which Stephen Downes (2003) describes as the "educational equivalent of dictatorship…. a manufactured environment where every movement, every idea, is carefully guided and nurtured". The 'learning value' of the content was seen as being within the e-learning environment. Sadly managers and administrators had failed to notice that most learning took place outside the lecture room, still less did it take place in a 'virtual' learning environment.

That is not to say there were not other pedagogic ideas. But the opportunities provided by the typical LMS were limited. Furthermore, as I said in an earlier paper (Attwell, 2004b), the much-vaunted constructivism is a simple way of describing, in one category, all the varieties of creative, perceptive and innovative approaches to learning.

The mainstream LMS offered little in terms of interactivity. The main emphasis was on providing tools for lecturers to transfer their notes for the web, with, typically, the provision of chatrooms for discussion of notes and assignments. Interactivity was a big aim for the edutainment industry. Although there was little underpinning pedagogic theory – enjoyment and engagement being the main aims – it is interesting to note that as recently as the end of the 1990s consultants were predicting edutainment could take over from education. In reality the edutainment industry has grown hugely, but has had little impact on education.[1]

Exploring new approaches – the vision

The third, and emergent, phase in the development of e-learning and ICT applications is once more charactised by innovation (Attwell, 2004a). One of the main driving forces for change is widespread disappointment with the results of phase two development. Central is the emergence of two technological developments, open source software and standards. Open Source Software (OSS) and standards – LMS, SCORM and particularly Learning Design - allow the accumulation of innovation and facilitate creativity, activity and innovation within an administration and learning environment.

Enthusiastic amateurs, with strong intrinsic motivation and a deep interest in learning innovation, drove phase one of the development of e-learning. Phase two saw the

[1] In the same way that radio and television had been predicted to transform education, with in reality a limited impact, the affect of 'edutainment' on education has been very limited

domination of e-learning enterprises, both application developers and content producers. The importance of the OSS and standards developments is that they open the door to creators and innovators who no longer have to develop complex learning environments and comprehensive administration functionality. With limited knowledge of software and systems, teachers and learners themselves can produce content.

OSS has also contributed to a social recognition of the potential for sharing and co-development of learning applications.

More importantly, the emphasis on life long learning is driving awareness of the importance of different types of knowledge and of developing software to support wider forms and contexts of learning. There is a realisation that it is necessary to refocus on the learner and on the needs of the learner. There is also an acknowledgement that not everything can be learned through a computer. The invention of 'blended learning' recognises face to face and work based learning as playing an important role.

There is also a very interesting change regarding attitudes to teachers and trainers. Whilst in previous phases there was great hope that's significant cost savings could be made by bypassing the need for a teacher – through provision of sequenced learning, or through intelligent agents or even avatars – there is increasing awareness that teacher may have a critical and central role to play in scaffolding and supporting learning. The new focus is on the enhancement extension of teachers' roles and occupational profiles.

These changes do not, by themselves, guarantee a new period of innovation, still less the development of rich pedagogical applications and content. Nevertheless, they do promise a new freedom to experiment and innovate and may facilitate a refocusing on the needs of the learner and on pedagogic applications, rather than administration and control.

Dreaming of the future

In the last two sections I want to indulge in a little blue sky dreaming, first to look at what new pedagogies we could develop and second to ask if the technology is with us or against us?

I have been greatly taken with a speech by John Seeley Brown (1999) who looked how the ubiquitous use of ICT is leading to changing ways of learning. He puts forward four different ways in which learning is changing.

1. There is a new literacy of information navigation - to know how to navigate through, confusing and complex information spaces.
2. There is an increasing use of discovery-based or experiential-based learning especially using the web.
3. There is a "substantially more subtle shift" pertaining to forms of reasoning. "Reasoning, classically, has been concerned primarily with deductive, abstract types of reasoning. But what I see happening to today's kids as they work in this new digital medium has much more to do with bricolage than abstract logic. Bricolage, a concept originally studied by Levi Strauss many years ago, relates to the concrete. It has to do with the ability to find something—an object, tool, piece of code, document—and to use it in a new way and in a new context" - borrowing and then modifying it to fit their needs. There is the need to decide whether or not to believe or trust those 'borrowed' things. Navigation is coupled to discovery and discovery is coupled to bricolage but requires judgment concerning quality or trustworthiness.

4. Young people, learn by absorption and trying things or action, rather than attending a training course or consulting a manual.

Action, he says “brings us back into the same loop in which navigation, experiential learning and judgment all come into play *in situ*.” “Learning becomes as much social as cognitive, as much concrete as abstract, and becomes intertwined with judgment and exploration. As such, the Web becomes not only an informational and social resource but it could also become a learning medium where understandings are socially constructed and shared. Said differently, learning becomes a part of action and knowledge”.

This is the key to the pedagogy conundrum form me point of view. Learning has to become a part of action and knowing and pedagogies using the web are about exploring, acting, making or constructing and developing knowledge. These ideas are not so new. The social learning perspective of the Russian psychologists (Vygotsky, 1962, 1978; Luria, 1976; Leontiev, 1978) offers a theoretical framework where social interaction in the classroom represents a fundamental condition for learning to take place. Vygotskytalks of interaction where activities happen in cooperative and conjunctional ways. The value of such interaction relies on students being challenged by different perspectives and internalizing meanings as they ask and answer questions. (Cristina and O’Rourke, 1998).

From this perspective, e-learning provides additional resources to support and enrich the interaction. Students working with e-learning can exchange ideas and in this way gain control of their own abilities as users, doers, and thinkers. Here teachers play an essential role, not only planning and embodying tasks in an integrated curricula approach, but also guiding students’ reflection and understanding in a way that actual learning can take place.

Is the technology with us or against us?

If we want to transform e-learning we have to ask if the technology is with us or against us. Many educationalists have had great pedagogic ideas for the use of e-learning, only to be frustrated by the limitations of the technology applications. In this regard I am increasingly optimistic.

I have already talked of the promise of open source software and the nascent partnerships between technology developers and educationists. I have also referred to the role of standards in allowing the development of shared learning materials. Both these developments promise to change the nature of educational software and more importantly the social relations in which that software is developed and deployed.

A further technical development heartens me. This is the development of component architectures. Instead of having to install an LMS in the future educationalists will be able to select relatively thin learning applications which will do what they want and with the pedagogic application they wish to deploy. This is at least partly because of the development of learning repositories which allow the development, storage and retrieval of learning materials independently of the learning and pedagogic application.

The other development which encourages me is a social development. This is the growing movement or open contents, the idea that resources can and should be shared. MIT gave the movement a great boost when they announced their Open Courseware initiative.

But there are dangers. Olivier and Liber (2003) have expressed the concern that:

"eLearning standards will constrain Internet supported learning by freezing a sub-set of existing practices, or whether specifications can be provided that can support the development of new, enhanced, but yet to be developed approaches to learning which the Internet makes possible"?

Norm Friesen (2004) has launched an impassioned polemic against the educational ideas – or rather the lack of them – that lay behind the prevalent Learning objects theory and practice.

These are hurdles that still have to be overcome. But I do see the dawning of a new movement which focuses on the leaner and on learning and in which e-learning can open opportunities for a new and rich pedagogy.

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[2] This is a pretty poorly formated html version. Conatct Graham Attwell – graham@theknownet.com for a better copy.