

Themata 3

E-learning Archaeology, Theory and Practice

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01

Education and e-learning in archaeology. Teaching materials in a virtual world *Mark Pluciennik*

Introduction

This paper was written for a conference about E-learning and Archaeology: so a specific medium and a specific discipline. But it has been or will be presented in different media, oral and digital; and of course the whole topic as well as this paper sits within many wider contexts – of pedagogy, of economics, of capitalism and globalisation, of anthropology and sociology and the ways that technology can promote and subvert various agendas, including those within education, and many of which come under the rubric of ‘flexible learning’. So I would like to start by thinking a little about those wider contexts and concepts. Let me also situate myself by saying that in my institution my role is that of a Director of Distance Learning (in archaeology and ancient history), not e-learning, and so this paper spans the two. What I am convinced by, at present, is that e-learning is not the same as distance learning (though it can be), and distance learning is not entirely e-learning, though again it can be. What I also want to propose is that there are dangers, as well as benefits, in conflating the two. Further, although there are many benefits to e-learning,

I also want to argue that the pressures for convergence between not only distance learning and e-learning, but also between e-learning and traditional, face-to-face learning that we are seeing at many universities, are not always and invariably good, and sometimes need to be actively resisted. Finally, I shall suggest that while a key characteristic of the developing educational world is complexity, organisational support sometimes lags behind the needs of those producing, delivering, supporting and expecting new forms of learning.

Chronologies and practices of learning

It is generally accepted in contemporary educational theory that much effective learning is not a case of simple knowledge transfer from teacher to student as though ‘knowledge’ were a collection of facts equivalent to a material object, to be transferred from one brain (the teacher’s) to another (the student’s), whether individually or collectively. Rather, learning should be active rather than passive, and often works best when thought of as a form of engagement, whether with ideas, or materials, or practices; and often co-operatively too in dynamic learning situations as ‘communities of practice’ (e.g. Bird 2001; Lave & Wenger 1999; Russell 2002; Thorpe 2002; see also Burke and Smith 2007 for application of these ideas to campus-based teaching and archaeological theory). On the other hand I do want to acknowledge that sometimes, for all of us, we do want ‘facts’, or ‘words’ or images: we want to learn or check what the legislation says, what the form of that pottery vessel is, the distribution or location of these sites, what’s available or local practice elsewhere... This is part of what the internet has become for many of us: a giant database, a repository of potential information, and a way of searching it as, or instead of, a library in a way which means that we don’t have to bother about where we enter it or where the information is stored. But what is exciting about many current technologies is that they can enable new or differently-emphasised ways of learning, forms of participation and collaboration, as well as more traditional exploration and absorption, for a whole range of groups who are otherwise dispersed in space and/or time.

E-learning can also be usefully considered as just one facet of a more general shift towards a more general ‘flexible learning’. The information and communication technologies available to us all have one thing in common (just as print technology does!): they allow non-co-present communication. Typically for the traditional print medium the communication is individually received and understood (read!), and perhaps physically responded to, at a time of the recipient’s choosing: it is an asynchronous medium. The big difference in the various modern technologies is that they are easily and speedily delivered and responded to: they are or can be interactive; they often allow near-synchronous responses which can become quite close to dialogue in the traditional sense; they allow one-to-one or one-to-many or many-to-many responses. And such responses can instantly become semi-permanent records of learning which in themselves can become iterative learning resources – emails, bulletin boards, wikis, blogs for example, but also

potentially podcasts, videos, or videos from webcams and so forth. So in addition to, or between the timings of traditional methods (read this, write an essay; or listen to this and let's discuss as a group), we now have technologies which blur the differences between synchronous and asynchronous learning, teaching and participation, knowledge transfer and learning, reading, observation and dialogue. Exercises and tests can be administered and indeed sometimes assessed automatically and on-line. Images can be much more creatively and engagingly and usefully presented: pictures, maps, data sets, graphs, presentations, animations, 3D reconstructions, all of which can be interactive, manipulated, viewed differently, and themselves constructed by individual students or by synchronous or asynchronous groups in learning projects. There are perhaps four lessons from this.

Firstly, in terms of materials and teaching/learning (and the difference between those is also becoming increasingly blurred, especially in aspects of CPD), we can genuinely do more and in a variety of different, sometimes more useful and also often more engaging ways.

Secondly, there are different 'chronisms' available, by which I mean the timescales over which people (students, teachers, participants) communicate and interact. Some forms are (quasi) synchronous, but there are many which are semi-asynchronous and differently or partially synchronous for different participants – wikis, blogs, emails, texts, assignment feedback, peer review... To think about it another way, there are various ways of 'presencing' or co-presencing members of what are often called 'learning communities'. The concept of what constitutes dialogue can be both stretched and compressed.

Thirdly, there are different combinations and directions of one-many or many-many relationships which again can continuously vary in their extent, size, chronologies and dynamics (e.g. e-tivity task groups and e-moderators, (Salmon 2002, 2003), project sub-groups, virtual classrooms, observers, 'lurkers', participants...

Fourthly, all this means that especially within relatively small disciplines such as archaeology, good educational or training provision at levels above the introductory is likely to be complex, being quite highly-tailored to specific

audiences and staff – and that probably also means 'expensive', despite potential economies of scale for parts of the process.

As is well known, many of the qualities of e-learning noted above mean that it is part of, is helping to construct, and is generally seen as crucial to 'flexibility', one of the new buzz-words in contemporary politics and economics as well as education. Of course we then have to ask: flexible in which aspects? And flexible for whom?

Flexibility

There are many contested ways in which the term 'flexible' is understood. Neo-liberal governments such as those in the UK in recent decades have tried to promote and indeed enforce 'flexibility' among the workforce as a way of adapting to and competing within a globalised economy. From one point of view then 'flexibility' becomes the mantra of commercial and capitalist organisations and governments for mobile, adaptable and well-trained labour forces available more or less on demand (e.g. Standing 1999; Smart & Smart 2005). Flexibility can thus be associated with job insecurity, short-term contracts and part-time working and the so-called 'feminization' of labour; for employers the ability to out-source, cut costs and respond rapidly to market conditions. In this view flexibility in education can also be seen largely as a response to globalised yet fragmented markets, and the increasing insistence on knowledge, training and education as a commodity, and one for which the costs can be increasingly transferred away from government and towards employers or individuals. The onus to adapt to (for which read 'accept') change in a globalised world through lifelong learning is often placed on the employee/learner (Edwards *et al.* 2004: 160 – 164). But others, more positively, have seen 'flexibility' associated with ways of increasing access to education, especially for traditionally under-represented groups of increasingly diverse students. This is coupled with moves from elite to mass Higher Education systems, the increasing availability and use of new technologies (initially radio and television, as well as the later forms of ICT), and associated developments in pedagogical theory (see e.g. Jakupec and Garrick 2000). For Taylor *et al.* (1996: 49) academics tended to see flexibility as:

'involving the provision of increased learning opportunities and options. In addition, "flexibility" was seen as an attempt to work towards the notion

of the autonomous learner, particularly challenging the “culture of dependence amongst on-campus students”.

Thirteen years after that was written the landscape of learning has changed: technology especially makes it possible either to make the notion of the ‘autonomous learner’ more applicable to all students, thus only offering personal, face-to-face or at least synchronous support at key points, and potentially enabling mass teaching, staff reductions or both; or equally making it possible to mimic a ‘culture of dependence’ among groups whether physically co-present or not. Virtual classrooms, bulletin boards, wikis, blogs can all be used or thought of as if they represent peer group or tutor-student group interaction in a supportive way which encourages dependent, rather than independent learning. A broad definition of student-centred flexible learning was developed by Deakin University in Australia:

Flexible learning refers to an approach that places the needs of learners... at the centre and takes account... of the particular circumstances of learners and teachers, the requirements of the subject of study and the available options for learning methods and *milieux*. Flexibility may apply to access to courses; accommodating diverse student groups in a course; the place, time and pace of study; the form and pattern of interactions among learners and teachers; and the type and variety of resources to support study and communication. Underpinning principles include primary emphasis on student learning; catering for diverse backgrounds and learning styles of students; accommodating diverse learning environments; recurrent education as a lifelong process; and the appropriate use of information and communication technologies to facilitate learning.’ (Calvert 1998 cited in Bottomley 2000)

The above refers to flexibility in just about every aspect of learning and teaching. I don’t know how successful Deakin University has been in implementing this particular policy, nor what the students or teaching staff feel about its success as opposed to administrators and managers, but this is clearly an ideal vision of ‘flexible learning’, and inevitably there will be practical constraints in implementing that kind of policy. With regard to the various categories and perspectives on what exactly constitutes flexible learning, there is though at least some overlap and agreement between parts of the various constituencies.

Within the UK, which has espoused a kind of neo-liberal economics for the last 30 years, it is fair to say that the economic rationalist argument has tended to dominate. But there have also been other factors. Among those not involved in delivering education, and just like the internet bubble, so flexible learning and especially e-learning was seen as a desirable initiative for senior managers and politicians to be associated with. E-learning and new technologies were seen as revolutionary; the rulebook for learning and education provision could be thrown out of the window; content mattered less than the platform and the medium really did become a large part of the message. To politicians, the promise was alluring: just as the internet supposedly provided unlimited opportunities for commerce unconstrained by the ‘old’ business models, so e-learning, with all the excitement of technology, could revolutionise education provision. In the UK in 2000 the government decided to start an ‘e-university’ from scratch using business people and consultants, rather than those already experienced in delivering education in a variety of media (Education and Skills Committee 2005). It collapsed disastrously in 2004, *sans* funding, *sans* courses and *sans* students, but having consumed a great deal of resources, including payment of a ‘performance bonus’ to its leader. A subsequent report into the fiasco of the UKEU, as it was called, noted that the:

‘ukeu allowed the development of the technology platform to drive its strategy and the development of programmes. It had a skewed focus on the platform, based on an assumption that once this was right, the original projections of very high student numbers would be easy to realise. Unfortunately this assumption was not based on research evidence, but on an over-confident presumption about the scale of the demand for wholly internet based e-learning.’ (Education and Skills Committee 2005: 41)

With fingers burned, and despite some rhetoric about how e-learning could improve access, flexibility, and enable better use of resources, in practice it has proved easiest for UK governments to concentrate on vocational training and the perceived requirements of employers or ‘the economy’ rather than the needs (or wishes) of actual or potential students, teachers or institutions. These constituencies do have aspects in common: flexible learning is commonly seen as a way of widening participation in post-compulsory education, for example, though whether resources always usefully follow the rhetoric is

a very debatable point. A related issue, the heightened attention being given to Continuing Professional Development (CPD), is also highly relevant for much flexible provision. Being optimistic, it enables students to fit in ways of developing their own careers, education and prospects – their individual aspirations – around their own lifestyles and commitments. It can also be thought of as improving the skills and knowledge base of their institutions and employers and the country (or EU) as well as those of individuals. Being cynical, it also easily enables employers to shift at least some of the burden away from themselves: for example they do not have to make time available within the working day for study or training; they can also, intentionally or not, transfer some of the monetary cost to the employee/student, since it is not taking place in work time. Apart from fees, e-provision is also well-known as a mode of delivery which often results in transferring book and especially printing costs away from institutions and to individual students, who often prefer to engage with texts away from a computer screen. Access to e-resources is also often time-limited in ways that books are not, which encourages such individual printing.

But because e-learning is genuinely international and simultaneous, self-contained materials do of course overcome the problem of distribution and some forms of learning at a distance: geography really does not matter in many aspects of e-learning. Thus e-learning also proves particularly attractive not only to individuals, but also to geographically dispersed 'learning communities'. This is seen for example within multi-national companies who can provide common training to all their employees, for example (Jurich *et al.* 2002); and this is one reason why e-learning also appeals to pan-national institutions including the EU. E-learning and ICT more generally offer ways of engaging with issues of integration, consistency, awareness, the promotion of co-operation and so forth. There are also negative aspects to which some have drawn attention: does such easy communication lead to an emphasis on 'branding' rather than content? Does the common denominator and large and varied audiences encourage superficiality and homogeneity of provision, rather than the stimulus of friction and difference? In Europe too there are arguably disadvantages to 'integration' as well as benefits, and the values, goals and effects of European cultural programmes including those related to archaeology are disputed (*Archaeological Dialogues* 2008; Pluciennik 1998). All this is part of the context of the project which this conference is celebrating and of archaeology and e-learning more generally.

Nevertheless, as suggested at Deakin University, flexible learning including e-learning can also be rightly glossed in terms of better access to educational opportunities and widening participation. There are a number of barriers which may discourage particular people from entering or staying within archaeology or HE, or more generally blocking their aspirations: these are geographical, socio-cultural, physical, financial and logistic. Certainly our distance learning students at Leicester would include some who would feel vulnerable and uncertain attending university in person, at least to start with. We have an open access policy at our introductory level, because distance and e-learning doesn't limit the size of groups in the same way as the physical constraints of traditional face-to-face learning may, and we are more interested in whether students can come out with qualifications, rather than policing them on the way in. Other socio-cultural reasons include class or other group perceptions of and attitudes towards Higher Education or debt, for example; inability to pay or unwillingness to accumulate debt; cultural disapproval of the worth of particular subjects or suitability for, say, women; physical disabilities (some of which may be particularly pertinent to aspects of archaeology); individual circumstances e.g. commitments to care for others, other jobs, partner's commitments, preference to remain where one is, wish to study archaeology for leisure only – all these may restrict individual availability for study in the traditional way. Obviously many of these are matters which have to be addressed at a much wider level, such as the nature of aspirations among socio-economic groups, or distribution of resources. But this is not to say that we should not try to counter such barriers in various ways, and potentially e-learning (and distance-learning) offer some support for this. Physical disabilities are often to be dealt with on an individual case basis. Increasingly, at Leicester, we are finding a small but growing number of students coming to us who are interested in and want to do archaeology, but are confined to their homes for various medical reasons; or are in prison or other institutions with limited library (and computer) access; or cannot deal with traditional materials for reasons of disability: we have pioneered a course for the blind and severely visually-handicapped, for example. Many others are nervous of attempting (or returning to) Higher Education, and we and other flexible learning providers may offer an unembarrassing and relatively pain-free way in, ironically largely because of the isolation and lack of personal interactivity that often cited as a disadvantage of distance learning.

So in summary: one can criticise aspects of flexible learning as ways of shifting education and training costs from the state and employers towards individuals; and parts of, and responses to the widening participation agenda can be seen as collaboration with particular contemporary capitalist demands and practices. It has been argued that flexible learning is largely shaped by the demand for a particular type of labour force whose members are expected to engage in lifelong learning, but primarily for the benefit of their organisations. The state sector of higher education and many of our institutions and organisations are themselves acting within certain market forces, subject to often debilitating management within the so-called 'audit economy' (Shore and Wright 2000). But there are also many potential direct benefits of flexible and e-learning. Institutionally, it is another way of hedging against potentially falling traditional recruitment – of spreading risk. It presents another way of managing the risks from changes in our primary markets and recruitment pools, and a way of coping with internationalisation and globalisation. Nevertheless, for many of us the development of flexible learning is part of a general commitment to increasing opportunities, for those who have the ability and wish to do so, to study archaeology among other subjects: it can be part of an emancipatory and inclusive educational strategy, of reaching new groups, enabling new learning and communication opportunities for individuals and collectivities across borders and boundaries whether socio-logical or physical. Thus for a variety of reasons I think we can safely predict that in the immediate future at least various aspects and modes of flexible learning and especially e-learning in archaeology, as elsewhere, may generally become more important. This is suggested by developments in technology, attitudes towards learning, and trends in national, pan-national and international policies towards training and professional development. And this means that the provision of learning is likely to become generally more complex, as it engages with different groups, in different ways, for different purposes, in dynamic educational, economic, cultural, commercial and technological environments.

Complexities of provision

To evaluate the reasons why we should or should not promote or adopt particular practices in specific situations we need to understand the parameters by which successful distance learning and e-learning are judged from various different perspectives – students, teacher, administrator, institution,

company, accountant, technologist, researcher. But because many of these groups are varied within themselves in terms of experience, expectations, education, skills, as well as in the aims and objectives of the teaching materials, and indeed the nature of the objects of disciplinary study and focus, we should not expect that e-learning materials will always be similar to each other, or indeed to other forms of presentation, learning or teaching. And technologies, including the ubiquitous PowerPoint, for example, even if on one level a simple replacement of an earlier technology such as film slides or transparencies, can change the nature of face-to-face teaching, let alone when inserted into a Virtual Learning Environment (see for example Gabriel 2008). The range of technologies and forms of technologies I mentioned earlier – and no doubt many more to come – together with the requirements of particular student groups, or institutions, or teachers and teaching styles, and disciplines, and courses, mean that there is a very complex matrix of possibilities for how best to deliver teaching materials and how to engage learners. There are opportunities for many combinations of perspectives, forms and structures. For example technologies can vary in richness (the kinds and numbers of technologies employed within a particular e-learning environment); depth (how much and how learning materials are made available); appropriateness (e.g. the need for zoomable plans, interactivity, real or simulated data, links to text, video tutorials, virtual classrooms etc); medium (digital? Web-based? Mobile? Virtual?) There are different chronisms of communication (permanent, ephemeral, synchronous, asynchronous etc); different learning objectives, disciplinary 'objects' and the natures of disciplinary knowledge; variety in student backgrounds, experience and education; and variation in finance and/or time and/or people available (see Figure 1).

My basic argument is that while most teaching practitioners understand that there is no one model for e-learning – which is potentially a good and liberating aspect – institutions and commercial companies often find it much easier (and on the face of it cheaper) to act as if there were. And that is where some of the tensions come in.

The difficulties of implementation

For example: some of the functionality of this ICT, especially that which enables potentially instant communication, has led to a naive view, especially among those who are not actually doing the teaching, that e-learning should be about replicating as far as possible campus-based experiences for students

Nature of technology	Richness	Depth	Appropriate?	Chronism	Availability
Nature of students	Background	Experience	Education	Finance	Time
Nature of discipline	Practical	Theoretical	Lab-based	Individual	Team-based
Level of learning	Introductory	Degree	Graduate	Research	Professional
Level of support	Minimal	Assessment	Tutoring	Pastoral	Participatory
Learning objectives	Knowledge	Assessment	Skills	Training	Qualifications
Institutional requirements	Staff	Investment	Fund-raising	Support	Maintenance

at a distance. That is why we have the term 'Virtual Classrooms', among other things. Yet those virtual classrooms, bulletin boards, wikis and blogs are not substitutes or replacements for seminars or tutorial groups; text-based communication is not the same as verbal communication especially with all the richness of nuance, inflection and body language. However, this is not to say that digital media are inevitably worse, but rather to recognise that they are different with their own strengths and weaknesses. For example, sometimes, the lack of embodied persona in electronic media can be an advantage – it can helpfully depersonalise, de-individualise and even democratise exchanges. But one needs to be aware not only that text is not the same as speech, or face-to-face delivery, and that the use of (say) VOIP and webcams (as in the MA in Digital Heritage discussed below) introduces interesting and new issues of pedagogy, rather than sidestepping or reproducing old ones through digital means.

Figure 1 The complexities of e-learning provision: some of the parameters.

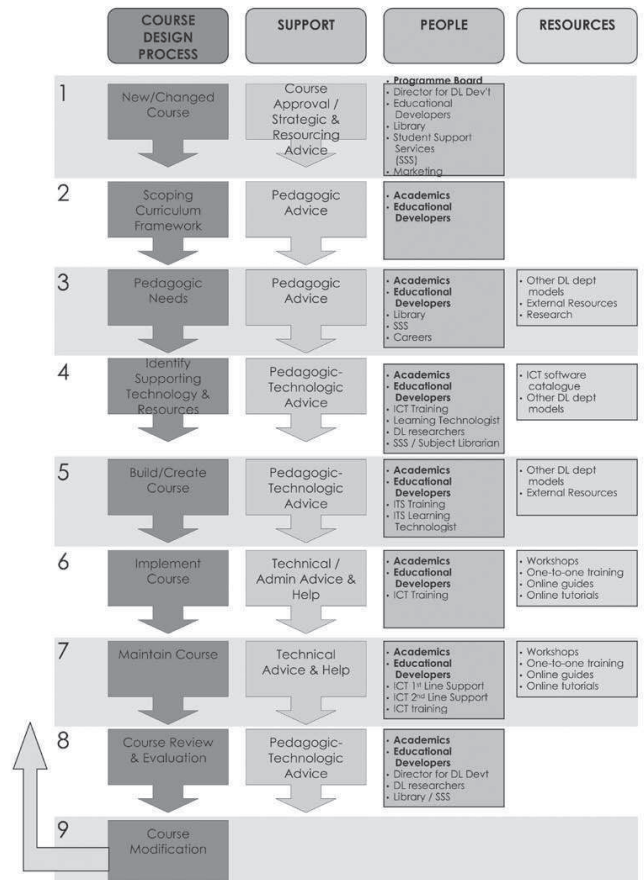
At the same time there is the view that campus-based or distance-learning teaching using e-learning methods can enable scalability and efficiency (and increase institutional size and income) – ever larger groups, repeated delivery, mechanised assessment and using largely digital resources which relieve e.g. pressure on libraries and teaching rooms. This is partly true, and is one of the benefits of e-learning in making possible new forms of mass education. It can also make viable specialist and niche education by enabling sufficiently large student cohorts to justify investment in course material production. But by and large research suggests that the costs of providing e-learning are in fact often comparable to those of traditional forms (Bottomley 2000: 102 – 4; Rumble 1997; Wentling & Park 2002), though of course costs to students (in terms of travel, accommodation, lack of earnings and so forth) may be considerably less.

There is also the danger of technophilia, which can affect not only politicians, as seen in the example of the UKU described above, but also some educationalists. Technologies can in themselves become very seductive – they are sometimes perceived as 'cool' and fitting in with especially 'young people's lifestyles' – can we deliver courses to mobiles? MP3 players? Virtual worlds? Via Facebook? YouTube? This actually stereotypes both students and indeed technological use-patterns – which are not always strongly related to age, rather than class, location or education, for example. For some educationalists and educational technologists who may themselves be innovators, the *technologies of delivery* can become the 'cutting-edge' and the exciting aspect, with a great loss of focus on both student needs and desires, academic requirements and wishes, and especially academic content. There are various costs associated with this: one is that academics (or students) may easily find themselves spending more time on learning their way around new platforms, media and softwares and their updates than they do on the subject matter. The speed of technological innovation and rate of software revision can make this a real problem, and also act as a potential barrier to genuine widening participation. 'Early adopters' of technology may be catered for, but others effectively shut out or discouraged. My own university has a 'Learning and Teaching Strategy' which insists that students must have more-or-less continuous high-speed access to the internet, not recognising that off-campus and for some individuals, constituencies and (parts of) countries this is unrealistic, exclusive, simply unavailable or too expensive.

Should we listen to students?

Not everyone wants the same delivery or learning methods. The Open University in the UK, a large, successful and long-established distance-learning institution, found that using discussion lists sometimes attracted a relatively small proportion of participants: some did not log in at all, others observed but did not contribute to discussions – they were ‘lurkers’. The OU perceived this as a ‘problem’ to do with the ‘learning community’, and hence on at least one programme, introduced sanctions for those who did not participate: an assessment was partly-based on email discussions, and those who did not contribute were required to lose 15% of their mark. A substantial minority preferred to be penalised rather than take part in such enforced dialogues. At my own institution I have similarly been advised by e-learning educationalists to make assessment partly or wholly dependent on digital materials as a way of enforcing student log-in. But we also know from student feedback that many (and especially after spending a day at work on a computer) prefer not to spend more time staring at a screen. Yet some also – rightly – complain that materials do not print-out properly if they are written for digital distribution. In addition, they want a permanent record of their course materials, which can be easily annotated and added to, and which will not disappear from their view after their registration period has finished. However, they like being able to explore, for example, maps, plans and other images, and especially the ability to link through directly from screen to e.g. journal articles without having to type in a web address, sign into the library and so forth. Balancing these individually perfectly reasonable needs which are, though, partly contradictory and in any event not shared by all the student community or cohort, simply adds to the complexity of e-learning provision. Which is why our preferred route at the moment is precisely to offer ‘hybrid delivery’ in various forms – as cd-roms and hard text; as modules and materials in a VLE and hard text; as primarily hard-text materials but with digital ‘resource areas’. I discuss some examples below.

Figure 2 Flow diagram summarising typical e-learning course design and development processes within a university (adapted from Helen Lentell and Alex Moseley, pers. comm.). This series of processes is itself normally preceded by informal and formal discussions at departmental and sub-departmental levels, where initiation typically takes place.



Organizational issues

With increased capacity offered partly through technology, student groups are potentially becoming perhaps both larger and more fragmented, and in any event more various in many ways. Across any institution there will be disciplinary differences of emphasis and both across and within disciplines different requirements and emphases at various levels between training, information provision and knowledge transfer, learning and research through various media. Producing materials which are relevant and appropriate for these different groups and requirements is in itself much more complex than typical traditional campus-based courses, and in general requires a far higher initial investment of time and people. Institutionally, whether or not e-learning is thus worth this investment (in traditional accounting terms) broadly depends on student numbers (assuming these are funded or fee-paying), fees, longevity of materials and their maintenance and support costs, and the intensity of support required for the students. Producing distance-learning and e-learning materials is itself a complex task (see Figure 2).

For those institutions wishing to develop not just e-learning, but also accepting the wider mission of flexible learning outlined above, there are thus many more structural, organizational and administrative implications. Apart from changed patterns of investment, there are issues of student records, income, staff management and culture – to be effective and efficient ‘flexible learning’ has to be available all year round and with multiple start and finish dates, for example, which changes the pattern and tempo of academic staff time, and has many other knock-on effects which I won’t go into here. In my own institution, which has long been involved in distance learning as well as traditional campus-based delivery, and both modes which increasingly use versions of e-learning as one of the delivery modes, flexible learning has largely been developed relatively independently within departments. This has been excellent from the point of view of producing materials and modes of delivery which are disciplinarily-relevant and appropriate for the particular cohorts of students. As an example of fragmented organic growth it has produced much interesting variety. But it is not proving easy to communicate the values of such variety among the disparate and dispersed practitioners, nor to learn from good (or bad!) practices and change; departmental or disciplinary traditions of doing, structures of practice can become easily sedimented and then fixed within bureaucratic procedures. And often procedures and the academic and administrative architectures developed for

traditional delivery are wholly inappropriate for flexible delivery and learning. As we are finding to our cost, increasingly database structures are insufficiently-detailed and inflexible at the institutional level, yet fragmented and incompatible or otherwise inappropriate at disciplinary or departmental levels, and change can require major and costly re-engineering. Yet simply providing e-learning within traditional structures is surely not taking full advantage of what these new technologies can offer in practical and social and political terms.

Case studies

Finally I want to present four very brief examples of ways, each from my own institution, in which primarily archaeological or related materials are presented and delivered using e-learning resources of various kinds.

Case study 1: Digital delivery

The simplest case is that of a postgraduate module on the *Archaeology of Standing Buildings* which had initially been delivered as a hard copy text in a large folder, plus associated textbooks and journal offprints. From 2005 we produced this in web browser format on a cd – this was the most compatible with any platform of almost any age. Lack of full digital copyright permissions meant that although weblinks could be included, not all associated teaching materials could, and so a hard copy element was still required. Student response has shown very little concern about the medium, except for a small number who claimed that it did not print out correctly, showing that some at least still prefer all hard copy to engage with. A similar response was met from students where preparatory material for a field course was provided in Blackboard, a Virtual Learning Environment: while liking the ability to click directly on hyperlinks to access journal material, they did not like the way that the main text printed, yet this was the only way they could keep a permanent record of the course materials (access will expire with their student registration).

Case study 2: Materials for the visually-impaired

We have produced a short module, *Introduction to Archaeology*, which is specifically-designed to use digital and other media as a way of making material available for visually-impaired students. The module text was written expressly for this project, bearing in mind the variety of ways students might be accessing this material (visually, aurally, braille) and for the inclusion and

production of accompanying artefacts. The module text was produced in a range of formats: print (large font); digital (cd-rom) in order to be used with a screen reading package such as JAWS, or a screen magnification package such as LUNAR, or even LUNAR PLUS, which is a combination of magnification and speech; audio as an MP3 file; and Braille print. Ensuring that prospective students had access to this range of formats was a key element in the production of this module, allowing students to select and combine formats according to individual need. This of course affected the ways in which visual material such as graphs, tables and photographs could be presented – Braille for example, is not suitable for the reproduction of tables. On the advice of staff at the Royal National Institute for the Blind we also ensured that any visual materials (such as pictures, site plans and so forth) were described in the text as fully as possible.

We also produced a set of enlarged reproductions of 'real' archaeological artefacts which were closely linked to different sections of the text and could thus be seen by the partly-sighted, and felt by those without sufficient sight. These replica artefact sets were made available in specially designed boxes where each artefact was numbered and linked by cord to a specific part of the box, meaning that each artefact would be returned to its correct place after each examination. For further details including artefact images and student response see Pluciennik & Young (2009).

Case study 3: Teaching through avatars in a virtual world

As part of a research project, we have experimented with using the virtual world Second Life as a medium for delivering synchronous experiences (tutorials?) in spatial theory in archaeology (Edirisingha *et al.* 2009). It should be noted that the group had students from the UK, Germany and the USA, and it was difficult to find a time when all could 'meet'. Nevertheless, we prepared four hour-long sessions, which included a digital simulacrum of a Sami tent, and a Kalasha village including a birthing hut, to parts of which entry for avatars was restricted according to gender. Communication and teaching in Second Life included PowerPoint presentations on virtual screens e.g. within the virtual village and the surrounding landscape, and by 'chat' – almost instant text messaging, allowing exchange and dialogue. (Voice exchange would also have been possible). Logs of conversations were subsequently available to all. Students who participated were genuinely enthusiastic and did feel that they were getting to 'know' staff and students better

even in avatar form, and also engaged well with the ideas being presented. However, preparation time (including building virtual landscapes and structures) was lengthy, and it was a staff-intensive if rewarding way of delivering a relatively small part of one module to a small group of students.

Case study 4: Museum Studies and Digital Heritage

A newly-introduced MA in Digital Heritage (Museum Studies 2009), perhaps surprisingly to some, despite the subject and required technological expertise of the developers and students, deliberately does not rely solely on digital delivery. Student responses and educational consideration have guided production of materials in a variety of forms and media ranging from hard copy texts to group tutorials conducted through Skype (using webcams and VOIP), materials in a VLE including a 'Common Room' jointly-curated by students and staff, and various web resources. These various media were chosen by the academic developers who are experienced in the provision of d- and e-learning.

The examples briefly described above, and to our knowledge many others, suggest that e-learning in whatever form is not a blanket answer or solution, no more than would be lectures, or textbooks, or practical classes, or essays or examinations as the *only* means of teaching or assessment in any field. But what digital resources do make possible – albeit at a cost – is for many more ways of teaching, learning and doing to be explored and adopted as appropriate. They can also potentially play a very large role in developing or improving access to education for many groups of people, in the same ways that earlier technologies of print, radio and television have also done. What learning is and might be will also change – user-constructed groups and resources are becoming an increasingly important and an interesting dynamic, both as a part of formal education, but also as an educational analogy to open-source software, for example. E-learning and associated developments will also no doubt have less-intended consequences. Over the longer term, the socio-political implications are as interesting as the educational ones, perhaps.

Conclusion

What seems likely though is that not all learning is ever going to be by e-learning (or distance learning) – at some stage one has to go on site, in the field, in the laboratory, into the archive, the workplace, factory, or organisation; one has to learn practical and embodied skills directly through

doing – finds processing, assemblage analysis, buildings recording, surveying and excavation for archaeological generalists, at least; similar though different requirements will apply for most if not all other disciplines. Not everything can be done through digital presentation and simulation, video or manipulation of processed data. E-learning is not a substitute: it is a complement, even if sometimes such delivery can replace parts of other forms of education. So what we seem likely to end up with in many disciplines including archaeology, is what is called hybrid or blended learning, in which education is delivered through many media. Of course, many of us are already used to that in campus situations: large groups, small groups, independent learning using traditional books and journals, presentations and materials within Virtual Learning Environments, on-line resources. But – in the UK at least – what hasn't often kept pace is the institutional understanding and management of what genuine flexible, hybrid learning implies behind the scenes. If one is talking about a widespread and easily available system of flexible learning including much e-learning (rather than small-scale research or other projects), then we need to think seriously about the kind of structural, resource and staff implications for supplying and maintaining high-quality and up-to-date education, at whatever levels. Given current economic forecasts, that might be the biggest challenge of all, over the next decade.

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