E-Collaboration: Concepts, Methodologies, Tools, and Applications

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Chapter 8.7 Bridging the Gap Between Web 2.0 and Higher Education

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ABSTRACT

This chapter looks at some of the areas of tension between the new social networking, Web 2.0 communities and the values of higher education. It argues that both the granularity of formal education and the manner in which the authors formalise learning are subject to change with the advent of digital technologies and user generated content. The gap between higher education and Web 2.0 could be bridged by, amongst other approaches, a sort of flickr for learning design, which allows users to share activities and sequences, thus meeting the diverse needs of learners and utilising the best of social networking approaches.

INTRODUCTION

The rise of internet technologies that can be grouped under the Web 2.0 heading has generated

a good deal of interest in education, as witnessed by the number of conferences that now have Web 2.0 or related approaches as a main theme, the number of educational technology bloggers, and the interest of commercial Web 2.0 start-up companies such as TeachThePeople.com.

This is because the popularity of sites such as flickr, facebook, MySpace, wikipedia, etc is interesting of itself, in terms of what drives users to these sites and why they keep returning. But more significantly it is their potential as tools to facilitate learning that has caused much discussion. Their implications for learning can be summarised as:

• **Technology:** with most universities now possessing a virtual learning environment (VLE) (OECD 2004, Barro and Burillo, 2006), the extent to which some of the technologies could form a learning environment has been discussed. For example Downes

(2007) highlights Facebook's educational heritage, and Kemp and Livingstone (2006) have integrated the virtual world SecondLife with the Moodle VLE.

- User generated content: wikipedia is the most famous example, but through formats such as blogs, podcasts, vlogs, wikis, slide-share (shared presentations), splashcasts (video clips that combine different media formats), screencasts (slideshows with synchronised audio), and webcasts there is a good deal of material that is both useful for students, and is generated by them.
- Pedagogy: learning as it occurs in Web 2.0 communities tends to be informal, and socially oriented. If we look at open source software communities as an example of where learning takes place in such communities there are a number of differences with higher education. For example, these communities are very flexible where roles are not stagnant. Although hierarchies and formalised roles exist, they are not as rigid, with advancement or promotion through meritocracy, with a selection of individuals earning the right to make decisions based on merit or past contributions. A number of researchers, such as Bacon & Dillon (2006) have suggested that open source communities might serve as an example for future educational structures and processes.
- **Content and resources:** there are a variety of educational sites offering a range of resources. These include open educational resource repositories such as MITs Open-CourseWare and the Open University's Openlearn project, and also audio and video lectures and talks through providers such as iTunesU. Students thus have access to a wide diversity of high quality material to supplement their studies.
- **Philosophy:** this is probably the most significant, and one we will explore further below. There is a fundamental difference

between the principles that the Web 2.0 world enshrines and those within higher education. At its simplest this can be summarised as bottom up versus top down.

The last point in the above list suggests that there are differences between the cultures and values found in the Web 2.0 community and those in higher education. It is worth examining these in more detail as they hold the key to the central question, both of this article and for education as whole, which is how do we bridge the gap between these two worlds? In this chapter we wish to explore some of the differences, consider their implications for higher education and lastly to map possible benefits for the learner that such approaches may have on to the existing higher education structures, through the process of learning design.

DIFFERENT CULTURES

Firstly, let us examine the values of the Web 2.0 community. Web 2.0 can be seen as both a set of technologies (such as the use of particular programming languages) and also a set of values. In his essay 'What is Web 2.0?' Tim O'Reilly (2005) sets out a number of key features. The first of these principles is the notion of web as platform. This was an idea that first surfaced with much of the initial dot.com hype. That didn't come to pass, but O'Reilly suggests a crucial difference this time around, which is personified by Google. Whereas Netscape was based around a software product, Google is based around a service. He summarizes it thus:

In each of its past confrontations with rivals, Microsoft has successfully played the platform card, trumping even the most dominant applications. Windows allowed Microsoft to displace Lotus 1-2-3 with Excel, WordPerfect with Word, and Netscape Navigator with Internet Explorer.

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This time, though, the clash isn't between a platform and an application, but between two platforms, each with a radically different business model: On the one side, a single software provider, whose massive installed base and tightly integrated operating system and APIs give control over the programming paradigm; on the other, a system without an owner, tied together by a set of protocols, open standards and agreements for cooperation.

Another principle, and one that has relevance for education, is that of 'harnessing collective intelligence'. Wikipedia is an obvious example here, as are sites such as Flickr, YouTube, 43Things, etc. This ability to harness what James Suriowecki (2005) calls the wisdom of crowds is partly what sets aside successful e-commerce sites such as e-bay and Amazon. This seems to be one of the key principles, that the actions of users when interacting with a site (selecting content, commenting, tagging, voting, etc) collectively adds value that benefits all users. The technology or site therefore needs to be set up so that it encourages participation. This shift to co-ownership of information and technology challenges the conventional hierarchical model found in traditional broadcast media.

In terms of software development Web 2.0 applications operate a much more evolutionary model, continually adding new features and monitoring the use of these. Because the applications are all delivered online this can be achieved without the need for a major update and release of software. O'Reilly suggests that

Users must be treated as co-developers, ... The open source dictum, "release early and release often" in fact has morphed into an even more radical position, "the perpetual beta," in which the product is developed in the open, with new features slipstreamed in on a monthly, weekly, or even daily basis....

Another principle is that of lightweight programming models. The key to these models are that systems are often loosely coupled, (at least from the user's perspective) rather than tightly integrated. This facilitates the 'perpetual beta' model and also means that tools and services from other providers can be easily assimilated to make the overall system more powerful. The approach is summarized as 'innovation in assembly', whereby value is added by assembling a number of different components together in a useful manner. This may have been achieved through hardware previously, for example, Dell computers assemble components to produce PCs that suit a user's needs. With the sort of lightweight programming models now in practice, the same approach can be applied to tools and services.

There are a number of key features to Web 2.0 approaches then. The first of these is democracy, in that participation and governance is the result of the collective. The second is that a bottom-up approach drives content generation, description and discovery. And, from the educational perspective, the third is that they are socially oriented.

Now let us compare these with the values that are enshrined in higher education practices. While not always in direct conflict, there are a number of clashes. For instance, education is a hierarchically arranged system, with Professors, Lecturers, part-time support staff and students. Education places a high priority on quality assurance of the content (where content can be physical resources such as books and journal articles, and also events such as lectures). It achieves this through a largely top-down process of review (for example of journal articles) and formal assessment (such as exams and course approval processes) which effectively act as filters to participation in the process. Much of education can be seen as a process of enculturation into academic practice, for instance a PhD student is not only conducting research in to their subject, but learning how to be a researcher and publish academic material.

This is in marked contrast to Web 2.0 which removes all barriers to participation, and then uses popularity, user tagging, and metrics such as number of links and quotes to an article to filter for quality and appropriateness. Weinberger (2007) refers to the process as 'filtering on the way out'. In education, this filtering is done on the way in, through the process of peer review, standardised measures of quality (such as the Research Assessment Exercise in the UK), and the enculturation process mentioned above. Web 2.0 removes all this prefiltering, so that anyone is free to publish, but then adds in a suite of tools and metrics to help users search through the content and judge its quality. For example, blogs can be listed in the blog directory Technorati, which provides an 'authority' ranking, which is calculated by the number of unique blogs linking to your blog, and their respective authority. This works on the assumption that the more times a blog is linked to, then the greater it's reliability, and particularly if those doing the linking have a good reputation. Combined with search, metrics such as authority are then used to do some of the filtering on the way out.

There are a number of other areas of conflict between higher education and Web 2.0. For instance the perpetual beta approach to software development reveals a fundamentally different belief as to how not only software, but any project should develop. Weller (2007) argues that

"Most higher education institutions will favour rigorous, consultative approaches when developing or adopting software with the specification process taking months and maybe years to complete, with the intention that the system will be in place for a suitably lengthy period. Such an approach does not match well with the faster, loose knit, rapid turnover mentality of the Web 2.0 approach."

Perhaps most significantly is the belief in education that there is a right way to do things, that essentially the educator holds the knowledge about how the students should learn and provides the pathway. In Web 2.0 diversity and personalisation are championed. However, can this miscellaneous approach apply to education? There has been a shift towards more constructivist approaches in education recently which acknowledge the role of the individual's experience in the learning process, but the key function of education remains to overcome Meno's paradox, which states 'how can I inquire about something which I don't know anything about?' (e.g. Laurillard 2001). It is this need to maintain the structure and guidance, while embracing some of the principles of Web 2.0 which a learning design based approach may be able to address, and which we will examine later in this paper.

WEB 2.0 CRITICS

Any movement that gains as much publicity and generates as much hype as Web 2.0 is bound to attract a range of critics. Some are merely concerned that it is an over-used and misleading term, for example, Hirschorn (2007) says that "Like 'push,' 'social media' is a functional advance pimped out as a revolution."

Perhaps most prominent amongst these has been Andrew Keen, who argues against the quality of user generated content. The cult of the amateur he says

"worships the creative amateur: the self-taught filmmaker, the dorm-room musician, the unpublished writer. It suggests that everyone—even the most poorly educated and inarticulate amongst us—can and should use digital media to express and realize themselves."

On the Encyclopaedia Britannica web site, Michael Gorman (2007a) takes this argument further stating that the difference between traditional sources of information (such as encyclopaedias) and online information is "the authenticity and fixity of the former (that its creator is reputable and it is what it says it is), the expertise that has given it credibility, and the scholarly apparatus that makes the recorded knowledge accessible on the one hand and the lack of authenticity, expertise, and complex finding aids in the latter."

Authenticity and reliability lies at the heart of the problem for Gorman, who argues that only through top down processes can these be assured:

"The task before us is to extend into the digital world the virtues of authenticity, expertise, and scholarly apparatus that have evolved over the 500 years of print, virtues often absent in the manuscript age that preceded print."

This concern over the quality and reliability of content is one that is pertinent to education and frames many educators' response to Web 2.0. For example, many will find themselves in agreement with Gorman (2007b) when he asks

"Do we entrust the education of children to selfselected "experts" without any known authority or credentials? Would any sane person pay fees to take university courses that are taught by people who may or may not be qualified to teach such a course?"

And on wikipedia, the best example of online user generated content Gorman (2007c) adds

"A few endorse Wikipedia heartily. This mystifies me. Education is not a matter of popularity or of convenience—it is a matter of learning, of knowledge gained the hard way, and of respect for the human record. A professor who encourages the use of Wikipedia is the intellectual equivalent of a dietician who recommends a steady diet of Big Macs with everything." What the argument between the critics and the proponents seems to be about is *process*. For the critics the top-down, official metrics and measure approach to authenticity is the best way to produce high quality resources. For the proponents, the bottom up, distributed process is more powerful.

In terms of the power of distribution we have an analogy in the process of open source software. Eric Raymond's (2000) maxim of 'given enough eyeballs, all bugs are shallow' sums up the benefits of the distributed approach. There is no debate about the quality of the software produced through open source communities, including some of the most robust and widely used software in use today such as Apache, Linux, Open Office, etc. Wheeler (2007) uses quantitative data to make the case for open source software from the perspectives of market share, reliability, performance, scalability, security and cost, where open source solutions nearly always outperform proprietary ones.

The question then is whether a similar distributed approach can be applied to domains other than software development. There are undoubtedly areas where the top-down centralised approach is necessary, for example it is difficult to imagine a feature film being produced through a distributed model. Wikipedia is the best example of user generated content, where the process of creating entries is performed through careful negotiation and dialogue between contributers.

In objective tests wikipedia has been found to be as reliable as Britannica (Giles 2005) (and it even contains a list of entries with errors in Britannica http://en.wikipedia.org/wiki/Wikipedia:Errors_ in_the_Encyclop%C3%A6dia_Britannica_that_ have_been_corrected_in_Wikipedia). After this study was completed the errors identified in wikipedia were fixed within a few days, whereas Britannica had to wait until the next round of publication to address theirs. This at least demonstrates that distribution as process can work in creating complex content other than software. As with open source software, the contributers to wikipedia may be 'experts' in their own field, but the means by which they have acquired this expertise is irrelevant, that is they are not required to have particular credentials *before* they can contribute, but rather they are judged on the quality of their contribution.

THE GRANULARITY OF EDUCATION

The digitisation of content and its frictionless distribution on a global scale is challenging many of the assumptions we have about the format of content and the underlying business models that support these. Often these are so ingrained in our view of the content and its related businesses that we do not even recognise them as assumptions.

Prior to digitisation, all content was bound up in its physical form. That is, you had to buy or obtain, the physical copy of a book, CD or DVD. Evans and Wurster (1999) argue that previously a product and its information were bound together and therefore forced to follow the same business models. For example to find out which books are on sale in a bookstore you have to physically walk past the products. But online these two elements – the product and its information – are unbundled and free to follow different models.

The business models of content industries followed the demands of this physical form – CDs require production, packaging, storage, distribution and retail. The record company and record stores are thus a logical necessity in a market for music CDs. But with the digitisation of content many of these demands disappear. MP3s can be distributed freely online, they do not require production (in the physical format sense), or a distribution network. There are also a number of computer based 'studio' software packages that mean the production, mixing, and overlaying of tracks is much easier and cheaper.

What Web 2.0 adds to this process is the removal of the filtering function performed by intermediaries, which previously were a neces-

sary part of the model. Prior to the internet, artists could make tapes or CDs of their own music and try and bypass the record companies, but they lacked a significant distribution network. With the advent of the internet they had access to a potential global distribution method, but they lacked the promotion and a means of people finding their music. With Web 2.0 content discovery is facilitated through services such as LastFM and iTunes. Here users can create playlists, recommend artists and tracks, and add favourites. In addition, data mining finds similar artists and songs by monitoring user behaviour (like book recommendations in Amazon), so that in LastFM for example, a user can enter an artist's name and will be played a series of songs by artists that are deemed similar. Thus the filtering process of the record companies is also removed.

This leads to some profound implications for content industries, including newspapers, television, music, film, etc. For instance in the music industry, record companies are beginning to be disintermediated, with artists (e.g. Radiohead) offering free downloads of their albums.

It also changes the nature of our relationship to content. Weinberger (2007) says of music

"For decades we've been buying albums. We thought it was for artistic reasons, but it was really because the economics of the physical world required it: Bundling songs into long-playing albums lowered the production, marketing, and distribution costs ... As soon as music went digital, we learned that the natural unit of music is the track."

As we shall see in a later section, education has some similarities with content industries, but also some significant differences. However, it is worth considering whether we hold similar assumptions about the granularity of education as we held about the granularity of music, which would be subject to change with digitisation of content and provision of online services. Higher education, as we normally conceive of it, is typified by the undergraduate degree course. This takes 3-4 years continuous study, comprises a number of modules, has regular exam and assessment sessions, is taught face to face, and students are assessed in terms of the knowledge they demonstrate of the taught modules. There are, of course, variations to each of these elements – study can occur at a distance, it can be part-time, assessment can be portfolio and continuous, there can be breaks in study, etc. But each of these adaptations is usually mapped on to the existing, standard model. They represent modifications to it, not replacements.

However, it may be that many of these assumptions are bound up in the economic models that have their roots in the physical aspects of education. For example, if you are requiring students to come to a physical campus, then it makes sense to bundle all their modules in to a short time span to minimise inconvenience and to manage staff time. If the assessment is then based on an exam, it similarly follows that you package this up into one event. These restrictions have then moulded what we deem to constitute a higher education experience, but like the album, perhaps this packaging is merely a product of the physical format, not a 'natural' means of structuring it. Even when courses have moved online, they have usually followed similar conventions in terms of length and assessment.

The digitisation of content, and perhaps more significantly, dialogue and collaboration, means that the type of learning event we can include and assess now changes. It is not just the standard lecture, but can include student reflective writing on their learning through video, blogs, podcasts, etc. It can also include discussions between learners, in the form of asynchronous text forums, recorded virtual meetings, instant messaging transcripts, etc. So the type of content we assess the student's understanding of changes, which will inevitably have consequences for the way we assess it. The formal exam or multiple choice question bears little relationship to the student's experience when connected to such a range of media. As well as altering *what* is assessed, the frequency and *nature* of assessment is subject to change also, which we will address in the next section.

THE TOPOGRAPHY OF FORMALITY

Just as we think of learning being bundled into a convenient course package, so we think of the formalisation of learning being grouped into large chunks. Informal learning is difficult to recognise and accredit, and is thus often overlooked in favour of formal education. There is an intrinsic paradox with informal learning – in order to reward and recognise it, then it needs to be formalised in some manner. This can be through an accredited programme, the use of portfolios to demonstrate competency, or diagnostic tests.

If we were to consider the formalisation of learning as a topology then currently it is a flat plain with a few high peaks, rather like skyscrapers in a desert, representing courses. The learner traverses this topology over their lifetime, most of it spent on the flat plain, with no easy access to formal recognition, and is then requested to climb large peaks of formality, such as a postgraduate course. This bears little resemblance to how they actually learn, which will have some peaks, but will be more evenly distributed.

In the online world however, this topology could be subject to considerable change. The peaks become shallower, but more frequent, so it is more akin to an archipelago. In this model, the digitisation of content and interaction mentioned in the previous section allows users to gather evidence of informal learning on a daily basis. They may then choose to bundle this into a formally recognised event, for example by having their portfolio assessed, or engaging in a 'micro-course' which demonstrates their ability in a given area, or by creating a meta-document of their own, for example a reflective blog post that draws on the different pieces of evidence. Ironically this is actually how educators conduct their professional lives. An educator may engage in a research project and they will formalise this learning through conference presentations or journal articles. They will bundle together recent experience into published text books, or project reports, with a number of informal steps along the way, such as class discussions, departmental seminars, work in progress conference papers, etc. In this respect the academic profession has a number of recognised means of formalising learning. Many other professions and individuals do not have such readily available and acknowledged means of unifying recent learning and experience.

THE THREAT TO HIGHER EDUCATION

Higher education has many similarities to content and broadcast industries, such as book publishing and the music industry. As we saw in a previous section, the digitisation of content and the use of the internet as a distribution method is having profound implications for these industries. They are essentially faced with two choices:

- 1. Find ways of maintaining the publisher model, by managing the rights and use of content through a combination of technological and legal controls.
- 2. Find new business models that give away content but build and sell services around it.

The struggle between these two modes of operating will define content industries over the next five to ten years. As George Siemens (2007) puts it

"Consumers, like learners will in the future, have a dramatically different relationship with content than they have had in the past. Textbook publishers, journals, and other content-centric industries need to take heed of these lessons and adjust before they become the next statistic."

However, education is also unlike these businesses in many ways. Much of the 'content' of higher education, be it books or journal articles, has always been readily, if not freely available. Noam (1995) suggests that there are three main university functions:

"Scholarly activity, if viewed dispassionately, consists primarily of three elements: to create knowledge and evaluate its validity; to preserve information; and to pass it on to others."

These can broadly equate to research, librarianship and teaching. If we accept the Web 2.0 argument then both the creation and evaluation of knowledge includes those outside the remit of the university, although a good deal of research is still likely to be best performed by universities. The preservation of information could also be argued to be more of a function performed by Google, or digital archive projects such as the Internet archive, than universities. This leaves teaching of Noam's three main functions. However, the establishment of a number of open educational resource (OER) initiatives such as MIT's Open CourseWare and the Open University's openlearn project, then even that is subject to weakening. If one extends the definition of content to the lecture or tutorial then the challenge to education does resemble those faced by content industries to an extent, in that learners can find freely available content online, for example lectures from Stanford via iTunesU.

So, with the net providing the content and the technology the quote in *Schindlers List* comes to mind, when Itzhak Stern asks of Schindler "Let me understand. They put up all the money. I do all the work. What, if you don't mind my asking, would you do?" Increasingly this is a question that students will ask of HE, but more importantly which it should ask of itself.

But Noam's three functions are probably too restrictive. To these we can add:

- Guidance: this is perhaps the strongest service that higher education offers (and also one of the most difficult to 'market'). As more content becomes available, the value of guidance and skill development becomes more important, not less. The role of educators shifts from being a content provider to a content interpreter or skills developer. Through a framework (which conventionally one might think of as the course, but it needn't necessarily be structured this way), the educator provides activities, guidance and support enabling learners to find, interpret, use and analyse content.
- **Social:** the student cohort which consists of individuals learning the same things at the same time, with the same experience, is a powerful motivating factor for many students.
- **Convenience and coordination:** although it is possible to be an autodidact with less effort than was required of the one depicted in Sartre's *Nausea*, university courses still offer a degree of convenience as someone knowledgeable (the educator) has assembled (and produced) the right set of resources, structured them into a meaningful pathway, coordinated access to a range of resources (articles, books, peers, laboratory equipment) and managed the timetable.
- Accreditation: this is the valuable service held by higher education. It accredits education in a format that is widely recognised by employers and others e.g. the Bachelor's degree. Holding a near-monopoly on formal accreditation has enabled universities to resist competition from other providers, however, in a world where services are modularised, then accreditation may be vulnerable to predation from other providers. Offering accreditation of other forms of

learning and experience may be one means of providing alternative revenue streams. This happens to an extent in some sectors, for example IT certifications for networking, with some universities now delivering externally developed programs of study, such as the Cisco networking courses.

BRIDGING THE GAP

Having looked at the different cultures in higher education and Web 2.0 and some of the potential conflicts we can now ask how we might bridge the gap between these two seemingly diverse worlds. We will concentrate on the possible role learning design could play, as an illustration of how education may need to adapt, but other bridging techniques would undoubtedly be required, for example the development of appropriate technologies.

We are using the term learning design in its broadest sense here, and not the specific IMS specification. As such it can be taken to mean the process and underlying design of a learning sequence or activity. It is thus roughly synonymous with lesson, or pedagogical planning and instructional design. A learning design then can be in a variety of formats, including a template document, case studies, formal activity sequences, and visual representations.

Over recent years there has been a commendable effort to make educational content freely available, through initiatives such as open access, MIT's opencourseware, learning object repositories such as MERLOT and the Open University's openlearn project. It may still be too early to assess the success of such initiatives, and although some of the statistics are impressive, for example 1 million visitors per month for MIT's open courseware in 2005 (MIT 2005) as yet they have not had the scale of impact on higher educational practice that had been hoped for. The reasons for this are undoubtedly numerous, including cultural factors such as academics attitude towards reuse and institutional recognition of teaching. It seems likely that one contributory factor is that education is more than content. As we observed in an earlier section, much educational content has always been available. The value that educators provide is in the process of scaffolding learners through content. This becomes a more valuable service when the range and quality of content increases dramatically.

If we look at the issues raised in this paper we can now suggest how a learning design focused approach can help resolve many of them:

- Meno's paradox: learners still often seek guidance and structure. For some subjects they are satisfied with creating this structure themselves, for example by finding resources such as blog postings, tutorials, articles, podcasts and video clips. For other subjects, particularly when the subject is itself complex, or the learner feels less confident of the subject area, then providing a scaffolding structure (which has been created by someone more knowledgeable in the subject) is essential to help the learner build concepts and skills in a robust manner.
- Granularity of learning: in the section on granularity, we argued that the size of educational unit we commonly recognise has been largely determined by physical factors. If learning designs were created and shared by a community of users, what might be thought of as a Flickr for learning designs, and these could be run by individuals, or by groups of interest, then many of the restrictions on size which derive from a hierarchical, centralised model disappear. We looked at the music industry as an analogy, and in education perhaps a more relevant model is that of blogging. Prior to the advent of blogs, the type of academic output was usually limited to books or journal articles.

The granularity of these was partly driven by the economics of publishing, as Shirky (2003) argues: "Analog publishing generates per-unit costs-each book or magazine requires a certain amount of paper and ink, and creates storage and transportation costs. Digital publishing doesn't. Once you have a computer and internet access, you can post one weblog entry or one hundred, for ten readers or ten thousand, without paving anything per post or per reader. In fact, dividing up front costs by the number of readers means that content gets *cheaper* as it gets more popular, the opposite of analog regimes." With the advent of blogging, academics (as well as many other bloggers) have found the format liberating, so that blog posts can vary in size from small links with comments to full essays.

- Topography of formality: as with granularity, a set of user generated learning designs allows users to bundle their recent experience together into a course which can be formally recorded more frequently. This would be possible not only because the monopoly of formality is removed from universities, but also because a distributed model of learning design production is the best way to attack the long tail (Anderson 2006) of possible learner interests. If a user wants to find small courses to formally accredit their understanding of highland knitting patterns, history of Sydney in the 1960s or anthropology amongst football fans, then most current formal providers will not meet their requirements, but a sufficiently distributed pool of user generated designs might.
- Web 2.0 quality: much of the concern educators have around Web 2.0 is of the quality, and how it can be assured. A set of user generated learning designs could go someway to addressing this by providing a pedagogical structure around resources, and

those resources are then changeable. Users can see who has created any given learning design, so some designers may be trusted more than others, rather like sellers and buyers on eBay gain reputational status by recommendations from other users. Similarly, users will be able to comment on designs, thus providing information and context for other users. However, by allowing users to create and select learning sequences it is necessary to accept some of the bottom-up metrics mentioned previously, as the 'filtering on the way in' approach currently used in education is replaced by filtering on the way out. This is necessary to encourage participation.

Personalisation: if a learning design pool reached a sufficient critical mass, then users will be able to select designs that are appropriate to them in a number of different ways: subject area, style of learning, level, range of resources, duration, assessment method, etc. However, it may be that for some subject areas, particularly those that have a professional body such as medicine, that personalisation is not a desired goal, as they wish to maintain a core set of common knowledge.

CONCLUSION

Learning designs potentially offer a means of overcoming some of the cultural differences between Web 2.0 and higher education. They can do this in a number of ways, but ostensibly they provide a means of maintaining the structure, guidance and formality required of higher education, whilst simultaneously embracing the user generated, distributed and personalised approach found in Web 2.0.

Although some means of achieving this have been suggested, such as a site for sharing designs and an unbundling of the accreditation function

from universities, there are a number of significant obstacles that would need to be overcome. The first of these would be the provision of appropriate tools, which are easy to use and simple to understand. The IMS Learning Design specification is too complex for most users to adopt, as it requires an understanding of the specification, the nature of roles and XML code. If it is to be used, it requires tools that 'hide' much of this complexity from user. The most popular example of such a tool, which can conform to the specification, but does not depend on it, is LAMS (Learning Activity Management System). This has an easy to use visual interface, and does not require specialist knowledge. At the LAMS community (Dalziel 2006) over 200 LAMS learning sequences have been uploaded for others to share. While not many sequences are reused, it seems that users tend to take existing sequences as the basis, or inspiration for creating their own sequences.

At the Open University (OU), the argument mapping software Compendium has been adapted to act as a learning design tool. Again, the tool is easy to use, (although unlike LAMS it is a design only tool, not a runtime delivery system also), with a visual interface, which allows users to easily create activity sequences. The tool incorporates a number of context sensitive information aids, helping users with examples of new technologies, or application of pedagogy (Conole, forthcoming). Early trials with the software have been positive with course teams at the OU designing activities in a collaborative setting.

However these tools represent only an initial step in creating the range of easily shared designs that would be necessary to bridge the gap in the manner suggested. As well as further development of such tools, what would be required is for them to be embedded in a cultural context that provides the motivation to create and share designs. With many successful Web 2.0 sites, such as Flickr and YouTube the motivation to share and create is driven partly by social factors such as recognition, and ego. The threshold to participation is also sufficiently low that there is little 'cost' to the user in participating and they can easily vary the level of their involvement.

Learning differs from the content of such sites in being a more complex and nebulous activity. The same motivational factors could still be used however, particularly if a system for sharing designs reaches a critical mass, so the tipping point of participation seen in other Web 2.0 services is reached. This could be achieved through an initial seeding of such a system from a global consortium of universities, who as an extension to the current Open Educational Resource (OER) initiatives, begin to share not just learning content, but learning designs. When setting up the LAMS community Dalziel (2005) set out nine principles for its design, which would help address some of the pitfalls seen with learning object repositories. From our perspective the most relevant of these are.

- learning activity as focus rather than content,
- community focus rather than repository focus,
- resources can be easily adapted and
- resources are easy to share.

These four principles in particular would be key to the success in using a learning design approach to help bridge the gap between Web 2.0 and higher education.

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