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Article · January 2009

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Bridging the gap between web 2.0 and higher education

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The popularity of web 2.0 technologies and approaches poses both a problem and an opportunity for higher education. In this paper the differences in culture between web 2.0 and higher education are examined. The authors propose that both the granularity of education and also the nature of formal assessment are subject to change in a digitised environment, and that as with other industries, there is a threat to higher education. While attempting to embrace many of the positive aspects of web 2.0, there are a number of concerns in higher education, such as the maintenance of quality, overcoming Meno's paradox and providing adequate support and guidance. It is suggested that user generated and shared learning designs represent one possible means of bridging the gap between these two cultures, while addressing the issues of concern in education.

Keywords: learning design, web 2.0, higher education, digital culture

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. This is because the popularity of sites such as flickr, facebook, MySpace, wikipedia, etc is interesting in 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.

There are also significant cultural differences between the values found in higher education and those in the web 2.0 community. There are a number of key features to web 2.0 approaches: The first of these is democracy; the second is that it is based around a bottom-up approach; And, from the education perspective, the third is that they are socially oriented.

Now let us compare this 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, and formal assessment 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 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'.

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).

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 cereals are on sale in a supermarket 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.

What web 2.0 adds to this process is the removal of the filtering function performed by intermediaries, which previously were a necessary 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, whereby users can find recommendations, see similar artists and people with similar tastes. 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, means that the type of learning event we can include and assess now changes. It is not just the standard lecture, but can include 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 topography 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. 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:

- i) Find ways of maintaining the publisher model, by managing the rights and use of content through a combination of technological and legal controls.
- ii) 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 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 is now at least partially outside of the remit of the university. The preservation of information could also be argued to be more of a function performed by Google than universities. This leaves only teaching of Noam’s three main functions, and if we follow the OER route 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:

- 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 – 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, and also structured them into a meaningful pathway.
- 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.
- 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.

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 pedagogical planning and instructional design.

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 early to assess the success of such initiatives, and although some of the statistics are impressive, they do not seem to have had the impact on higher educational practice that was anticipated.

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 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 paying 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 some way 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.

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 far too complex for most users to adopt, so even if tools are based on this standard it needs to be hidden from the user. An example of an easy to use tool for designing learning activities is LAMS as it 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.

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Please cite as: Weller, M.J. & Dalziel, J. (2007). On-line Teaching: Suggestions for Instructors. In L. Cameron & J. Dalziel (Eds), *Proceedings of the 2nd International LAMS Conference 2007: Practical Benefits of Learning Design* (pp 76-82). 26th November 2007, Sydney: LAMS Foundation. <http://lamsfoundation.org/lams2007sydney/papers.htm>

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