

Education and the Internet

Web 2.0 & renewed innovation in online learning

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Paper presented to the Teaching and Learning Forum, Perth, 2009

Abstract

This paper presents an overview of the author's Australian Teaching and Learning Council 2009 Teaching Fellowship Project, entitled 'Learning in Networks of Knowledge' (LINK). The project will involve developing Web 2.0 approaches and technologies that provide the opportunity for educators to create learning experiences in which students work to produce knowledge in and for a public, networked digital environment. These learning experiences emphasise real-world engagement, and are founded on advanced understanding of the mechanisms for promoting learning through assessed participation and contribution. Other aspects of the project involve the use of online presentations to provide context and instruction, rather than content and the promotion of reflexivity. Having provided a brief description of the goals and methods of the project, the paper will concentrate on exploring two key underpinning elements of critical significance to the continued development of online learning, whether as the only method of study or as part of an on-campus education. The first element concerns the development of Web 2.0: the paper argues that this development is not so much a 'new version' of the web, but a re-emphasis within Internet applications and activities of some basic affordances of online communication dating back two decades or more; nevertheless, certain new features do emerge that create opportunities for a reconceptualisation of online learning. This reconceptualisation becomes necessary because of the second element which the paper considers: the problem of the learning management system and its inherent and operationalised constraints in light of the developing nature of the Internet in society. In summary, this paper both identifies a key problem that constrains innovation in online learning and outlines one possible response to it that is to be developed in 2009 by the author as an ALTC Teaching Fellow.

Introduction

This short presentation is the first tangible outcome of my successful application in 2008 to become a teaching fellow of the Australian Learning and Teaching Council and I gratefully acknowledge the support of the ALTC in being able to present this work to you today. I want to move very quickly through my project description – which will soon be publicly available in considerable detail when the website is finished – so that I can talk more about issues and ideas. More details can be found when the project website is released publicly; you might also like to refer to the ALTC site; and can contact me directly.

The ALTC Project described

Briefly, my ALTC project is called *Learning in Networks of Knowledge*, subtitled Improving student outcomes using Web 2.0 concepts and a knowledge-networking approach. It will, I hope, assist the re-invigoration of university-level online learning by updating techniques and underlying pedagogic approaches to take account of the changing nature of the Internet in society today. In other words, the project asserts that, understanding the Internet as a social technology whose dynamics are very little to do with education, but a lot to do with knowledge, we can actually create better educational approaches than thinking of the Internet first of all as a 'learning technology'.

Though I will not detail them here, it's worth noting that there are three systemic issues informing the specific approach and goals of the project. They are as follows:

1. Learning management systems are now less relevant
2. Web 2.0 means knowledge networking
3. Online learning must be economically sustainable

I will concentrate on the second of the three issues in this paper; with some reference to the first, and leaving the last issue for another time.

As a result of the problems that I identify in the origins of the project, the areas of focus for my work will be:

1. Online knowledge work as key learning activity
2. Assessment of participation
3. Creating new forms of didactic presentation

Because of the first focus, we need to rethink participation along two different but complementary lines – participation in learning, within a community of learners; and contribution to the Internet as a whole; and the third focus becomes important because of the first two, perhaps less so in its own terms.

There are three broad outcomes which flow from these focal areas:

- effective tasks and methods for student learning within a more open curricular approach suitable to a situation of knowledge networking and real-world knowledge production
- protocols for the assessment of learning from regular online knowledge-based activities so that assessment involves guided and rigorous selection, contextualisation and reflective analysis of examples of those activities
- ways of using shorter Internet-delivered audio and audio-visual recordings that re-invent the lecture to emphasise cognitive scaffolding, motivation, and guidance rather than content transfer

None of it strikes me as particularly revolutionary and indeed the methodology of the project involves a degree of reviewing, assessing and re-using existing attempts and approaches to what I am proposing. The methods and techniques selected, and the

specific ways of making them work, will however be subject to applied research techniques, involving their trial and review in several units of study, with incremental development built in. The context for this research will be the revised program of units constituting the Internet Communications major within Curtin's new Bachelor of Arts, and involves students both here and offshore, and a large cohort of OUA students.

What is *more significant* is the attempt to develop, in the project, thorough conceptualisations of knowledge networking and web presence to understand how learning might occur through and with the Internet in ways that take account of the emergence of Web 2.0 at a more foundational level than just "where's my wiki", "begin a blog" or "total up the tags" – useful as those tools might be! In the end, while my project will have very practical and pragmatic outcomes – guidelines, exemplary materials, reports on implementation problems, recommendations for further development, it will also I hope enable me to contribute in some small way to the need to think very differently about online learning. I will now spend the rest of my time today on some of those broader, bigger issues.

What is web 2.0

To understand Web 2.0 requires us to first of all decide what we are trying to achieve by defining and delimiting that term. We might want to use the term simply, as a kind of short-hand for novelty and nascent development within the Internet and its increasingly dominant sub-section, the World Wide Web. We might, on the other hand, wish to engage closely with the challenging and yet revealing mix of indeterminacy and specificity of definitions which have been proposed over the past few years. The outcome of this latter approach is to allow us to understand the Internet more generally through the discourse of Web 2.0 rather than just labelling certain activities we might engage in or observe online with this term. I have done the latter, at least partially, in a couple of recent papers, on which I draw here (see Allen, 2007; Allen, 2008). But my main aim today is to achieve a little of both, assigning to the category of Web 2.0 certain things people do with the Internet and the technologies they use, while hinting at the arbitrariness of doing just that and searching for something more than just a list of tools and techniques. This approach permits me to highlight the concepts of *knowledge networking* and *web presence*, which I believe are the main opportunities that Web 2.0 affords us and which thus challenge us as educators to rethink the Internet and education. I hope thereby to provide a foundation for my assertion that the Internet now operates in ways which invalidate some of the premises which have, so far and perhaps not for much longer, made learning management systems sensible and relevant.

Web 2.0 can be understood to involve four broad tendencies. First, Web 2.0 involves technologies for website design and operation that create more interactive, immediate web-screen experiences and include increasingly extensive data-sharing 'behind the screen'. An example would be the air travel booking sites – think *Travelocity* or *Expedia* that, in real time, collate and present both data about travel options and prices from several different sources including airline reservation systems and involve immediate transactions with linkages to other commercial endeavours. It

is a more active, programmed (and programmable) web experience. Second, Web 2.0 is about new economic approaches to information exchange, involving a combination of two elements: the business model requires unpaid (though not unrewarded) labour from users to generate web content; it also, and more importantly, depends on the fact that the behaviour of users at sites such as *Facebook* creates data which site owners then exploit for advertising profitability. Third, Web 2.0 is about media consumers becoming producers: creating, distributing and interacting with content, without being dependent on one-way flows of media content designed for mass and perhaps passive consumption. Services such as *Blogger*, *Wikipedia*, *Flickr*, and *YouTube* demonstrate what and how Web 2.0 describes from this perspective. Fourth, Web 2.0 is a state of mind, an abstraction which, though realised within some technologies, businesses, and activities, is actually concerned with democratisation, liberty and empowerment.

Pew Internet Life researchers Madden and Fox (2006) conclude wryly that “analysts, marketers and other stakeholders in the tech field” tend to “huddle the new generation of Internet applications and businesses” under the “conceptual umbrella” of Web 2.0 for reasons that have more to do with the individual ‘stake’ which each has in successfully promoting or exploiting some form of Internet business or service. As a result Web 2.0 is both a thing in the world to be observed and understood, and also a way of thinking which changes the very world we seek to analyse and control. Thus any project – such as the one I am now engaged in – which attempts to use Web 2.0 within a specific domain, such as education, is both an application of ideas to achieve certain outcomes within that domain and also part of the writing of the broader story of what the Internet might be.

Put together, these tendencies provide the four sides of a conceptual frame “within which we can correlate and make sense of those diverse events even as we use it as a convenient short-hand” (Allen, 2007). One of the questions which we must ask within that frame is: what kinds of changes are occurring from the time *before* Web 2.0, as explicitly denoted, by the “2.0”? I now want to turn to that question by concentrating on the concepts of knowledge networking and web presence. I will avoid if possible too much reflexive engagement with the historiographical challenges which discourses of Web 2.0 involve, in their peculiar mix of continuity and change (see Allen, 2007; also Allen, forthcoming).

Knowledge networking

I believe the idea of knowledge networking is critical to our capacity to develop a clear and effective understanding of the Internet and how it might be used in concert with educational approaches suitable for universities in contemporary society. Knowledge networking makes us think about the preparation that students receive before attending university, both at school and also from lives lived within a network culture, and to the likely scenarios both personal and professional in a virtual society within which graduates will find themselves, *and* to the state of knowledge work within the professions and the academy itself. Today, I will provide a brief exposition of how I am beginning to think about knowledge networking as it relates to my ALTC Fellowship; in doing so you will see, I hope, how my interest in re-inventing online

learning is influenced by the greater visibility of and capacity for knowledge networking because of the change from 'the web' to Web 2.0.

My model of knowledge networking, under the conditions of Web 2.0, is based on the fact that Web 2.0 brings together numerous component processes of knowledge work in simple, easy-to-use and interlinking forms. As a result, activities which had previously been quite separate now occur within in a shared space-time web environment, often conducted and displayed on the same screen. These activities also become more automated, building in networking aspects to the creation and reception of knowledge.

By way of example, consider the difference between publishing an article online and then having discussions about that article, referring to related articles, and disseminating and contextualising that article before and after Web 2.0. Before Web 2.0, it is likely the article would appear on a website somewhere, probably maintained by the author. Discussions would occur perhaps on an email list, or in a Usenet newsgroup, or even just by email between author and reader. Links to and from that article would be manually made, on other websites or float ephemerally within the conversational spaces of chat and email. Contextualising data about the article – its relevance, availability, subject matter, utility and so on – would largely be tacit, or encoded within the original presence of the article on its website. Within Web 2.0, things change. Let us imagine the article is created as a blog entry. Conversations about it can occur directly within the same space as the original; RSS feeds can automate the process of distribution of the availability of the article. Within some forms of collective web publishing, ratings can be attached to those articles; tagging of the article can occur at other places which, either manually or automatically, can further create a context in which the availability and relevance of the article can be judged.

Knowledge work involves a series of component processes (research, review, origination, presentation circulation, promotion, commentary, contextualisation, summation, re-use and reference, and so on), which collectively enrich the original object, creating both additional knowledge and links between knowledge objects. Knowledge work depends on and creates a *network* between knowledge objects. The Internet dramatically improved *some* of the possibilities for knowledge networking, primarily by making available opportunities to circulate knowledge and communicate about it with less reference to the constraints of time and space, physical production and presence. The Web, in its earliest formation, further increased the potential for networking – largely because of the embedding of links within one knowledge object to another. Web 2.0, however, produces yet more quantitative and qualitative change by further expanding the array of techniques and opportunities to 'work' within knowledge in a manner which makes explicit the interactions of many people all interested in and contributing to knowledge, whether it be something as simple as reviews of consumer electronic goods, or as profound as the science of genetic engineering. Critical to this change is the collocation within a single shared environment, which persists over time, *both* the informational and communicative aspects of knowledge work. Web 2.0 makes 'conversations' about knowledge and knowledge itself come together; it also realises the interlinking of knowledge, and

knowledge about knowledge. Furthermore, it distributes this process through time and space and potentially draws into many more collaborators into the process.

Consider now a real example. *Wikipedia* predates the public hype about Web 2.0, operates without the business models associated with it and involves very simple technologies; it probably doesn't conform to the individualistic conception of user generated content either. Yet, though basically failing to 'be' Web 2.0 in most respects, nevertheless *Wikipedia* provides a very good example of knowledge networking in practice within the Web 2.0 conceptual frame. Within *Wikipedia*, a particular knowledge object becomes subject to relatively regular and immediate revision by an indeterminate number of contributors; discussions about updates – potential or actual – occur within the same, visible space; references to *Wikipedia* (and use of *Wikipedia*) is automated throughout the Internet. *Wikipedia* itself embodies the delights and frustrations of hypertext linking such that no object exists alone. Knowledge about knowledge emerges and is explicit – in, for example, the disambiguation components. Collaboration within *Wikipedia* occurs on a continuum, ranging from people who come together tacitly and accidentally, to those engaged in deep discussion and who are highly organised. The fact that *Wikipedia* does not necessarily work 'perfectly' according to its stated aims, or to the standards normatively expected of such encyclopaedic work only heightens my contention. Knowledge networking now becomes the default form of knowledge work in a connected world, for good and bad. It is not a choice as to whether we work in knowledge networks, but rather a choice as to how we do it, how well we do it, and to what ends might we now put this default state.

Web presence

One of the consequences of increasingly visible, interlinked and readily available networks of knowledge is that knowledge networkers – the people in the network – also become a key part of the overall networking process. To make sense of how knowledge and knowledgeable people all combine to form the 'network', I am developing a concept of web presence. Web presence, put simply, is the total 'presence' that an individual has across all places and processes of the World Wide Web. It is both a presence in the sense of being there, online, and also a presentation of the self in the sense of performing one's identity (or one of a person's identities) in the context of the interlinking of activities and content which are identified with that person. Web presence emerges, in one way, through knowledge networking activities (with a very broad definition of knowledge, admittedly), but also, knowledge networking depends on that presence, for presentation of who one is and does builds the capacity to become part of knowledgeable networks. I should also add that, for some people, web presence is the online component of the lives they lead - the living out of certain aspects of their everyday experiences via computer mediated environments.

At this stage, as I begin working through the implications of what I can observe online which supports my use and development of the idea of 'web presence', I will lay out a brief definition of the term. There are three main elements to a 'web presence' that someone might maintain and develop: core, extended and linked. All

three add up to a totality of web presence. Such a presence does not necessarily align completely or exactly with all aspects of a person's identity, but does represent a significant component of 'who they are' and 'what they do' online. I will describe these in personal terms, since it is essential to maintain awareness of the link between presence and identity.

Core Web Presence (CWP)

My core web presence is the single place at which I put most of the important material that forms my presence on the web. It is my site, controlled by me, and mainly authored by me, though some people's CWP will include the ability for others to comment and add. It is probably best thought of as being a new way to describe the idea of having a 'home page' - a home on the Internet - which so dominated 1990s web discourse. It is not essential that this page be hosted on my own infrastructure and, indeed, most will be hosted on others. However it will be aligned with the identity of 'me', at least so far as I establish an identity for that presence. This site is, by definition, singular. While my presence may be distributed over many sites, in many ways, to have a 'web presence' demands this keystone site. The site which serves as my core is the central reference point in the 'web' of pages, links, comments, activities etc, which forms the totality of my web presence. Whatever else the core site does, this place defines the 'self' I am presenting on and through the web.

Extended Web Presence (EWP)

My extended web presence is formed by all of the places and sites that I also have significant control over and which contain material largely generated by my own activities, or activities with which I am closely associated. For individuals, the extended web presence may be quite small; for organisational identities, it is likely the extended web presence could be much larger. Crucial to this group of sites is capacity I have to control and manage the content of them. Anything which passes from me into another's control when web published does not belong in this component of web presence (it is linked). Self-evidently, the whole purpose of thinking about 'core' and 'extended' presence is that there are significant hypertextual linkages between the two. Whether some activity or communication I make is part of the core or extended web presence generally can be determined by the degree to which 'I' would still exist in web space if it was deleted. If all of my extended presence were, for some reason, to disappear, but it was still clear who I was, what I did, and how I contributed to the Internet, then we can see a core web presence, not an extended presence. These other sites may include quite a bit of 'identifying' information but would not of themselves clearly identify and present 'me' *without* the links back to a core presence.

Linked Web Presence (LWP)

Linked web presence consists in all of my contributions and activities at all the places where, though not controlled by me, there is some element of my online presence. These are 'linked' in the conceptual sense that these sites are actually part of someone else's core or extended web presence, not mine; they are also linked in the more technical sense that a good core web presence should link outwards to most of them.

Example: an individual academic

An individual academic might build up the following web presence:

- **Core Web Presence (their own website)**
 - Academic's home site, including CV, information about their activities and institutional location;
 - small collection of key articles;
 - blog reporting on their current research projects.
- **Extended Web Presence (websites they have significant control over)**
 - Collaborative site supporting their research where they are identified as one of the key authors and to which they can write directly;
 - E-space repository on their university's library server of all their publications;
 - information, activities publicised via their professional association's website, of which they are president.
- **Linked Web Presence (all other websites)**
 - Article they wrote for an online journal
 - comments they make on a colleague's research blog
 - listing of their membership of editorial board on a journal website
 - Amazon.com entry of their latest book

Ultimately, the purpose of thinking about what we do online as a 'web presence' is to distinguish all of what I do, across several – perhaps many – knowledge networks such that it is all about me, as a knowledge networker. A web presence links – through its owner – all of those knowledge networks. A single knowledge network will contain links to many different web presences, large or small, of all those loosely or closely connected to that network.

The problem of the LMS

The problem of the learning management system in contemporary innovation in using the Internet for education is best understood by considering the circumstances of its origin, and then systematisation. These two circumstances no longer reflect the diversity, capacity and capability of the Internet and thus place in question whether using an LMS is, in fact, Internet-based learning. I apologise that, because of time constraints, I can do little more than sketch out a history of the LMS that hopefully I will have time to develop during this year into a full and considered argument.

Simply put, the LMS – even before that term became popular – emerged in the 1980s in the creation of relatively easy-to-use interfaces for communications and information exchange by which to conduct computer-mediated learning. One early and influential example was the Virtual Classroom, pioneered by Hiltz at New Jersey Institute of Technology (see for example Hiltz, 1998; and 2004). The fact that students in NJIT courses were mostly majoring in computer science probably indicates the extent to which, to achieve good learning, something else was needed besides just the network communications functions. The 'virtual classroom' came

from the combination into a usable package of numerous functions and features of Internet-enabled communication and an interface to provide a learning context. Various packages and interfaces were developed, though we now know that WebCT and Blackboard emerged as the most common through the late 1990s and into this century. As the LMS matured, it began to include specific learning applications of Internet communications, such as assignment delivery and return, grading and results functions and so on, though these are not unique to the learning environment in their underlying functionality.

Very rapidly, LMS development also included attention to identity management – always a key component in successful systems development and utilisation, especially when involving the creation of specific, bounded communities such as occurred with virtual learning communities. At the same time as approaches to LMS development began to mature, this concentration on the management of students also came to be a selling point for advanced versions of software like WebCT Vista. In particular, one possible development path for WebCT was to serve as a student management system in small institutions, as are commonly found in the USA – a kind of Student One / Callista ‘light’. While WebCt and Blackboard came to dominate, with Moodle functioning as a largely similar – but open-source – equivalent, other systems began to develop that concentrated more on the creativity with which academics and educators could author material for online learning (LAMS for example, from Macquarie University), or Sakai which attempted to emphasise communications and collaboration over content.

Ultimately, what made learning management systems successful at a particular point in time was their capacity to offer uniform, scalable, reliable, secure and largely simplified forms of internet communication and information exchange, extracted from the unruliness of the public Internet. This was very appealing for academics and learners who needed simplicity and security, within institutions that became increasingly dominated by the pursuit of ‘widespread’ adoption of existing approaches rather than ongoing innovation which, ironically, had been the root of WebCT and so on in the first place. But, whatever the strengths of the ‘learning management system’ it is questionable whether the LMS offers much for innovative education using the Internet. While existing LMS approaches scramble to adapt to and include Web 2.0 elements within their products (Sakai, 2008), they do so either very slowly, or by hastily bolting on tools like wikis and blogs without thinking how the underpinning logic of Web 2.0 changes the very nature of the online learning enterprise.

Conclusion

To the extent that Web 2.0 involves processes of knowledge networking, supported by and visible through people’s web presences, then Web 2.0 approaches to learning are not about the tools we might use, but the engagement of learners with real networks of knowledge and developing their own web presences. Because LMS approaches largely involve students engaging with their peers only, within a confined, private environment, they singularly fail to meet the challenge of Web 2.0. Moreover, the LMS being a largely enclosed system which ‘does it all’ will struggle to adapt to a web environment in which the automated interaction of sites and services will sustain

knowledge work of a different kind to individual reading and writing of webpages. The challenge is not just how we manage this re-invention of the spaces for innovation which existed in the 1990s, but how we do so efficiently and effectively: but the answer to that challenge lies not in bringing 'into' the classroom all of the features of the net, but instead to move students more thoroughly *into* the net and then support them in what they do and assess its quality.

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