

Higher Education 2.0

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Abstract

Web 2.0 refers to the emergence of the Internet as an interpersonal resource and a service delivery platform. As defined herein, Higher Education 2.0 (HE 2.0) subsequently concerns the impact of Web 2.0 on how higher education is delivered and managed, as well as on student expectations of their higher education experience.

This article explores the operational and strategic implications of the new tools, stakeholder expectations, development concepts and philosophy of HE 2.0. Within this context, it then discusses the use of Web 2.0 in the teaching of two large undergraduate modules. It also reports on the ongoing development of an online learning environment called "Nexus" used to support teaching in a large UK business school.

At the extreme, HE 2.0 involves a transition from academic broadcasting to collaborative facilitation, from linear to student-directed teaching delivery, and from a tight to a loose coupling of educational resources. Core competencies of successful HE 2.0 institutions are therefore likely to include the effective piggybacking of teaching content on the sites of external Web 2.0 providers in order to most widely facilitate multimodal student experiences.

Keywords: Web 2.0; HE 2.0; e-learning; higher education strategy

Introduction

Web 2.0 refers to a second age of the Internet in which the worldwide web is becoming a platform for interpersonal content sharing and service delivery. This article looks at how the new tools, development concepts, philosophies, and stakeholder expectations of Web 2.0 may impact on higher education (HE). It subsequently develops a representation of the "Higher Education 2.0" (HE 2.0) environment and discusses resultant strategy implications. These are then explored via practical reference to the use of Web 2.0 in the teaching of two undergraduate business modules, as well as in the development of an online learning environment in a large UK business school.

Across a wide range of industries and organisations, Web 2.0 is increasingly being identified as a significant and growing phenomenon. For example, McKinsey recently reported three quarters of 2,847 executives surveyed to be planning to maintain or increase their investment in Web 2.0 (McKinsey, 2007). A special MIT Sloan Management Review Report also recently highlighted a trend to implement Web 2.0 "to support innovation, creativity, collaboration and information sharing" (Mangelsdorf, 2007, p. 51). Within UK HE, there is also a growing interest in using blogs, wikis and other Web 2.0 tools to facilitate online personal learning environments (Hiebert, 2006; Wilson, 2007). Some UK universities are now also routinely making available free lecture materials on websites including iTunes (BBC, 2008).

As noted above, Web 2.0 broadly encompasses interpersonal content sharing and online service delivery. The first of these is associated with wikis (collaborative document authorship websites, such as Wikipedia), blogs (online journals, as facilitated by websites like Blogger), viral video hosts (such as YouTube), and social networking sites (including MySpace and Facebook, and which allow users to communicate in forums and share rich media both publicly and privately). Social networking is now also taking place in 3D virtual worlds, such as Second Life.

Whilst interpersonal content sharing is gaining the most popular attention, the service delivery aspect of Web 2.0 is at least as significant, as well as gaining the most business attention (McKinsey, 2007). Developments here include the rise of SaaS (software as a service), which involves the delivery of software application functionality directly via the web. For example, the SaaS offering Google Docs (<http://docs.google.com>) is a Microsoft Office compatible word processor, spreadsheet and presentation package, which allows online individual and collaborative document authorship for free from any device with web access. Other SaaS offerings include online desktops, project management, CRM and HR applications, and are available from companies including Jooce.com, Clarizen.com, Salesforce.com and Employease.com.

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The service delivery aspect of Web 2.0 additionally includes the development of web services. These are building blocks of online functionality that can be seamlessly assembled into loosely-coupled business applications and wider service offerings. For example, Worldpay, Netbanx and Paypal offer payment service provider (PSP) functionality by providing a web service for taking credit card payments online. Other common web services enable the integration of maps (for example from Microsoft Virtual Earth) and local information into property websites including RightMove.co.uk.

As Business Week has commented, “Web 2.0 sites are not online places to visit as much as services to get something done” (Hof, 2006). Such services may involve interpersonal exchanges, software application access, or an integrated customer/user experience delivered via the transparent integration of web services from many different online providers. As Brynjolfsson and McAfee contended, the business focus is now on “using the Web to grow revenues and foster innovation - as opposed to a focus on cost cutting” (Mangelsdorf, 2007, p. 51). Web 2.0 is very much where the unnamed “Web 1.0” was ten years ago – a virgin territory in which possibilities exist for a conceptual and branding land grab for those with the insight to move quickly. Indeed, as Brynjolfsson and McAfee also note, “expertise barriers” (at least in terms of technology) have “basically vanished” (Mangelsdorf, 2007, p. 51). Live Web 2.0 experiments can be set up in weeks, days or even hours, and at low or almost no cost. What’s more, as Intel once pointed out in its advertising, “the kids already get it”. HE in particular is hence playing catch-up, as those it seeks to educate increasingly arrive with content sharing and service skills that those teaching them and managing that teaching have often not yet fully understood.

The impact of technology?

Before looking in more depth at the key concepts of Web 2.0 and their implications for HE, it is important to highlight the potential danger inherent in proclaiming any new technological development as a driver of change. Technological innovations – such as those of the industrial revolution – have frequently been linked to changes in human activity and wider society. However, such a technologically determinist hypothesis runs the risk of too strongly implying that technology development alone can create and drive change. Not least because technology cannot yet be considered a social actor, it is therefore worth stressing that Web 2.0, if defined as an umbrella term for a related set of technological developments, cannot reasonably be considered to be solely responsible for the emergence of HE 2.0 as discussed herein. Or, as Mitcham contends, whilst the need for us to think about technology is increasingly manifest, we also need to keep in mind that “technology, or the making and using of artefacts [can be] a largely unthinking activity” (Mitcham, 1994, p. 1).

Clearly the impact of the internet on an industrial and cultural sector such as HE cannot be ignored. Indeed, as Poster argued “the conquest of space and time by electronic media augurs more for institutions and for theory than a mere retuning of [existing] practices and ideas” (1992, p. 3). Heim goes even further to suggest that some years ago interfacing with computers became “an ingredient in human knowing” and a “thread in the texture [of our] civilization” (1994, p. 60). More recently, Turkle suggested that whilst “for most of the last 50 years technology knew its place” and “seemed external”, very recently computing and online technologies have become not just ubiquitous but also “highly intimate” in their facilitation of human relationships (2003, p. 42).

Interfacing with information technology – and in particular engaging in interpersonal communications using Web 2.0 tools such as social networking sites – is now undeniably a mainstream human activity. It is also one which has very rapidly become highly socially and culturally embedded. As Turkle (2003) hinted, whilst there may be a danger in suggesting technology to be an unthinking driver of change, it would be equally naïve to ignore the emergence of new everyday social practices and skillsets as cultural (rather than technological) change drivers. Indeed, perhaps the greatest error being made by many in their analysis of Web 2.0 has been in labelling the phenomenon as a technological development. It is, for example, surely reasonable to suggest that teenagers who spend hours every day on Facebook or MySpace have not become addicted to computers, but have instead embraced new and now dominant social norms, cultural expectations, and social skills, and that further it is these norms, expectations and skills that are the most significant part of Web 2.0’s development. Web 2.0 involves technology. However, the changes with which it is associated are not about technology alone. As we consider the phenomenon’s roots and its impact on HE, it is therefore important to keep this in mind.

Web 2.0 characteristics

The term Web 2.0 comes from O’Reilly, who provides a detailed overview of its conceptual underpinnings in his seminal paper, “What is Web 2.0” (2005). This work highlights several key Web 2.0 characteristics, of which the first two are now widely accepted (not least by O’Reilly himself) as by far the most significant. The first of these key Web 2.0 characteristics is recognising the web as a service delivery platform. This signals a shift away from a Microsoft-dominated age of desktop-installed applications, and towards an emerging era in which interpersonal tools and web services will be accessed from a conceptual online “cloud” of computing

resources (Carr, 2008).

O'Reilly's second Web 2.0 key characteristic is the "harnessing of collective intelligence" wherein collaborative tools such as blogs, wikis and social networking sites lead to an emergent "wisdom of crowds". This again signals how Web 2.0 is a phenomenon involving new social practices and cultural norms, in addition to being a label for certain technology developments. Indeed, it is worth remembering that the idea of harnessing collective intelligence in online forums was both technologically possible and highly popularised over a decade ago by Rheingold (1994) in "The Virtual Community", and Hagel and Armstrong (1997) in "Net Gain". We must therefore not forget that all that is really new today about the harnessing of collective intelligence online is that a very large number of people are now actually doing it.

In an attempt to map the impact of Web 2.0 on HE, Figure 1 illustrates the key characteristics of the new environment within which all HE 2.0 institutions now find themselves. The next section subsequently explores in more depth the new online tools, development concepts, philosophies, and stakeholder expectations with which HE institutions will increasingly have to contend.

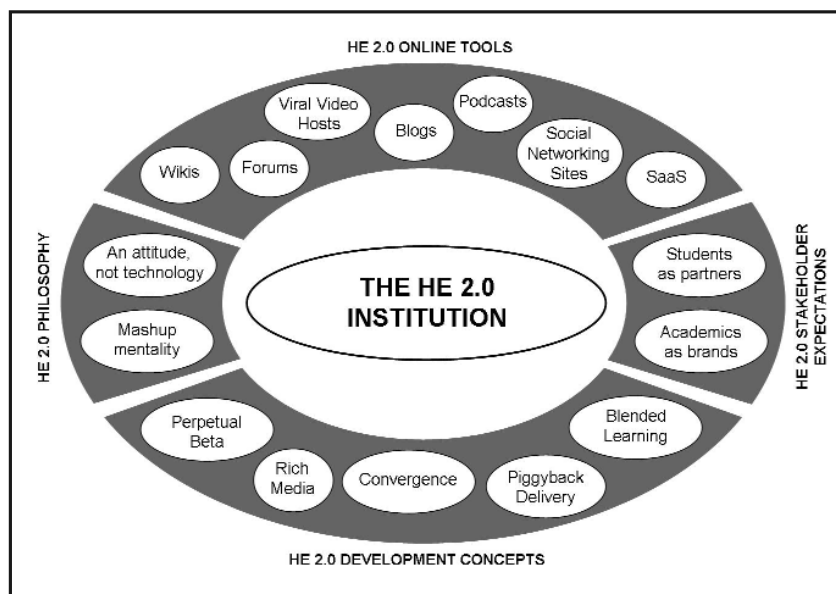


Figure 1: The HE 2.0 environment

The HE 2.0 environment

The online tools, and new social and cultural practices now available to and impacting upon HE are, in essence, no different to those available to and impacting upon any other sector. Technologies, workspaces, workplaces, skill sets and online behavioural norms are simply no longer industrially or organisationally bounded. The challenge faced in HE, as in any industry today, is hence to leverage the most value from the generic tools and new practices and expectations of the Web 2.0 Age.

HE 2.0 online tools

Whilst both Web 2.0 and HE 2.0 are about more than technology, it is nevertheless Internet developments that provide the online toolset that facilitate their development. The use of websites to enable the electronic delivery of HE materials is of course very well established. However, such websites are often based around a Web 1.0 broadcaster model offering little student interactivity. This said, forums and podcasts are starting to be used by more and more academics, with the former providing a time-effective means of interacting with a large class (at least in comparison to answering individual e-mails), and the latter permitting additional content delivery in a manner where it can be accessed where and when a student chooses. Social networking sites are also being experimented with as teaching venues. Lecturers at Harvard, for example, are now holding classes in the Second Life (Duranske, 2007), whilst the Second Environment Advanced Learning (SEAL) project at the University of Leicester is also exploring the possibilities of creating communities of learners and teachers within this highly popular 3D virtual world (SEAL Project, 2008).

Blogs, wikis and SaaS also offer great potential. Blogs allow academics yet another mode of additional student engagement and content delivery to compliment traditional lectures or tutorials. At an administrative level, wikis are also starting to be experimented with as vehicles to support or replace traditional meetings or committees. In terms of teaching delivery and assessment, wikis can also be used as a vehicle for running and submitting student group projects (Mader, 2006).

Student groupwork can also be facilitated using SaaS tools like Google Docs. This provides a far more

effective means of managing a group activity than e-mailing back-and-forth individual files and trying to track which is most up-to-date. The fact that Google Docs tracks every revision also aids the resolution of disputes concerning individual student contributions.

YouTube and other viral video hosts also offer significant possibilities for improving the scope of HE teaching delivery, interactivity, and indeed marketing. It is, and will probably remain, easier for most academics to make and post a video on YouTube than to host the file on a university server. Placing videos on YouTube also frees university infrastructure from the not inconsiderable file storage and network bandwidth requirements of video hosting. YouTube videos and playlists can also be very easily embedded (effectively as a web service) into any other web page by cutting-and-pasting embed links.

HE 2.0 philosophies

Beyond the use of new online tools by individual academics, an adoption of the philosophies, stakeholder expectations and developments concepts of Web/HE 2.0 is likely to prove far more difficult for HE institutions at a strategic level. Embracing Web 2.0 has to involve taking on board a “mashup mentality”, in other words learning to piece together resources and parts of resources from a range of electronic sources in order to communicate, and hence to teach, most effectively. Building with what happens to be electronically at hand is not something with which many academics still wedded to the lecture theatre as the primary means of student engagement are yet comfortable. This is a pity, not least because it is a mentality with which many of their students are already very happy. Accepting a mashup mentality also closely relates to the acceptance of Web/HE 2.0 as an attitude and not a technology. Indeed, one of the reasons for starting to talk about HE 2.0 herein (in the same way that business organisations are adopting the term “Enterprise 2.0”) is to try and highlight how the key issue is really about a new mentality for resource coupling and resource sharing, and not any particular technology application.

HE 2.0 development concepts

Again at a level beyond technology, there is a need for HE institutions to more broadly accept a convergence of the *places* (geographies), *spaces* (configured locations) and task-delineated *times* (of the day or week) that for so many years could be used to segment human activities. The lecture theatre has been the dominant mode of HE delivery only because alternatives have not been available. However, opportunities now clearly exist for multimodal forms of educational engagement that allow students to individually and continuously select from a variety of interlinked off-line and online delivery formats, many of which are at least partially under their control. Academics therefore now need to rethink, and fast, what mass lecture gatherings are actually for now that students can access podcasts, forums, videos, wikis, blogs, social networking spaces and SaaS applications increasingly when, where and how they want.

The Internet Generation have grown up knowing that they do not need to tightly conform to the requirements of those organisations from whom they make purchases. Blaming students for not turning up to tutorials which they are paying for therefore simply will not suffice. With the continuous development of better interfaces and mobile devices, computer science has for a decade or more been focused on delivering systems to more readily conform to user/customer requirement. What is required is for HE establishments to follow this trend, rather than sticking with the old mentality of requiring their customer to conform to them.

The above implies that academics need to learn to both create and “mash” a wide variety of rich media as a core part of their job. They will also need to start thinking multimodally in terms of their own teaching delivery. This in turn will have to involve an acceptance of presenting a rich tapestry of resources from which individual students will select in building their own educational experience. In order to do this it is almost inevitable that academics and their employers will also have to accept their modes of delivery to be in “perpetual beta” (in the same way that SaaS offerings like Google Docs continually update and will never be finished). Indeed, the idea of completely finishing optimal packages of teaching resources (such as textbooks or lecture packs) will no longer pervade. Gone are the days of annual repetition, even for the lecturer cursed with first year statistics, and gone too is the concept of a closed HE infrastructure at either the organisational or sector level.

“Piggyback delivery” is likely to become a key HE 2.0 mantra. This means that, in constructing their continually evolving mashups of multimodal rich media teaching materials, academics and indeed entire institutions will have to rely on an increasingly wide net of external resources and hosting infrastructure. Of course, drawing material from multiple sources has always been good academic practice but, for example, incorporating online video, podcast and SaaS resources into an overall teaching mashup when some or all of these resources are hosted externally is not the current strategy of many universities and their IT departments. However, with organisations from the BBC downwards describing YouTube as the world’s premiere video hosting service, the idea that individual HE establishments should not use the free web service provision of such players to increase the scope and reach of their activity seems ludicrous. In the United States there are also signs that a shift towards the use of free external infrastructure providers is starting to occur. Many US universities are now, for example, rolling out Google Apps Education Edition (a

tailored SaaS e-mail, office, calendar and messaging suite) across their campuses (Google, 2007). This also tends to immediately improve the IT service that students receive, not least in terms of the storage space they have available.

HE 2.0 stakeholder expectations

What the use of the technological tools and an adoption of the philosophies and development concepts of Web/HE 2.0 implies, is that content creation, integration and verification will become key activities of successful HE 2.0 institutions. This may be both obvious and yet highly worrying at the organisational level. Probably the two most significant stakeholders that any HE establishment needs to worry about are its students and its academics. In terms of the former, what Web/HE 2.0 developments imply is that students will need to be accepted far more as content creation partners. Content and modes of content delivery which students are unhappy with will simply not continue to be deliverable in a world in which they will be able to vote with their mouse click.

Web/HE 2.0 developments will also allow individual academics to develop themselves into online brands. Today, academics have to publish best-selling textbooks or seminal papers in order to become well known teaching commodities in their own right. However, this is starting to change. Individuals can now publish textbooks and indeed all manner of teaching materials both on their own sites, and more importantly on key Web 2.0 hosts, as, when and how they wish. Even those not skilled in raw content creation have the opportunity to powerfully mash content authored and shared by others. In turn this allows them to channel knowledge of their student's needs gained from interaction in the classroom into the building of content highly tailored to meet those needs. This all means that those academics who add the most value to students will increasingly not always be those who are employed by the HE establishments at which students are enrolled. There are already a great many valuable HE resources on YouTube and a whole host of other public websites.

The rise of academics as online brands may be seen as a threat by some institutions. However, it also presents a great opportunity for HE 2.0 organisations to both develop such individuals and to associate their brands with them. In the future, many students may arrive at university not just having viewed marketing materials online, but having also been taught something by one or more faculty members.

HE 2.0 developments in teaching delivery

Over the past few years the author has put some of the above theory into practice in the delivery of two particular modules, and in the management of an online learning environment called "Nexus" across a large UK business school. Innovations at the module level have involved two courses called "Technology and Organization" (TAO) and "Computers in Business" (CIB), which are taught to groups of around 300 and 600 second and first year business undergraduates respectively.

On the TAO module, the online tools initially adopted in addition to traditional web pages were discussion forums and podcasting. In the 2006-2007 academic session, on the first day of teaching, students were provided not just with a pack of hardcopy materials, but also with access to a complete series of podcast audio programmes. These provided a shorter and, more importantly, alternative coverage of every module topic. The intention was to try and move students away from a rote-learning mentality by letting them access an alternative yet equally valid delivery of the same set of concepts covered in the lectures, but with different cases and examples. All academics in the social sciences aim to communicate to students the lack of a single, definitive right answer. However, it was only by delivering lectures and podcasts that were the same but different that significant progress started to be made in demonstrating to students how no lecture should ever be taken as the definitive guide to how material *ought* to be structured and presented. This led to some excellent tutorial debate, a very active online forum, and to an improved overall student performance in the final examination.

The podcasts were also extremely popular, beyond expectation. What was most interesting was that whilst most students are reluctant to read ahead, most will both listen ahead and also remember what they have heard. This may be because listening is a slightly more passive activity to which students do not have to devote their full attention, and which can hence be integrated with their other daily activities and routines.

When they heard about the TAO podcasts, some colleagues expressed a concern that making an audio version of the whole module available would lead to a fall in lecture attendances. However, this did not happen, with attendances if anything going up. Some students even produced YouTube videos that featured the module podcasts as a demonstration of how Web 2.0 technology can drive a convergence of space, place and time on a range of levels. In turn, these videos and the nature of the podcasts became the subject of much discussion in the online module forum. The content and form of the TAO module hence started to become one.

Students appear to like podcasts because they give them control of teaching delivery. Podcasts also provide a

platform for multimodal engagement, with several students on TAO commenting how effective it was to be able to listen to part of a podcast, consult an article when they felt most appropriate, listen to some more, and so on. Students also commented on the benefits of being able to listen to podcasts on a variety of devices where and when they wanted, including when they were on the bus, walking around campus and apparently in bed or even taking a bath. A flexible convergence of their work/study and home lives and locations was hence permitted.

Following the publication of videos about the module on YouTube by students in 2006-2007, a YouTube channel was specifically created for the module in 2007-2008 (www.YouTube.com/TechAndOrg). This features a video introduction to the module (which many students appeared to have watched before teaching even began), as well as playlists of relevant material produced by other academics, authors and organisations. One of these playlists was used as the basis for a series of tutorials and proved a significant success. In particular, it was noted how no student arrived at a tutorial having not watched the videos, with recall of content being very high. This was in stark contrast to previous teaching experience of tutorials based on the pre-reading of cases or other materials, which many attendees had usually not read. When it came to engaging students, the use of video and audio materials, both prepared by the lecturer or presented as a mashup from other sources, was clearly highly successful in comparison to the sole use of traditional methods.

In parallel with the above, the author also launched a free online textbook (ExplainingComputers.com) to support both the TAO and CIB modules. This not only proved popular, but also allowed further possibilities (such as the embedding of YouTube videos into a “textbook”). Opportunities were also regularly taken to update the book following online and off-line student discussions. This permitted improved engagement with students as partners in material development, as opposed to students remaining traditional (and less engaged) passive recipients. Growing use of both ExplainingComputers.com and the TAO module YouTube channel outside of the author’s own institution is also proving beneficial to the author’s reputation, that of his institution, and students and academics more generally. As should be the case in any Web 2.0 context, the result is very much win-win-win.

Students on the CIB module were also encouraged to make use of the Google Docs SaaS application in completing groupwork. Those who did this reported it to be very rewarding not just in terms of getting work done more effectively (one commented that he would never carry around a USB key again), but also as an educational experience in its own right. Today, students still list on their CVs things like a competence in Microsoft Office. However, increasingly smart employers will be looking for graduates with Web 2.0 collaborative competencies. HE therefore surely has a responsibility to encourage and support students in the use of Web 2.0 when designing teaching activities and methods of student engagement.

An educational nexus

Individual experiments in Web/HE 2.0 do not have to exist in an institutional vacuum, although it should be noted that via the use of free Web 2.0 resources they can. In the author’s case, module forums, podcasts and links to YouTube and other online resources were all facilitated via an online learning environment called Nexus. Nexus supports the teaching of over 230 modules in the UK business school in which the author works, and has been developed in-house over the past five years. Access is restricted to students taking the business school’s modules, with the system based on a MySQL database that provides a personalised interface to each user via PHP web technology.

In contrast to many e-learning portal initiatives, the development of Nexus has been stakeholder driven. The initial key applications were online tutorial booking and module forums. Online tutorial booking was initially a student request, whilst forums were in high demand from some academics tired of answering the same query repeatedly via e-mail. When students post a query, the relevant academic is sent an e-mail with a hyperlink to post a reply. Posts to which the academics have replied are then highlighted in red for students.

Nexus has been integrated with other in-house systems to provide online assessment feedback and module performance summaries, access to past examination papers and module specifications (including coursework deadlines), and the online evaluation of modules and lecturers by students. Lecturers can also add their own pages to host electronic module materials, module messages (seen when a module is first accessed), and most recently podcasts. For management purposes, an external contacts tool and an online workflow process for buying-in external teaching staff have also been integrated, as have management reports on teaching performance.

The intention with Nexus was to provide a consistent level of online service delivery for every module offered by the business school with a minimal level of individual academic effort and this has been achieved. Some academics rarely if ever log on to Nexus themselves, having turned off options such as forums, and indeed there is no policy requirement for them to do so. Nevertheless, due to the integration of Nexus with other core teaching databases, students on their modules are using Nexus to find module information and

materials, sign-up for teaching sessions, access assessment and broader module feedback, and provide their evaluation of teaching staff. At the other end of the scale, other academics have embraced the possibilities of Nexus completely and are always pushing the boundaries of what the system can allow them to do, increasingly in conjunction with the delivery of materials from their own individual websites and public Web 2.0 websites on which they host video content, blogs and wikis. Most academics are naturally somewhere between these two extremes.

What has been achieved with Nexus is the avoidance of a situation in which some of the business school's modules have strong e-learning support and others do not. The existence of Nexus as an integrated platform has ensured that just as business and e-business are actually the same, so are learning and e-learning in the business school. Opportunities for staff to engage multi-modally with students exist, but the use of any particular tool is not imposed. Communication and staff development have subsequently been vital to broaden the scale and scope of online resources available to students. For example, when podcasting was enabled on Nexus, staff development events explaining the practicalities and academic value of creating podcasts were key to ensuring its uptake.

From HE 1.0 to HE 2.0

The transition from Web 1.0 to Web 2.0 is about a progression from static information broadcast to collaborative content creation, from local software installation to online service delivery, and from tightly coupled-systems using dedicated resources to loosely-coupled systems using generic web services. In a similar manner, certain key progressions can be used to separate HE 2.0 from an unnamed HE 1.0 before it.

Table 1.0 highlights three key distinctions between HE 1.0 and HE 2.0. As the previous sections have discussed, these may firstly involve the primary role of a lecturer changing from broadcasting to a lecture theatre full of students to facilitating an integrated online and off-line learning environment. Secondly, there may be a move away from a reliance on linear teaching delivery, via traditional lectures, and towards the use of media such as podcasts and videos which students can control as they please. Thirdly and perhaps most significantly, as mashups and resource piggybacking become the norm there is likely to be a far looser coupling of teaching content to an academic's parent institution.

	HE 1.0	HE 2.0
Primary lecturer role	Broadcaster	Collaborative facilitator
Learning delivery	Linear	Student directed
Resource coupling	Tight coupling of content and delivery infrastructure to institution	Loose coupling of content and delivery infrastructure to institution

Table 1: HE 1.0 and HE 2.0

The above suggests that a new set of core competencies for HE institutions may emerge. With reference to the HE 2.0 environment identified in Figure 1, and as detailed in the previous sections, it is contended that such competencies will comprise:

- leveraging piggyback hosting
- content integrity and content integration
- the free academic facilitation of multimodal student experiences
- infrastructure independence
- a student centric mentality

Leveraging piggyback hosting, in other words hosting some teaching resources on external Web 2.0 provision, is perhaps the most significant of the above as to a large extent it drives the competencies that follow. Indeed, in the age of Google, YouTube, MySpace and other Web 2.0 giants, it is pointless for HE institutions to invest too heavily in their own online infrastructure. Rather, the adoption of an "institutional mashup mentality" is required. Excellent campus networks are necessary and so too are a reasonable provision of computer suites and wireless hotspots. However, any HE establishment hoping to take on the giants of the Web 2.0 age when it comes to infrastructure investment is deluding itself.

HE needs to ensure the delivery (via authorship or mashup) of content integrity and content integration, not infrastructure. All major and indeed minor Web 2.0 players are also crying out for quality content to populate the infrastructure in which they have so heavily invested. Videos of dogs falling over and teenagers being drunk will only keep users going back to their websites for so long. Just as the new-age social anarchy of the early world-wide web rapidly culturally transformed to embrace commercial activity, so today's Web 2.0 online spaces are already showing signs of embracing serious educational and commercial content, which will happily coexist alongside the latest camera-phone spam. As UK business schools have largely not even

noticed, there is already a lot of MBA content on YouTube.

The big issues here are also cultural. Indeed, the free academic facilitation of multimodal student experiences via authorship and mashup, in part across external resources, is still viewed as risky by many academics and their management for two reasons that are both fundamentally flawed. Firstly, concerns are raised over the reliability of the hosting. This is bizarre given that most educational establishments, at least in the UK, boast such poor levels of service continuity that they dare not even compare themselves to commercial providers. An uptime for their web provision of 99% plus is considered acceptable by most UK universities. Sticking to such a figure for any commercial provider (who is likely to boast uptime of between 99.9% and 99.999% plus) would rapidly put them out of business. The bottom line is that hosting content on major Web 2.0 sites is at least as reliable as hosting content on most HE web servers.

A second concern often expressed is that putting educational content such as videos or audio podcasts of “lecture” content on sites such as YouTube or iTunes raises the problem of “everybody seeing it”. This concern is unfounded and anybody claiming this has clearly never attempted to generate web traffic. As the Web 1.0 Age so aptly demonstrated, whilst being an online publisher is now quite literally child’s play, the simple act of putting anything online in no way guarantees that anybody will ever see it. In a world with 112.8 million blogs and growing (Technorati, 2008), the idea that when Professor Jones posts a video online it will be seen by the whole world is not true. Indeed, there are likely to be more people wandering into university buildings for a visit than will ever randomly come across the average academic’s posting of content in public webspaces.

The reasons for posting academic materials publicly on major Web 2.0 sites are also powerful. Not least, it will almost certainly prove less time consuming, less technically demanding, and more likely to be successfully achieved, than trying to host the content on an internal site. This is simply because providing tools for doing just this is the core business of public Web 2.0 players and is not the core business of HE establishments.

Secondly, posting content on a major Web 2.0 site will maximise the chances of student access. However good a proprietary system is made, it will never be as good as a public one. Proprietary delivery platforms require people to conform to boundaries that are increasingly artificial. Students spend hours on MySpace, Facebook and YouTube. They find and subscribe to content there far more readily and regularly than logging in to institution and activity-specific e-learning portals. Such portals will continue to be needed for some purposes, not least administrative. However, any organisation that does not place content on those major Web 2.0 sites which their customers actually inhabit (as opposed to expecting people to just as regularly pay them a visit) has missed the whole concept of Web 2.0. To put this another way, web strategies for HE 2.0 should focus at least as strongly on the hosting of content on magnet Web 2.0 locations as on the design of an institution’s homepage.

Thirdly, when it comes to arguments in favour of posting content on public Web 2.0 sites it is worth reminding those who complain that “everybody will be able to see it!” that the whole business of HE is supposed to be knowledge creation and transfer. It is indeed quite bewildering how academics will happily work hard to publish a journal paper that on average will be read by just a handful of people, whilst at the same time wishing to protect from public view the materials and ideas that they are using to enlighten the students who they teach. Finally, and linked to this, by posting quality teaching content on public Web 2.0 sites, both academics and their institutions have the potential to promote their brand to a wider audience.

Many business authors in the US now put a video on YouTube when they publish a new book, with these in turn becoming very useful educational resources. This is a practice that both UK educational publishers and HE institutions need to encompass quickly. HE institutions also need to devise and implement new policies. For example, is the institution aware of how much teaching content their academics have or intend to post online? And have steps been taken to ensure or request that an institutional association and web link are included with each video or audio work?

The piggyback hosting of some academic materials on a range of websites external to the parent institution also links to the proposed HE 2.0 competence of infrastructure independence. In computing, the related Web 2.0 mantra is the development of software “above the level of a single device”, in other words the move towards online SaaS applications (such as Google Docs) that can be accessed from any internet-enabled computer regardless of whether it is a desktop PC, PDA, or mobile phone, and regardless of its operating system. In HE, the development of a competence in infrastructure independence similarly refers to the ability to provide educational experiences that are independent of any particular mode of delivery, whether physical, virtual or some combination thereof.

Infrastructure independence enables globalisation, and should increase and enable more flexible access to educational resources. It is also an almost inevitable consequence of the adoption of the aforementioned

competencies of leveraging piggyback hosting, focusing on content integrity and content integration, and permitting the free academic facilitation of multimodal student experiences. However, once again, culturally the concept may be difficult to accept.

In a conversation following one of the YouTube-based tutorials previously discussed, a student with a good knowledge of the material being taught stated how much he was enjoying the module, before adding that he had “not attended any lectures”. The initial reaction of most academics to such a statement is one of shock. However, whether such a reaction is justified when the student in question was clearly engaging with the module (via online handouts, journal papers, podcasts and videos) is something we all perhaps need to question. In terms of HE, infrastructure independence is not just about a truly open acceptance and use of online technology, but also acknowledging traditional physical methods of educational delivery as something that students may legitimately abandon as their requirements dictate.

The above links to the final proposed HE 2.0 core competence of developing a student centric mentality. This may appear so obvious that is it not worth listing. However, a great many HE institutions are clearly not student centric at present. Indeed, the legacy model of delivering lectures at a certain time in a certain place is almost the reverse. As the non-lecture-attending student mentioned above explained, online resources enabled him to learn where, when and how he choose, and at a pace he discovered to be the most effective for his individual requirements. This is not to suggest that lectures as key set-piece educational events will not continue to be important HE resources. However, it does suggest that academics and institutions will have to start signalling far more clearly why lectures are the most appropriate mode of educational delivery where they believe this to be the case.

Conclusions: Giving the books away for free

Many a Dot Com start-up was financed based on a proposition that it would leverage value from a new business model. Indeed, the identification of wacky new online business models became a mainstream consultancy activity in the late 1990s and early 21st century. The problem was that “e-business” and “business” not only quickly proved to be the same, but also almost entirely dependent on a similar set of business models. These business models on the whole all demanded customers or their intermediaries to pay for products and services of supposed post-purchase value. The online ventures that successfully emerged from the Dot Com Bust were therefore those that charged people up front for things they hoped they wanted: books and DVDs that people hoped would entertain them; groceries that people hoped would enjoyably fuel their day; insurance policies people hoped would pay out in emergencies; and so on.

Perhaps the most interesting thing about the most successful Web 2.0 pioneers, at least in the computing industry, is that they have emerged from nothing on the back of what arguably really is a new business model. Indeed, the business model adopted by many successful Web 2.0 players basically involves providing online content and service access to the entire world for free, but on the assumption that after an initial consumption of the free service certain minorities of users will be prepared to pay for product support, mass use, customisation, or the integration of their own service into an offering. Hence for example, Google does not charge to use Gmail, Google Docs, Google Earth, Google Maps, or even Google Analytics below 5 million hits a month. However, it does charge for pro/enterprise usage of Google Earth and Google Maps, for its Google Checkout online retailing application, and for its Google Apps Premiere Edition suite of online collaboration tools. Google also charges companies to be included in Google Maps, or for Google Maps to be used as part of other web services, as well as charging advertisers for listing positions on its search pages. The latter is more like a traditional business model. However even so, the principle on which Google and other Web 2.0 pioneers operate involves giving the basic offering away for free, and then charging a minority for extra value added, or charging other companies to be part of or associate with the free service.

The above description of the Web 2.0 business model is far from the public presentation of Web 2.0 as being all about collaborative content creation in blogs, wikis, social networking sites and their ilk. However, in business terms both of these elements of Web 2.0 really matter, and when it comes to HE 2.0, both also clearly matter too.

More than organisations in most sectors, HE institutions know a great deal about facilitating environments in which people collaborate to create, share and advance knowledge. HE should in this sense be very well prepared to reap value from the new online tools and at least a partial implementation of the Web 2.0 business model already practised by Google and others. However, at least in the UK, signs that this is happening are not strong. E learning is still promoted as something to be experimented with and delivered separately from the core product in many institutions, with online treated as an alternative as opposed to an additional and multimodally complimentary means of teaching delivery. In-house information infrastructures are also still defended far too highly, whilst public content sharing websites are shunned, much in the way that the entire Internet was shunned by business for many years before Dot Com. Perhaps most significantly, the idea of not “giving things away for free” is also embraced far too strongly at the individual academic and

institutional level.

As this paper has contended, sharing only with one's own students (or one's own peers in an academic journal that is read by a tiny fraction of those people who access even an unpopular website) will destroy rather than create or catalyse future value-added. Plants cultivated in a dark cupboard will always quickly die. Like Google in the search and SaaS businesses (and the latter will quickly become its biggest business by far), HE institutions need to become expert in giving stuff away in order to attract that minority from the total free consumption population who will pay for education or research or consultancy.

As many a successful management academic realises over time, there is little to be made in royalties from publishing even quite a successful book. However, much more money can be reaped from the speaking engagements, consultancy and media opportunities that publishing even a modestly successful book can generate. Finding effective online mechanisms to "give the books away for free" hence makes commercial sense in addition to being good for all educationally. And more than anything, this is what the characteristics and core competencies of HE 2.0 as identified here are all about.

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