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Web 2.0 applications as alternative environments for informal learning - a critical review

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ABSTRACT

Enthusiastic educational commentators are casting the internet in a new light through the emergence of so-called 'Web 2.0' technologies, which place learners at the centre of online activities and facilitate supposedly new forms of creation, collaboration, and consumption. Proponents anticipate a host of new pedagogical challenges posed by a 'Facebook generation' of 'wiki kids,' whilst schools and colleges are delivering courses in '*Second Life*' rather than real-life environments. An impassioned minority of educationalists has even heralded a 'Web 2.0 transformation of learning' with "potentially groundbreaking implications for the field of education" (Thomas 2008). Yet such enthusiasm has been tempered by a more sceptical reaction throughout other sectors of the educational and technology communities. Mindful of these debates, this presentation will overview briefly the emerging research literature in the area of Web 2.0 enhanced learning (specifically the Facebook and Second Life applications) and focus on the following issues:

- what evidence is there for informal learning taking place within Web 2.0 applications, and if so, in what ways? Can Web 2.0 applications be designed to facilitate informal learning?

- What potential benefits and risks do Web 2.0 applications pose for formal learning in educational institutions such as schools? Does Web 2.0 herald the increased individualization and personalization of informal online learning at the expense of learning in more formal offline settings?

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INTRODUCTION

Whilst a number of methodological and philosophical difficulties surround its definition, 'informal learning' is now acknowledged to be a vital element of education for learners of all ages (Colley et al. 2003). Despite the 'slippery' nature of the concept (Girod 1990), there is an emerging consensus that the nature of informal learning is more specific than simply being any learning outside of formal education. At one level informal learning is "undertake[n] individually or collectively, on our own without externally imposed criteria or the presence of an institutionally authorised instructor" (Livingstone 2000, p.493). Thus, whereas formal learning is typically institutionally sponsored, classroom based and structured, informal learning "is not typically classroom based or highly structured, and control of learning rests primarily in the hands of the learner" (Marsick & Watkins 1990, p.12). Yet we should not overlook the fact that informal learning also includes a range of learning stimulated by general interests which is 'caught not taught' (Davies 1998).

There is growing evidence that many people are engaged in a wide range of technology-based informal learning at home and the community (Cranmer 2006, Impact2 2003, Facer et al. 2003). As Sefton-Green (2005, p.3) concluded from an extensive review of literature in the area:

> "computers and other aspects of Information and Communication Technologies (ICTs) allow children and young people a wide variety of activities and experiences that can support learning, yet many of these transactions do not take place in traditional educational settings. In fact many of these may not be considered 'educational' according to our conventional understanding of that term."

The trend for the informal consumption, creation, communication and sharing of knowledge via ICTs looks set to increase with the emergence of so-called 'Web 2.0' applications and learners' growing use of such 'read/write' web activities at home. In particular the notion of Web 2.0 highlights the growing popularity of so-called 'social software' where users are connected to and collaborate with each other in a variety of group interactions (Shirky 2003). Indeed Timothy O'Reilly (2005), generally accepted to be the originator of the notion of Web 2.0, has been keen to stress that it refers primarily to what can be termed 'the network effect' of current internet applications – i.e. the principle that the value and usefulness of web activity is now contingent on the number of participating users, with communities of users adding value to web applications in collaborative and creative ways which would not be possible on an individual basis. In this sense the worldwide web of Web 2.0 is what O'Reilly terms an active 'architecture of participation' rather than site of passive consumption. In theory at least, the web can be seen as a vast network of interconnected services that allows users to move their content across and between a variety of applications and contexts.

Proponents of Web 2.0 therefore reason that whilst assuming a veneer of interactivity, most 'Web 1.0' applications from the 1990s were concerned primarily with the passive delivery of top-down content generated for a mass audience and then broadcast from 'one-to-many'. In contrast, Web 2.0 applications are seen to allow users to participate directly in the creation, refinement and distribution of shared content. For instance, through the tagging of online content (i.e. the labelling of excerpts of text, images or other forms of code) users are able to sort and share content with each other whilst also appropriating and re-using existing content in the production of their own content. Crucially, all of these activities are underpinned by a public domain approach

to issues of intellectual property rights where concerns over propriety do not hinder the distribution and use of online content (Beer and Burrows 2007).

There are many contemporary forms of internet application which are seen to embody these Web 2.0 qualities. For example, photograph and video sharing websites such as *Flickr* and *youtube* allow users to share visual content with others, categorise it through the attachment of 'tags' and pass comment with other users. Much attention has also been given to the online dissemination of self-produced content through web-logs (where users self-publish episodic journal-style content), or else the 'pod-casting' of audio and video excerpts in easily distributed digital formats. Other notable flag-bearers of Web 2.0 are the so-called 'wiki' applications – reliant on community produced and mass-edited content as epitomised in the online encyclopaedia *Wikipedia*. The popularity of these applications notwithstanding, it is the rise of social network environments which has perhaps prompted the most enthusiasm amongst technologists and social commentators. Social network communities (SNCs) have increased in popularity over the past five years functioning as personal and personalisable spaces for online conversations and sharing of content. Alongside the prominent *MySpace* and *Facebook* applications are more specialist social networking sites such as the child-orientated *Bebo* space, and the mobile phone-based *Twitter* application. Some communities are international in their appeal, whilst others are more nationally focussed, such as the Korean *Cyworld* or the Brazilian *Orkut*. Yet regardless of scope or focus, all these SNCs can be characterised as environments for democratic forms of self-expression and interaction between users and, it follows, are potentially fertile sites for informal learning.

QUESTIONING THE EDUCATIONAL POTENTIAL OF WEB 2.0

Whilst not intended primarily as educational applications these Web 2.0 applications are certainly prominent if unauthorised features of the contemporary e-learning landscape. Unlike 'official' educational applications these Web 2.0 applications are seen to form an important element of the digital landscape of many learners which is decidedly outside the control of the education institution. As such they constitute what Kirkpatrick (2005) terms "other, more flippant [educational] concerns" than officially implemented and sanctioned e-learning applications. Yet flippant or not, many commentators are now arguing that these Web 2.0 applications are of equal if not more importance than formal educational ICT applications in the 'real-life' educational conduct of contemporary learners and, as such, are worthy of acknowledgement by the education community.

With this in mind we now go on to consider emerging research findings from Europe, North America and Australasia relating to two exemplary cases where informal use of Web 2.0 applications are seen to have the potential to lead to enhanced learning outcomes. These examples are social networking sites (i.e. the 'Facebook' application) and massively multiplayer online games (i.e. the 'Second Life' application).

i) Social Networking sites - the example of Facebook

Facebook is a relatively conventional social-networking online environment, modelled ostensibly on the US school 'year books' where brief written profiles of incoming students are presented alongside a photograph. On the electronic version, users present themselves to others within a similar although far more extensive framework. An individual's Facebook page includes a portrait photograph, a 'Status' tag where the user can record their current activity, mood or thoughts, a list of 'Friends' and local 'Networks' with which the user is affiliated, personal contact details including postal address and mobile phone number, as well as a 'Mini-Feed' of recent Facebook activity which is shared with other users (detailing when and how the user has been making alterations or adding content). Perhaps the most revealing and according to Pew (2007) the most used feature of many users' Facebook page is the Facebook 'wall' - essentially an asynchronous 'chat' facility

owned by each user. Here users can exchange short text messages with their nominated 'friends', with 'wall-to-wall' exchanges then visible to all other users who belong to the local network. Alongside these activities, users can also exchange virtual 'gifts' between each other, use plug-in applications (most notably the online Scrabble game), and join user-created 'groups' on particular themes or topics.

Given its broad range of constituent features, Facebook functions in different ways depending on the preference of the user. According to Stutzman (2005), students can use Facebook to 'hang out', to waste time, learn about each other or simply as a directory. Students therefore often use Facebook in the micro-management of their social lives, as an arena for social exploration and to develop social networking skills between their peers at university and from previous institutions they have attended.

Yet whilst Facebook is certainly of major personal and social significance to current cohorts of students in schools, colleges, universities and elsewhere, its rise to prominence of Facebook is prompting growing numbers of educators to position it a prominent site for student learning. It has been argued, for example, that Facebook shares many of the qualities of a good 'official' education technology in its reflective element to use, mechanisms for peer feedback and goodness-of-fit with the social context of learning (Mason 2006). In particular the conversational, collaborative and communal qualities of Facebook are seen to "mirror much of what we know to be good models of learning, in that they are collaborative and encourage active participatory role for users" (Maloney 2007, p.26). Whilst some of these qualities may well clash with the dominant pedagogical paradigms of the conventional education settings, it has been suggested that Facebook nonetheless offers the opportunity to re-engage students with their education and learning – promoting a 'critical thinking in learners' about their learning (Bugeja 2006). In this sense Facebook has been heralded by some commentators to offer "the capacity to radically change the educational system … to better motivate students as engaged learners rather than learners who are primarily passive observers of the educational process" (Ziegler 2007, p.69).

Other potential educational benefits of Facebook have been seen to include its ability to connect learners with each other into new networks of collaborative learning. As Maloney reasons, "social networking sites such as Myspace and Facebook have shown, among other things, that students will invest time and energy in building relationships around shared interests and knowledge communities" (Maloney 2007, p.26). This has prompted some educationalists to begin to explore the potential of officially sanctioned Facebook spaces to augment 'conventional' interactions and dialogue between students and academic staff. Indeed, some educators have welcomed Facebook's capacity for "easy networking and positive networking with students", tempered only by questions of whether it is "wrong for the grown-ups to intrude on this student-centred forum?" (Lemeul 2006).

Yet the emerging empirical literature in this area suggests that these potential learning benefits are not straightforward. For example, Selwyn's (2007) recent research on undergraduate students' use of Facebook in the UK suggests that the educational nature of students' Facebook use is profoundly informal and often at a tangent with the official learning aims of educators. This study of 907 students' use of Facebook over a six-month period shows that whilst Facebook does fulfil a number of useful educational functions these are albeit often at odds with formal educational expectations. For instance, the data show how Facebook can act as an important site for the informal, cultural learning of being a student, with online interactions allowing roles to be learnt, values understood and identities shaped. Facebook is therefore a prominent arena where students can become versed in the 'identity politics' of being a student, and are allowed to work through the 'role conflict' that students often experience in their relationships with academic work, teaching staff, academic conventions and expectations. In particular the data showed Facebook to be used by less academically successful students as a space for contesting the asymmetrical power relationship built into the institutional offline positions of student and formal school system, and therefore afforded these students with the 'back-stage' opportunities to be disruptive, challenging and resistant 'unruly agents'. As such most of the learning that takes place on

Facebook is the learning that would have taken place previously in the corridors, back of classrooms, cafeterias and after-school telephones conversations.

ii) Massively multiplayer online games - the example of Second-life

Alongside conventional SNCs such as Facebook, increasing academic attention is being paid toward the learning potential of the popular 3D-virtual worlds and so-called 'massively multiplayer online role playing games' (MMORPGs) such as *World of Warcraft*, *Sims Online*, *Everquest*, *Habbo Hotel* and, in particular, *Second Life*. Second Life and the Teen Second Life (exclusively for the use of users under the age of 18 years) are internet-based 3D virtual societies where users interact with each other through self-created characters. In Second Life users operate in a computer generated world where they are free to meet other users, socialize, participate in individual and group activities, create and trade items and services with one another and generally explore. While Second Life can be classed as a game it lacks the common characteristics of games such as scores, winners or different levels. Instead it is most accurately described as a semi-structured virtual environment where users' characters undertake activities for the purpose of personal enjoyment. Second Life and other similar virtual worlds therefore add the qualities of a social network service to the general aspects of an online 'metaverse' world in which people can interact, play, do business, and otherwise communicate. Second Life has recently become the focus of much educational interest, with many major colleges using it a virtual learning environment (most notably the UK's Open University, Harvard, Stanford and Delft University of Technology). A growing number of education organisations are researching the use of Second Life as a teaching and learning environment.

Whilst some of the potential educational benefits of Second Life are seen to be analogous to the perceived wider educational benefits of games playing (see Gee 2005, Charles and McAlister 2004). Second Life is argued to offer a range of specific learning opportunities in what is a personalisable and highly flexible immersive social space. Informal learning is seen to accrue from the new opportunities offered by Second Life for users to engage and collaborate in social connected networks of peers and online services. Similarly, in terms of being a new network of participation Second Life is seen as helping learners build communities of practice, collaborate with peers in group work, create and share content. Participating in an immersive social world such as Second Life is therefore seen to involve learning that is facilitated in various ways; "from the community-managed etiquette of the various 'chat channels', to the didactic tutorials offered by the software. Informal learning in this context include communal learning-by-necessity" (Carr et al. 2007, n.p). As such, Second Life is felt by some commentators to offer fertile ground for personalizing learning and allowing learners to take control of their own experiential learning.

These perceived benefits have been borne out to some extent in the limited research literature on the educational benefits of Second Life. For instance, Sanchez (2007) evaluated the experience of Second Life learners via a focus group of eighteen users, finding that learners expressed an affinity with social learning activities in Second Life whilst enjoying the interaction with the avatars of other learners while learning in this space. Yet as with the research on Facebook, it is suggested by some studies that the potential learning outcomes of 'newer' technological applications such as MMOPRGs use are less straightforward than is suggested by those commentators who have extolled their educational potential. It has been argued, for example, that in terms of the tangible educational benefits "evidence thus far points to rather limited success" (Carr *et al*. 2006, p.4).

CONCLUSIONS

We conclude by addressing two key questions, i.e. i) what is the educational importance of these Web 2.0 applications; and ii) what is the potential for "scaling up learners' informal uses of Web 2.0 application into formal education settings such as schools?

What is the educational importance of these Web 2.0 applications?

Despite the immediate appeal of applications such as Facebook and Second Life it is necessary for educators to take time to reflect carefully upon the nature of these Web 2.0 applications as online learning environments and question the learning affordances they offer in practice. Above all it is clear that more rigorous and carefully conducted research is required in this area. There are clear limitations in terms of quantity and quality of the research conducted to date on educative uses of Web 2.0 applications and, indeed, the research conducted on their general use of such technologies. Whilst insightful the studies reported on in this paper nearly all relied upon small-scale case-study research designs. The data collected were often limited in scope and studies could be criticised as lacking the rigour and robustness associated with good social science research. In contrast, there is a relatively more rigorous (although by no means comprehensive) empirical base with regards to young people's engagement with online resources (i.e. Pew, Mediappro, UK Children Go Online). Some of this research is characterised by large-scale data sets, often based on randomised samples and complemented by in-depth exploratory qualitative data.

Lack of evidence aside, sensible discussions should be conducted concerning the prevalence of these new forms of online activity in the everyday digital lives of learners. As we have discussed these new ICT applications certainly reflect a significant shift in the nature of young people's engagement with digital media. For example, in terms of the use of digital media to create information there are signs that young people are taking the opportunities to engage with the creation of information in a variety of ways. A recent Pew report (2005c) found that more than half of young internet users in the US had created some kind of online content, be it a blog, personal webpage or sharing original content in the form of artwork, photographs, music or videos). As such there is growing reason to believe that ICTs are altering fundamentally many young people's relationships with information.

Nevertheless, the potentially empowering nature of these changes in media practice is tempered by the limited penetration of these Web 2.0 practices throughout the general populations of different countries around the world. Even in technology-rich European countries the recent Mediappro (2006) study of EU youth found that passive retrieval of information remains the most popular internet-based activity amongst young people, with content creation a less widely practiced activity. It is important to retain a balanced perspective on the ubiquity of applications such as Facebook and Second Life. Indeed, although Second Life boasts over one and half million unique people who have used it at least once, of that number only 250,000 people could be classed as active users (i.e. using Second Life more than 30 days after their account creation date). Despite its connotations of a virtual world unhindered by physical barriers, issues of between-country disparities are prevalent with the US providing the largest constituency of Second Life users, with Japan, Brazil and the UK users also predominant (Reuters 2007). Amidst the excitement over applications such as Facebook and Second Life we should not overlook issues of digital exclusion and even digital apathy.

A further limitation to younger learners' educative uses of Web 2.0 applications is that of the increased salience of 'e-safety' - i.e. the increased potential for young people to be 'at risk' when using ICTs, not least by exhibiting a range of 'risky' behaviours themselves via 'inappropriate' and 'challenging' uses of the internet. These behaviours are seen to include interpersonal victimization, disclosure of personal information, aggressive behaviour, talking with people met online, sexual behaviour, and downloading images using file-sharing programs (Ybarra *et al.* 2007). Questions have also been raised over young people's ability to use emerging web applications carefully, appropriately and safely. For instance, a recent Pew (2005d) study found

79 percent of young internet users to concur that they are not careful enough when sharing information online with others. Similarly, in terms of young people's own challenging online behaviours Berson and Berson (2005) found a significant number of adolescent girls to report engaging in risky activities including disclosing personal information, sending personal photos to online acquaintances, and arranging face-to-face meetings. That said there is a considerable body of counter-evidence that young people are not wholly at risk when using ICTs. The Europe-wide Mediappro project, for example, reported "wide evidence of self-regulation by young people" (Mediappro 2006, p.14), suggesting that young people are more considered and empowered users of online contexts than is sometimes assumed.

What is the potential for "scaling up"?

These concerns notwithstanding, we can conclude this discussion by asking what potential benefits and risks Web 2.0 applications pose for formal learning in educational institutions such as schools. Based on the academic literature to date, it would certainly seem that there are now clear opportunities for schools to draw upon and encourage Web 2.0 based informal learning (see also Potter 2006). Indeed, it has long been argued that such an expansion of schools' technology use is essential if schools are not to experience "a legitimacy crisis with kids" (Kenway & Bullen 2001). Such concerns have prompted stark warnings of a fast-growing 'digital disconnect' between students accustomed to high levels of ICT use in all contexts of their everyday lives apart from school (Levin & Arafeh 2002). As such, the appeal of appropriating Web 2.0 applications for formal classroom purposes is obvious.

Yet there is a need for educators to be wary of simply 'importing' informal Web 2.0 application into classrooms on the presumption of transforming formal education. A number of researchers warn against attempts to motivate and engage pupils through the introduction of consciously 'trendy' forms of technology use into schools. As Lankshear and Knoebel (2004, n.p.) contend, young people's forms of ICT use should not be simply transported or co-opted wholesale into classroom as "young people resent having their cultural forms (mis)appropriated into schools". Indeed, recent research with older students suggests that learners do not necessarily expect or even want to use technology in educational settings in the same manner as they do at home (Lohnes & Kinzer 2007). Many young people are rightly mindful of the risks, as well as the opportunities, involved in fully 'opening-up' ICT into classroom settings and often share adult concerns over issues such as e-safety and the variable quality of learning that informal ICT uses can engender (Selwyn 2006).

Thus we would conclude by arguing that before any such moves are initiated, that attempts are made to open up a dialogue between young people and educators regarding the development of schools' uses of Web 2.0 applications in the (near)future. As the UK-wide Impact2 study concluded, "schools and homes have more to learn from each other about the ways in which ICT is being used in each context ... schools could usefully examine the ways in which ICT is being used in other contexts and whether these have any potential in the school environment" (Comer et al. 2003, p.38). To date, most studies in this area have tended to frame this issue in terms of practitioner and institutional concerns over the likely changes to classroom practice and curriculum that potentially 'disruptive' ICT uses may entail. Whilst this perspective is crucial, there has been a tendency to overlook the views, opinions and ideas of the pupils themselves. As the ultimate 'end users' of ICT in the classroom, it could be argued that more attention needs to be paid by education technologists to the life worlds of learners (Selwyn 2000, 2006).

Indeed, the need to develop a more learner-centred perspective is now an integral element of many governments' stated commitment to developing more 'personalised' education systems. In particular there has been an increased policy emphasis of late on the notion of facilitating 'learner voice' – i.e. allowing learners to enter into dialogue and bring about change with regards to the schools and learning. In this respect, schools' appropriation of Web 2.0 applications would appear

to be an ideal area for such 'learner voice' dialogue to be enabled and encouraged - not least given recent enthusiasm for the use of digital media in supporting learners to express their voice in this way (see Shields 2003, Rudd et al. 2006). We can therefore conclude this discussion by considering a number of questions which can frame future debate and research in this area, i.e.:

- to what extent do learners expect/desire to use 'informal' forms of ICT use in the formal educational settings such as the school?
- Which ICTs do learners see as being most motivating, engaging and personalisable?
- Conversely, which ICTs do learners see as unsuitable for the classroom and why?
- What unintended consequences and/or risks do learners see as arising from importing 'new' informal modes of ICT use into the classroom setting?
- How can these issues (such as e-safety) be addressed without curtailing the informal learning potential of ICTs?

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