# Web 2.0 in the Classroom? Dilemmas and Opportunities Inherent in Adolescent Web 2.0 Engagement

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## Abstract

The paper discusses the implications of the current phenomenon of adolescent engagement in digital spaces. Young people are increasingly active Web 2.0 users, and their interactions through these technologies are altering their social identities, styles of learning, and exchanges with others around the world. The paper argues for more research to investigate this phenomenon through the use of virtual ethnography and identifies the ethical challenges that lie therein. It raises questions for school education and presents an argument for studying the area in culturally sensitive ways that privilege adolescents' voices.

In the broad context of learning and education, the rich and rapidly expanding engagement of adolescents in the phenomenon of social technologies demands attention. There is a prima facie case for seeing these technologies as potentially revolutionary, stimulating emancipatory notions of schooling. Such radical possibilities are not uncontested. They demand scrutiny and discussion. Informed debate requires investigations of young people's current and emerging online cultures. Only then can education fully capitalize on the engagement shown by many young people who use and create in online social spaces.

Yet, investigation of the field remains problematic. Studies need to be naturalistic to allow students' voices to be clearly heard. Innovative, sympathetic research methods are required to complement traditional modes of inquiry. Virtual ethnography, that is, an ethnography located in cyberspace and examining the adolescent culture inhabiting digital spaces, is apposite. It is an appropriate research methodology to explore the potentially transformational effects and challenges created by these disruptive technologies. However, the ethical challenges arising from researching an anarchical, potentially subversive, and democratic adolescent culture require new applications of principles of practice.

Although a number of aspects of learning with social and creative technologies are worthy of discussion, this paper is restricted to the following: the reasons for studying Web 2.0 adolescent engagement; the ways in which school education can be informed by the studies and issues arising when such technologies are used in formal schooling; and the research designs appropriate for studying adolescents' engagement with Web 2.0 and the ethical issues that may arise.

Young people are increasingly active Web 2.0 users, and their interactions through a suite of technologies are altering their social identities, styles of learning, and exchanges with others around the world (Facer, Furlong, Furlong, & Sutherland, 2003; Prensky, 2004; Young, 2005). To understand their interactions, researchers need an understanding of the digital phenomena with which they are engaged. The term Web 2.0 describes the range of user-controlled publishing and networking websites that have emerged over the past 5 years, allowing people greater connectivity, autonomy, and voice in online activities. This capability stands in contrast to older, less interactive Web 1.0 sites that limited users to passive viewing and information retrieval and whose content only the sites' owners could modify (O'Reilly, 2005).

Web 2.0 embodies a "blurring of the boundaries between Web users and producers, consumption and participation, authority and amateurism, play and work, data and the network, reality and virtuality" (Zimmer, 2008, p 1). Examples of these increasingly participative environments that contribute to a Web 2.0 ecology include (but are not restricted to) social networking, media sharing and manipulation sites, data/web mashups, conversational arenas, virtual worlds, social bookmarking, blogs, wikis, and other collaborative editing sites (Crook, 2008).

The theoretical perspective underpinning this paper is a sociocultural one.  Our belief, informed by sociocultural theory, is that Web 2.0 technologies have the power to (a) affect human cognition; (b) change the knowledge and skills necessary to participate in one's local and global communities; (c) impact upon the future development of society; and (d) disrupt school education. From a sociocultural perspective the Internet is viewed both as a cognitive tool and as a novel cultural medium.  Cognitive tools are recognized as influencing and mediating new patterns of thought and mental functioning (Salomon & Perkins, 1998; Wertsch & Rupert, 1993).  Also, the use of cognitive tools enculturates one into society and, in turn, changes society through the ideas and ways of thinking enabled by that tool (Putnam & Borko, 2000).

Currently, new tools have emerged which enable unprecedented high-level interactivity on a global scale.  These tools enable adolescent informal learning experiences, as young people take authorial and editorial roles, express themselves, and publish and interact globally. Therefore, to understand the sociocultural impact of these new tools on adolescents, and therefore, on school education, it is necessary to study adolescents' engagement and activity with these new media.

### Why Study Adolescent Engagement With Social Technologies?

A robust adolescent online culture has emerged, yet little attention is given by formal education authorities to the  implications of bringing these technologies into the classroom (Lamb & Johnson, 2006). Crook (2008) suggested that the slow uptake of Web 2.0 technologies in schools is due partly to the lack of teacher familiarity with these technologies and partly to the perceived dangers of using these technologies in the

classroom. As a result, incongruence is growing between students' informal and formal learning environments (Griffin & Aubusson, 2007) and there is a subsequent need to examine this shifting landscape.

Technology plays a special role in the life of today's adolescents. Increasing numbers of young people are comfortable using Web 2.0 technologies to express themselves: creating and publishing new media content; contributing to creations such as artworks, audio, video and photographic products, and creative writing postings. A UK survey conducted in June 2006 of 1,003 11- to 16-year-olds and 1,003 parents (NCH, 2006) found that 33% of the young people regularly used the Internet for blogging, and 79% said they used Instant Messaging (IM) regularly (including 59% of the 11- year-olds in the group).

A recent Australian study surveyed a representative sample of 751 family households with children aged between 8 to 17. Forty-two percent of young people in this study said they had posted their own material online. Amongst the 14- to 17- year-olds, 72% of girls and 52% of boys had their own online social networking profile (Australian Communications and Media Authority, 2007).

Livingstone (2008) highlighted the extensive use of social networks:

> In the UK, MySpace is by far the most popular social network with 6.5 million unique visitors in May 2007, followed by 4 million for Bebo and 3.2 million for Facebook (Nielsen/ /Netratings, 2007). US figures are far higher, with 38.4 million unique visitors to MySpace in May 2006 (Nielsen/ /Netratings, 2006). Young people are in the vanguard of social networking practices: 31 percent of MySpace users are under 18 years, as are 54 percent of Bebo users in the USA (BBC News, 2006); 6.6 million Unique users aged 12-17 visited MySpace in August 2006 across Europe (Comscore, 2006), and 32 percent of online 16-24-year-olds use social networking sites at least monthly (EIAA, 2006).  (p. 461)

However, there is a dark side to networking spaces that figures significantly in popular media reporting. Harmful outcomes associated with these technologies are emphasized through negative publicity in the print and television media (e.g., Cubby & Dubecki, 2007), sometimes overshadowing the benefits of these technologies for social networking, learning, and creativity. Indeed, much discussion on young people's use of online social technologies has focused on safety issues (see, e.g., Millwood Hargrave & Livingstone, 2006) but often associated research is based on outdated assumptions. This literature and the actions taken frequently assume that dangers lie in chatrooms, but usage is more complex than it was, with people now moving between sites and interacting in multiple roles.

The nature of risk for adolescents has also changed: Popular and political concern remains mostly focused on varieties of web-based sexual abuse and cyberbullying (e. g., Nairn, 2007; Hylton/Austin, 2006), but equally of concern are easily accessed links to sites promoting unhealthy lifestyles and conditions (for example, anorexia), extreme groups, and unethical practices such as cheating, plagiarism, and breaches of copyright (Albion & Maddux, 2007). Livingstone (2008) noted "It is commonly held that at best, social networking is time-wasting and socially isolating, and at worst it allows paedophiles to groom children in their bedroom or sees teenagers lured into suicide pacts while parents think they are doing their homework" (p. 461).

A report published by Green and Hannon (2007) provides many useful counterclaims for concerns of safety threats, junk culture, technologies wasting learning time, plagiarism,

disengagement, disconnection, and passivity. Like Livingstone (2008), Green and Hannon suggested that these concerns, while widespread, are largely unfounded. However, the influence of popular media in highlighting and sensationalizing the dangers of social networking is pervasive and tends to overshadow the impact of formal research findings, which consider social networking in a more objective light.

A few pioneering studies have begun to investigate identity, networking, creativity, and sociological issues (Dodge, Barab, & Stuckey, 2008; Lenhart & Madden, 2007) in these new Web 2.0 contexts. Livingstone (2006) considered the role of the Internet in young people's lives to develop a framework for understanding the related social, cultural and political dimensions. She noted that social boundaries are blurred by the availability of rich media and suggested that learning, work, and community participation now occur through interaction with these media.

Another important ongoing study, EU Kids Online (Livingstone & Haddon, n.d.), is considering research across Europe on how young people use the Internet and new media. However, it too is evaluating risks of such media and children's and parents' responses to such risks.

An important point identified by Dodge et al. (2008) is that "individuals develop unique relationships with technology, some of which are defined by the designer, some of which are bound up in community meanings, and some are determined by the individual" (p. 247). The implication of this statement is that education should recognize the potential of serendipitous relationships with technologies that are not historically leveraged by schools. With the current rapid increase in usage of these technologies, it becomes necessary to understand what is happening in this social networking phenomenon, so that educators better understand the new spaces that students inhabit and the implications for students' learning. Indeed, Crook (2008) argued the "need for more sound empirical research on adoption and impact" (p. 7) in the educational arena.

Web 2.0 technologies are currently enjoying great popularity among young people, and to view them purely as destructive technologies loses a great opportunity to capitalize on their potential for learning. Neither complacency about students' interactions out of school nor alarm about the dangers of such interactions are appropriate ways to view this phenomenon. A more complete picture is needed, locating these emerging dangers in the context of patterns of usage across technologies.

### Informing School Education?

The last century has witnessed numerous claims of technology innovations heralding a panacea for school education (Cuban, 1986), ranging from radio and the motion picture to more recent digital technologies such as interactive whiteboards.  These claims usually prove to be hollow, with minimal evidence of any impact on pedagogy (Cuban, Kirkpatrick, & Peck, 2001). This familiar trend of technologies having little transformational effects on schools was aptly described by Mayes (2007), who used the film *Groundhog Day*

> as a metaphor to describe how the experience of living through the excitement about technology in education always ended the same way–in disappointingly little change. In the film, the protagonist only escapes from a time loop by finally recognising his true nature...only when we finally acknowledge the true nature of learning will we escape from the cycle of raised expectation followed by disappointment. (p. 1)

The traditional research and education communities have been typically slow to respond to the rapid emergence of a contemporary 21st-century digital culture and associated technologies, and not surprisingly, we currently find ourselves trapped in another iteration of this cycle discussed by Mayes (2007). This lag in understanding yet again leads to educational policies and practices that alienate the very people the policies seek to embrace (Green & Bigum, 1993; Kent & Facer, 2004; Warschauer, 2007). There is an urgent need to find out where new boundaries have emerged and to investigate if there are transformational possibilities for exploiting the fluid nature of these emerging web-based technologies in school education. A way of theorizing adolescents' absorption with this mode of interaction is needed to understand its potential in education.

So far, school systems have generally been cautious about using social technologies in the classroom and are banning social webspaces out of concern about safety of their charges (Anderson & Sturm, 2007) and fear of complaints and legal consequences. Hull and Schultz (2001) urge researchers to help bridge the vast gulfs that separate and continue to widen between children and youth who succeed in school and those who do not by seeking a collaborative understanding of the relationship between formal classroom learning and the informal learning that flourishes in a range of settings outside school.

Understanding the adolescent culture evident in Web 2.0 engagement provides valuable insights for school education. Yet, while governments of Western countries have been considering ways to equip all schools with fast broadband connections, they have not yet come to grips with how adolescents are already effectively using Web 2.0 technologies.

Evidence indicates a growing use of Web 2.0 technologies in formal schooling. Crook (2008) identified 11 categories of possible educational Web 2.0 activity, such as media sharing, blogging, and collaborative editing. However, these authors also indicate that such usage might well require a reconceptualization of roles of teachers, schools, and systems. As a result, they suggest that teachers are approaching the use of these tools with understandable caution.

Many other examples exist of teachers using Web 2.0 tools in more traditional ways with their students, for example, for podcasting using teacher or student-created material (Sprague & Pixley, 2008), blogging to develop verbal and visual literacy (Freedman, 2006; Huffaker, 2005) and RSS feeds to aid information literacy (Evans, 2006). A recent study considering the impact on education discusses a case in which primary school children were observed both to receive information from and to contribute to online communities (Turvey, 2006). Turvey suggested that deep understanding of learning can occur through examination of students' participation in such communities.

Other studies have discussed the implications of emerging digital cultures for schooling (Green & Hannon, 2007; Maher & Schuck, 2004). These studies suggest that, although serious gaps exist between what students are learning in and out of schools, informal learning principles should not be used exclusively to inform the design of formal learning sites. Rather, in a similar way to Nagy and Bigum (2007), Schuck and Aubusson (2009) recommended that educators should be examining the possibilities for new kinds of roles for schools and new kinds of relationships between formal learning and Web 2.0 activities taking place outside the school. A compelling question is how to create such relationships in schools without losing the motivational aspects of autonomy and risk-taking that currently operate in these environments and which are sensitive to the localized needs of stakeholders (Owen, Grant, Sayers, & Facer, 2006).

Literature on Web 2.0 engagement (for example, Ferdig, 2007; Green & Hannon, 2007) suggests that educators ignore the popularity of this phenomenon and its implications for

school education at their peril. The disruptive, democratic, and dynamic nature of social networking and of creative and collaborative new media has been seen as a threat to the establishment instead of a powerful opportunity to understand adolescent culture and to bridge the gap between adolescent culture and formal education.

The picture is clouded further by the assumption that if safe use of social networking is achievable through careful monitoring, Web 2.0 technologies can simply be imported into formal schooling environments in unproblematic ways and used as teaching tools controlled by teachers and administrators.

Teachers' epistemological and pedagogical beliefs are the product of a different generation (Albion & Maddux, 2007). Hence, a major constraint is that they tend to apply what Barlow (1998, cited in Nagy & Bigum, 2007) has suggested is industrial-age thinking to the new context. The ability for anyone with access to the Internet to publish, critique what is there, and present their own perspectives with feedback from a large audience (Nagy & Bigum, 2007) presents a real challenge to the way things are done in formal educational settings. Reframing conceptualizations of the nature of learning is necessary in this time of unbounded interaction.

Harnessing adolescents' popular culture for school-based learning remains a vexing and formidable challenge (Pennycook, 2007). For most adolescents, the appeal of interactions through such media is probably their separation from the structured world of adult-centric rules, protocols, and formal engagements with adults (Boyd, 2008). The attraction of such places is not new. Dodge, Barab, and Stuckey (2008) argued that they are analogous to

> third spaces...informal public spaces such as coffee houses, affording novelty, diversity and learning. Unfettered by school protocol or family emotions, third spaces allow groups to meet in generous numbers, and while no individual constitutes the third space, close friendships can be developed unlike those found at home or school. (p. 229)

The social learning that occurs in these spaces, facilitated by informal groups that meet regularly, is recognized as contributing significantly to student achievement (Brown & Adler, 2008). Therefore, a key question for educators is how to use online third spaces "for leveraging the potential of social learning" (p. 20). Bringing Web 2.0 technologies into the classroom could well change their intrinsic nature, thus dissipating their appeal and leading to development of other ways of interacting underground, far from the adult eye (Maher & Schuck, 2004).

Given the sociocultural understandings that underpin this paper, using Web 2.0 in such limiting ways ignores the possibilities for new approaches and new paradigms for schooling that are offered by these technologies. Can the engagement and independence shown by adolescents in social spaces be captured by formalizing those spaces into school contexts (Schuck & Aubusson, 2009)? Web 2.0 technology usage should be investigated in ways that take account of the impact such tools can have on society and education and also look at the ways such tools can be modified through societal usage. Appropriating features of this contemporary digital culture for formal schooling may fundamentally change both the nature of the interactions and the appeal that this mode of interaction holds for adolescents.

**Appropriate Research Designs: Virtual Ethnography**

Adolescent practices and adolescents' views about the ways in which social webspaces can be made safe and welcoming places for them to learn, create, and share should be investigated. Sociocultural theory can inform the directions research should take as well as aid in understanding this relatively modern phenomenon. The relationship between current social and technological developments permit an opportunity to investigate a significant perturbation in the dynamics of human social evolution.

Tools influence and mediate cognitive and social processes. Social technologies are enabling a shift in generative processes and interactivity. Both appear to be particularly manifested in social networking among adolescents. The current (let alone, potential) learning is not well understood. Sociocultural theory asserts that understanding interaction between tool and user is critical to determining how each affects the other and how social systems and tools evolve. The research questions that need to be asked, then, are not merely about patterns of utilization, such as when, where, how, and by whom social technologies are used. The motivations, desires, perceptions of choice and control, processes and products, outcomes, and the sense of purpose should be explored related to both rich and superficial engagement in a new world mediated by social technologies.

Adolescent engagement is of particular interest because of the flexibility of mind associated with these socially and cognitively formative years. Its study is all the more urgent because adolescent culture has been spectacular in its embrace of social technologies. Of particular importance to those in education is an examination of this adoption of social technologies and its contributions to and influences on learning. Research in the field needs to investigate actual engagement with and perceptions of social technologies among a wide range of stakeholders. As with any emerging phenomenon, the production of knowledge has lagged behind the need for it. Research that will contribute to this knowledge must explore questions such as the following:

- What activities are occurring when adolescents engage in Web 2.0 spaces? For example, do these new digital spaces "impose distinctive ways of working" for young people? (Facer et al., 2003, p. 231)
- What perceptions do young people, student teachers, parents, teachers, and designers hold regarding the purposes, benefits, and dangers of Web 2.0 technologies? How might these stakeholders' perceptions inform conceptualizations of future schooling?
- How and what do young people learn through their informal immersion in Web 2.0 spaces? What do they see as the implications of these experiences for schooling?

In addition, the research design must be appropriate. Most previous studies in this area relied heavily on reported use rather than actual use of these technologies, often questionnaire based and snapshot oriented. Smaller scale studies with a greater degree of interaction between researchers and members of the digital culture, however, can give more insightful, and perhaps honest, data. A study that is longitudinal and participative in nature will be able to show how people move between different kinds of Web presences and also show how social contacts influence usage. Projects should also explore and extend virtual ethnographic methodologies (Crichton & Kinash, 2003; Hine, 2000) and address related ethical issues.

Given that an approach that provides deeper data would need to be more direct and ethnographic, researchers need to be immersed in the adolescents' digital cultures,

engaging with participants. This approach involves the researchers participating in various Web 2.0 spaces and interacting with the other participants to understand what is happening. However, this methodology of going native and participating in adolescents' underground interactions is fraught with ethical sensitivities, as discussed by the Association of Internet Researchers (AoIR) ethics working committee (Ess & AoIR, 2002).

As well as arguing for a virtual ethnographic methodology, a multidisciplinary approach is required. This approach would provide the flexibility to understand young people's activity with Web 2.0 technologies by taking into account the contexts, cultures, technologies, and learning that occur. The complexity of the relationship between adolescents and social networking and publishing technologies cannot be understood from a single disciplinary perspective. Providing varied, complementary perspectives enables researchers to challenge each other's thinking and extend conceptualizations of the adolescent social technology phenomenon. Like Facer et al. (2003, p. 226) during an earlier phase of adolescent computer use, we recognize that there is "no single theoretical framework available that [is] sufficiently rich to allow us to prise open all of the complexities" inherent in adolescent informal use of social software. Thus, a multidisciplinary approach underpinned by sociocultural learning theory and drawing on popular cultural studies and educational technology studies can enable holistic analysis of the phenomenon.

Of prime importance is the initiation of a dialog with young people themselves. The remainder of this paper addresses the need for a research methodology that facilitates this dialog with young people. The value of having the voice of young people in a debate that centers on their activity is widely recognized (Cook-Sather, 2006; Thomson & Gunter, 2006). At present, little literature explores the learning impact of these technologies, particularly with the 11- to 16-year-old population (Crook, 2008). Where such literature does exist, the voice of the adolescent population is often neglected. A virtual ethnography with an emphasis on adolescent voices and their active participation as coresearchers will establish a deeper understanding of what is actually happening in social spaces online.

## Emerging Ethical Issues

Ethical issues range from confidentiality and anonymity to more serious concerns about the consequences of encouraging adolescents to engage with adults entering their environment covertly. At one level the ethical concerns about confidentiality and anonymity appear to be trivial. First, researchers can ensure that artifacts are de-identified, though this may prove difficult in a minority of instances. Second, the adolescents are already in a public space, and the content that is available to researchers is that which someone has chosen to make public. Yet, the problem is that the ethical expectations of researchers are far higher than the expectations of those operating and publishing in these environments. Hence, simply appropriating content because it is public and accessible is questionable.

Digital ethnographers are charged with the task of understanding the ethical issues better and developing protocols for professionals exploring and using these sites with young people. Arguably, one reason for bringing Web 2.0 into the school is to encourage debate and raise awareness about ethical issues in content creation in digital spaces.

Procedures for obtaining consent also need to be carefully considered. Obtaining permission from parents of students under the age of 18 may be problematic. The NCH (2006) survey showed that most parents are unaware of their child's activity in Web 2.0

spaces. On one hand, simply seeking parental permission may seem desirable, but adolescents often choose to be in these spaces because they are generally considered by users to be adolescent "publics" where they can interact without parental supervision (Boyd, 2008). Hence, the adolescents may not want researchers to reveal to parents that they are in these spaces and, if revealed, their behavior in these spaces may become less authentic. In addition, because researchers will often be unable to identify the adolescent user, the researcher will also be unable to identify the parent and will be unable to seek permission. The researcher will be unable to confirm that it is the parent who is giving permission. Even if adolescents choose to identify themselves, it remains difficult to verify that participants are who they say they are or even that they are adolescents. Therefore, researchers using digital ethnography must recognize and acknowledge these limitations and implications for the integrity of the research. One of the tasks of digital ethnographers is to consider ways of circumventing these problems, for example, by using a referral process beginning with known adolescent participants to provide a pool of Web 2.0 users.

Young people's awareness of appropriate strategies to combat stranger-danger make contact with participants in these spaces an ethical minefield. Parents and educators highlight the dangers of talking to strangers. It has been argued that the dangers presented by strangers in Web 2.0 environments are exaggerated because most adolescents are not interested in interacting with strangers (Livingstone, 2006) and most strangers are not dangerous (Boyd, 2008). Nevertheless, there is danger in researchers encouraging adolescents to interact with strangers, because it clouds general guidelines for safety. The participant has no way of verifying in their digital space the authenticity of researchers and that their intentions are honorable. This ambiguity might make them relax their guard against strangers and become more vulnerable to approaches by others with inappropriate motivations.

An important point that differentiates research in this area from other ethnographies is that online contexts are more likely to involve subjects from different countries bounded by different jurisdictions. Researchers need to be aware of and updated on the constantly changing laws and sometimes ambiguous requirements. The issue of confidentiality and the blurred line between private and public spaces on the Internet present new challenges to ethnographic researchers: "Are participants in this environment best understood as 'subjects' ... or as authors whose texts/artifacts are intended as public?" (Ess & AoIR, 2002, p. 7). Ethical problems inherent in digital ethnography cannot be solved by simply ensuring confidentiality in reporting. Given these ethical challenges, future studies should contribute to new directions in the formulation of ethical guidelines associated with digital ethnography.

## Conclusion

If the yawning crevasse between formal schooling and social spaces is worth addressing, then this is unlikely to be achieved by a mere bridge allowing traffic to pass from one to the other. Rather it may require that both move closer together. If a dynamic Web 2.0 is to play a role in formal schooling, then its quintessential nature may need to remain unfettered. We cannot predict the influence of new technologies on adolescent behavior in 5 years' time. Web 2.0 may corrupt school learning, promoting an anarchy that may be inimical to school as a center of knowledge exchange. Or Web 2.0 might be transformed, tamed, and safe:

> Blunt thou the lion's paws,
> Pluck the keen teeth from the fierce tiger's jaws,

And make the earth devour her own sweet brood...
(Shakespeare, sonnet 19)

Such stark outcomes are avoidable. There are risks to be managed and research to be done if harm is to be moderated and potential benefits not merely dreamed but realized.

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