

Reflections on Research Ethics for Learning and Teaching with Web 2.0: Insights from Eight Case Studies of Design-Based Research

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Ethics of Research into Learning and Teaching with Web 2.0: Reflections on Eight Case Studies

Abstract

The unique features and educational affordances of Web 2.0 technologies pose new challenges for conducting learning and teaching research in ways that adequately address ethical issues of informed consent, beneficence, respect, justice, research merit and integrity. This paper reviews these conceptual bases of human research ethics and gives examples of their consideration in the literature of research into learning and teaching with Web 2.0. The paper goes on to give an account of reflective practice by two academic developers in relation to ethical issues they encountered, considered and addressed in eight case studies, which were part of a larger multi-university Australian study into learning and teaching with Web 2.0. The paper concludes that the human research ethics approval process needs to be understood as a series of measures that are important to protect not only the students but also the teacher-researchers and their institutions when doing learning and teaching research with Web 2.0. This understanding is important for educators and as well for educational developers, educational technologists and human research ethics review committees (also known as institutional review boards).

Keywords: Web 2.0 technologies, human research ethics, scholarship of teaching and learning, academic development, reflective practice

Learning and teaching with technology in higher education have moved rapidly in the past decade from reliance on campus-based computer labs to accessibility via wireless laptops and mobile handheld devices; and from locally developed educational software packages, static websites and learning management systems to innovations with social software tools and virtual worlds. In line with these developments, academic teaching staff have been encouraged by Alexander (2006), Dalsgaard (2006), Franklin and van Harmelen (2007), Richardson (2006) and others to incorporate so-called social web or Web 2.0 technologies (i.e. blogs and microblogging, podcasting, photo and video sharing, social bookmarking, social networking, virtual worlds and wiki writing) into learning and teaching activities.

The ensuing innovations with Web 2.0 in higher education have produced:

- New technologies that enable the capture and manipulation of large volumes of textual and multimedia data in digital formats
- New settings and sites for research and scholarship into learning and teaching
- New interest in research into student learning and teaching practice—including questions of effectiveness, engagement, efficiency and others

However, along with new opportunities for research, Web 2.0 may bring new risks including the potential for involuntary participation, privacy invasion, disregard for content creators' moral right and misuse of intellectual property.

The novel aspects of research into Web 2.0 innovations, compared to research in more traditional educational settings, raise the need for researchers to review what they understand to be the human research ethics requirements of such research, as well as what they consider to be responsible conduct in such research settings. With this need in mind, this paper presents:

- (1) An overview of the conceptual bases of human research ethics and examples of their consideration in the literature of research into learning and teaching with Web 2.0 technologies; and
- (2) An account of reflective practice by two academic developers and researchers in relation to ethical issues encountered, considered and addressed in eight Web 2.0 case studies.

Ethics concepts and considerations for research into learning and teaching with Web 2.0

The general considerations for human research ethics into learning and teaching are broadly derived from the values and principles that inform all research involving human participants. In a history of development spanning six decades, including the Nuremberg Code of 1947 and Declaration of Helsinki in 1964, the codification of human research ethics has been built on a foundation strongly oriented towards bio-medical research (Sachs, 2010).

In Australia, this means in practice that university Human Research Ethics Committees—equivalent to Institutional Review Boards (IRB) in the US, and Research Ethics Committees (REC) in the UK—draw on the National Health and Medical Research Council (NHMRC) guidelines. These guidelines make it clear that the relationship between researchers and research participants is the ground on which human research is conducted. They explain that trust, mutual responsibility and

ethical equality in this relationship are shaped by the principles of respect, research merit and integrity, justice, and beneficence. They emphasise the guiding values of balancing risks with benefits, and of informed consent (NHMRC, 2007).

For some time the ethics of human research involving new and emerging Internet and web technologies have been of interest among social science researchers and, to a lesser degree, educational researchers. For example, see Gray (2008) for a review of this literature and discussion of the particular ethical dimensions of teacher-research in this field. Research into learning and teaching with new and emerging web technologies can, by definition, present teacher-researchers with novel circumstances. Nevertheless research in these circumstances is not exempt from fundamental considerations of human research ethics.

Even though ethics review bodies may be well equipped to appreciate the implications of emerging technologies, it is essential to ensure that the ethical conduct of research into learning and teaching is underpinned by academic staff knowledge of the technologies and engagement with related ethical implications. Kanuka and Andersen (2007, p. 12) remind us that external governance and goodwill are insufficient in e-learning research: "E-learning researchers also require technical knowledge of how the Internet works in addition to a willingness to self-reflect with an openness and honesty about all aspects of our work".

Recently, social scientists (e.g., Buchanan, 2009; Bakardjieva, 2008; Moreno, Fost and Christakis, 2008) have begun to speak of the need for a new ethical framework, or of "research ethics 2.0", to signify the extent to which Web 2.0's features and affordances make ethical research practice particularly important and interesting as a subject of academic attention. In education specifically, the use of Web 2.0 technologies enables new kinds of transactions and interactions (between teachers and learners, among learners and their peers, and involving other parties) which trigger related questions about good practice and propriety for teachers. For example, Dohn (2009) and Waycott (2010) identify some of Web 2.0's challenges for learning, teaching and assessment. So it is important to explore the implications not only for teaching but also for educational research into its uses. Fendler (2011) considers the differences between Web 2.0 education research and previous educational technology research and notes that it raises new considerations for epistemology, pedagogy, communication, and power relations.

To date educational researchers have unpacked a few of the kinds of ethical questions faced when conducting educational research into the use of Web 2.0 applications. Greenhow, Robelia and Hughes (2009, p. 246) explore questions such as:

Can the researcher use the [public] blog entries without informed consent? Are these users in a vulnerable population because of a possible lack of technological knowledge, making them unaware that their reflections are publicly available? Because of the data's public status, do researchers need to safeguard the identity of the participants? [...]
How many data are necessary?

Vavoula and Sharples (2008, p. 298) continue this line of questioning, in relation to research into mobile learning which is intimately linked to Web 2.0 sites by web-enabled mobile phone ownership:

When evaluators are uncertain of what will constitute the mobile learning experience, how accurately can they inform the participants of what data is sought and why? Assuming that a vague description of the requirements for participation is acceptable, how can learners consent to disclosing information about events they currently do not know when, where and under what circumstances will take place?

Moschini (2008, p.242) points out in relation to research in virtual worlds, “As the virtual inhabitants of Second Life can appear to be animals, fantasy creatures, plants or even objects, the traditional safeguards might seem obsolete. However beyond each avatar there is a human user and the usual research ethics considerations still apply.”

In general, the terrain of human research ethics issues in learning and teaching research has been mapped by academic leaders of the scholarship of teaching and learning (for example, Hutchings, 2002). However, academic teaching staff may not be so conversant with such issues (Chang et al, 2005). At one end of the scale, there are staff who are highly attuned to questions of human research ethics—as exemplified by the emphasis in the research training that they provide to their own post-graduate students. At the other end of the scale, that there are academic staff who have very limited experience or awareness of the role of human ethics in research into learning and teaching, perhaps because their own discipline-based research training did not involve human subjects.

Nevertheless, for all academic teaching staff engaging in research into teaching with Web 2.0, the human research application to their HREC, IRB or REC is an institutional mechanism that allows them to consider and document their approach to issues of human research ethics. For some staff the application process can be experienced as a compliance exercise; here, the challenge is to provide academic development that does more than enable them to “tick the right boxes”. As Lindorff argues, “ethical researching requires continual engagement. It is more than compliance, “following the rules” or the law, or submitting HREC applications that are approved without question” (Lindorff, 2010, p.53).

Where the ethics application process is framed with more positive meaning, the novel circumstances presented by Web 2.0 or other emerging technologies become a context that can prompt ongoing engagement with ethical questions—which continue in the research process beyond initial submission of an ethics application. This continuing engagement with ethical questions supports what has been called “ethical rigour” (Cherry 2010, p.9) in the research process. This paper now turns to illustrate ethical rigour through an account of reflective practice in actual cases of research into learning and teaching with Web 2.0 technologies.

Method

The authors of this paper gained insights into the ethics of doing research into learning and teaching with Web 2.0 through encounters with ethical issues in *Educating the Net Generation* (Kennedy et al, 2009, 2010; Gray et al, 2009), an Australian multi-university multi-year study into learning and teaching with emerging technologies. Over three stages, this broad project documented the use of traditional and Web 2.0 technologies; included eight implementations of teaching with Web 2.0 technologies; and involved broad, national and international dissemination strategies.

The authors used reflection as their research method in this paper, drawing on Boud, Keogh and Walker's (1985, p. 30) model of describing, surfacing and evaluating. The next sections detail this method, describing the authors as research participants, the critical incidents that triggered the authors' reflections as research materials and the stance that the authors took towards these experiences as research procedures.

Participants

The authors were members of a ten-person project team. We were the two members of the project team with particular interest and expertise in academic development (encompassing educational, faculty and instructional development) and we had previously worked together to improve the ethical conduct of the scholarship of teaching and learning, with academics at a university not involved in this project.

Much academic development literature can be read as a form of reflective practice, according to Clegg (2009), who asserts that this helps to fill the gap in reports of studies which try to explain how educational development initiatives arise and are enacted in their particular contexts. In choosing a reflective research method we sought both to develop our own learning as practitioners and also to influence improvements in the practices of others.

The concept of being "earnestly ethical" (Bakardjieva, 2008, slide 3) in the conduct of this project resonated with us especially strongly; Bakardjieva gives a number of examples of this, such as, "accountability to the community and people that you are writing about and with [...]determines what ethical behaviour you pursue". We began to look, mostly in vain, for accounts of the ethical stance taken in other educational technology design-based research. We invited other members of the project team to engage with us in exploring this aspect of the project, but although they were conscientious and professional about the ethical conduct of the project, its ethical dimensions were not a research priority for any of them.

So, in this exploration, we came to be positioned as insider-researchers. Alongside our interactions with the rest of the project team, we pursued our particular academic development interest in studying the ethical aspects of the project.

Materials

The three stages of this project are described below to provide the context for our reflections, but it is not the intention to report on the findings beyond the focus of ethical issues and considerations. Additional details and findings from the study are available elsewhere (Kennedy et al, 2009, 2010).

The first stage of this project used anonymous surveys and confidential interviews and focus groups as methods to gather baseline data about the technology uses and preferences of staff and students across three universities. In the second stage of this project, members of the project team used a research method that was most closely informed by design-based research in educational technology (Reeves, Herrington and Oliver, 2005; Wang and Hannafin, 2005), working individually or in pairs with teaching staff and students at the three universities to implement Web 2.0 technology in teaching and learning in a total of eight subjects in various fields of study. These eight subject case studies involved a range of participants, with teaching staff between 1 and 6 and student numbers between 25 and 900 students. Each implementation involved a particular educational

design for the use of blogs (Sakai, WordPress), wikis (PBwiki), image sharing (Flickr), podcasting (Problm – a custom-built solution) or social bookmarking (Diigo). The third and final stage of the project used anonymous surveys and confidential interviews and focus groups with staff and students participating in stage two, as methods to evaluate the implementations across all eight subjects and it used shared reflection by the project team as a method to formulate recommendations for university teaching and learning.

Each of the three universities involved had different protocols and cultures relating to ethical questions of research into teaching and learning, from little or no requirement for human research ethics clearance for such research through to the same formal process as for any other human research proposal. At the outset of the project, members of the project team (based across three universities) submitted three similar ‘minimal risk’ Human Research Ethics applications, one at each of the three universities. These applications were approved at all three universities. The applications named all project team members as researchers and described the first stage of the project in detail. They left many aspects of the second and third stages unspecified. The project team engaged in lengthy discussions of Web 2.0 related human research ethics issues in the second and third stages of the project in order to amend the human research ethics applications at the three universities; these amendments were subsequently approved by each institution.

Procedure

To develop our own learning about the ethics of research into learning and teaching with Web 2.0 we employed what Schön termed “reciprocal reflection-in-action” and “reflection-on-action” (1987, p.277) through self-reflection (Moon, 2004) and dialogue (Vella, 1994). Learning through dialogue happened iteratively on two levels during this project—both between the co-authors, and in dialogue with our peers in the broader project team. We also employed “critical reflection” in the sense used by Habermas and Van Maanen (quoted in Del Carlo, Hinkhouse and Isbell, 2010), because we wanted to enable others to respond to what we saw as an educational issue with social, moral and political significance. This balance of three types of reflection that we used could also be described as combining three of Brookfield’s four (1995) critically reflective lenses. Initially, the data available for our review and reflection included documentary artefacts generated as part of the project, such as human ethics application versions, minutes of project team meetings, email exchanges and project development materials. In addition we drew upon our own reflexive writings (reflexive meaning “able to think against itself” Cherry (2010, p.15)), namely our private notes and individual journal entries which had been triggered at times by our observation of critical incidents, and in some cases, participation in them (Cunliffe, 2004) throughout the project.

Through reflection-in-action, during the third stage of the project, we determined to distil and translate our ethics related observations into a meaningful format that could be shared not only with other project team members but also with teaching staff more widely. A cohesive analytical framework within which to evaluate and present learnings from the project was offered by the fundamental principles (respect, research merit and integrity, justice, and beneficence) and guiding values (balancing risk with benefits, and informed consent) set out in the national research guidelines (NHMRC, 2007).

Using this framework entailed critical reflection, as we considered the potential inequity and disadvantage that might arise if case study research in this field were not ‘earnestly ethical’. We met approximately weekly over a period of six months, to analyse our data and draft the findings in the format of a “Checklist for Responsible Conduct of Research into Learning and Teaching with Technology”. We took this Checklist back to the whole project team to clarify several points of fact and to ensure that the final version reflected their perceptions and understandings as well as our own. The Checklist was included then among the tools produced by the project (Gray, 2009, pp. 49-50).

Subsequently, prompted by the process of developing and publishing the Checklist itself, we decided to undertake a second cycle of analysis, or reflection-on-action. This second cycle provided us with opportunities to (1) use hindsight to reflect more deeply on the experiences we had encountered during the project; (2) contextualise our reflections in a review of the unfolding educational research literature on this matter, and (3) practice the scholarship of teaching and learning to synthesise our insights and disseminate them in a peer-reviewed paper. We met every few months over a three year period to workshop this activity and exchanged drafts of our writing in between. We re-examined our previously collected data, went back again to individual project team members to fill in gaps in our data, and retested our perceptions and understandings of what had occurred, always using as our criteria the basic human research ethics concepts we reviewed earlier in this paper.

This method has limitations. It does not purport to be a comprehensive overview of the eight subject case studies, nor is it an evaluation of the learning outcomes in those case studies. As documented above, those reports (including the major findings and their implications for practice and policy) are available elsewhere (www.netgen.unimelb.edu.au). Thus the next section of this paper focuses on findings that emerged from the reflective method we have described.

Results and Discussion

Insights into ethical issues in research into learning and teaching with Web 2.0

This section presents our reflections on the research ethics issues we encountered in eight case studies of designing, implementing and evaluating learning and teaching with Web 2.0. In this section we use the theme of informed consent and the principles of beneficence, respect, justice and, research merit and integrity (NHMRC, 2007) as the framework for discussing our insights. It is our experiences and reflections to which we have given primacy in this reporting, so we have chosen to summarise or paraphrase qualitative data about student or staff experiences since there is no material difference in the exact wording of the data. We have selected one issue to focus on in each instance, although we acknowledge that there are further issues of concern which could also have been explored, such as cyberbullying, identity theft, etc. Through this process, at times, issues of human research ethics overlapped with issues of learning design and design-based research; this is consistent with Buchanan and Hvizdak’s (2009) assertion that human research ethics reviewers need to attend to the convergence between research ethics and research methods (and in educational research, teaching methods).

Informed consent: Compulsory membership of third party environments

Informed consent represents one of the fundamental values in human research ethics. Informed consent became an issue for us to consider in Web 2.0 learning and teaching activities where the Web 2.0 environment was not provided by a university-hosted web service, but instead was provided by a third party—such as Twitter, Flickr or Second Life. It seemed to us that, unlike university learning management systems, where the institution can control the online environment and make student welfare a priority, third party environments require student participants to agree to commercial terms and conditions that students cannot negotiate or modify. Moreover, teacher-researchers may require students to sign up to third party environments to contribute to a research project and at the same time, complete learning activities to receive marks or credit.

In four of the eight subject case studies, students were required to sign up to the terms of service of a third party environment. The project team members considered these terms of service in detail. Of particular concern were issues such as intellectual property (Would students be signing over the IP of their photographs?), length of publication (What if the photos get wiped after submission but before grades are allotted?), and restricted ability to react to undesirable comments from non-students (Should the group be private? If it is, won't we lose some of the benefits of Web 2.0 technologies?) The project team approached these questions by carefully examining the terms and conditions, and weighing these against alternate sites and the learning aims and objectives.

There was no guarantee of continuity of online publication for the four case studies in this paper, so there was the possibility that student work might be lost before it was marked. In the face of this risk, the technical expert on the project team backed-up group content off-line at several points during the project. In one example with a class of over 900 students, this solution required a level of technical understanding that was outside the expertise of the teacher-researchers on the research team (or the authors). Since many popular Web 2.0 technologies are in third party environments, this has implications for implementations without equivalent technical support.

In terms of students' informed consent, as a project team we considered the possibility that students may wish to participate in the Web 2.0 learning activity but not the research project. However, we did not consider the possibility that students may choose to participate in the learning activity and the research project, but not the third party environment we specified that they join—perhaps because they could not agree with the terms of service.

Another possibility is that a particular third-party environment proposed for student use may possess attributes that students decline to be involved with on principle. Boycotting online companies is not without precedent. For example, there have been public boycotts of Yahoo! for alleged violations of human rights in China (duihua.org, 2007). It is also possible to imagine students choosing not to engage in specific Web 2.0 environments for reasons of principle; see, for example, the controversy surrounding the morality of the WikiLeaks wiki (Gilson, 2010).

While this action could be analogous to boycotting a particular textbook on the grounds that its author or publisher were objectionable, one would expect alternative textbook resources to be available for student learning. With Web 2.0 environments for learning, it becomes even more important to ensure: (1) that the tool selected is not likely to be objectionable,

and (2) that other, similar tools may be available to provide other, equivalent experiences. This response could be considered a risk-management strategy in terms of planning for the learning activity.

At first the thought of accommodating a student choosing to boycott the third party Web 2.0 environment was daunting. One option is that we could have used the institution's learning management system instead; however, we had acted on advice from our technical experts that the third party environment offered a superior experience for our students. Otherwise, we could have reviewed the learning aims and objectives of the learning activity and constructed an equivalent alternative, although finding off-line equivalence of the educational affordances of the social web is a difficult task. In this context, we would have to be alert to the full implications and provide information of this to students participating in a research project to ensure their informed consent.

Overall, the lesson we took away was that in future we would pursue alternative options during the planning stages, be able to describe these to allow students' fully informed consent, and have a plan of action for student requests for alternate learning activities. Fortunately the number of Web 2.0 services offering competing features is expanding all the time, so it is possible to assign students a functional task, for example to upload a video presentation to the web for peer review, while giving them a choice of several tools with a variety of terms of service (for example, Fitzpatrick, 2009) which they could use to achieve the outcome.

Beneficence: Preventative measures relating to Internet addiction

Beneficence is the concept of balancing the potential harms and the potential benefits of research activity, while also protecting the welfare of research participants (NHMRC, 2007). One notional risk related to participating in Web 2.0 environments is Internet addiction (Byun et al, 2009). In Western countries, medical professionals are yet to reach consensus on Internet addiction. Some argue that it is a stand-alone mental disorder (Young and Nabuco de Abreu, 2011), and others argue that the behaviour points to further, underlying disorders. For example in 2007, the American Medical Association initially supported the inclusion of Internet addiction in the key psychiatric reference text, the "Diagnostic and Statistical Manual of Mental Disorders" (DSM-V), but later withdrew its endorsement (The Economist, 2011). A working group for the current version of DSM-V has foreshadowed the possibility of including "addiction-like behavioural disorders such as 'Internet addiction'" in a future edition, and highlighted the need for more research (dsm5.org).

By contrast, Internet addiction has been gaining a profile in the Asian region for more than two decades (see for example, Cho 1999), leading to nationally funded preventative schemes in South Korea and China (Block, 2008) and an interest in Internet addiction and student experience (for example, Liu 2011).

Against this background, how might we usefully understand Internet addiction? Given the interactive, social aspects of Web 2.0 environments, Internet addiction may manifest in users' developing compulsive attachments to online relationships and activities (Young and Nabuco de Abreu 2011) to the detriment of offline relationships, activities and wellbeing.

In this context, we want to tell the story of the “white spaces” (Cherry, 2010) of potential Internet addiction within the Web 2.0 case studies. Even though work had previously been published in international, peer-reviewed journals—see Chou, Condron & Bellard (2005) for a comprehensive overview of literature from Asian and Western scholars—the potential for Internet addiction was not remotely part of our awareness during implementations, and we considered the potential only in our subsequent critical reflections. As a result, during the implementations, we did not discuss this issue with other project team colleagues, or include the risk and potential mitigating strategies in the human research ethics application. In contrast to the vast amount of literature on Web 2.0 issues such as cyber bullying and the resultant integration of safeguards into online teaching practice, the developing literature on Internet addiction and the implications for teaching, learning and student wellbeing do not appear to have permeated into mainstream Web 2.0 teaching practices or literatures.

The principle of beneficence in research balances the benefit of research activities with the welfare of research participants. Fortunately, no apparent examples of Internet addiction arose in these eight case studies—neither in lecturers’ and tutors’ informal reporting, nor in the log file data that was collected on students’ online behaviour. On reflection, our intention in future implementations would be to refine our practice to clearly consider and plan for potential Internet addiction, to better protect students participating in the research. Our improved practice would involve recognising the potential risks (and yet under-developed knowledge base) relating to Internet addiction; discussing the risks with project team members; collaborating with university partners (such as student counsellors, campus health professionals, and human ethics officers) to plan strategies to mitigate such risks; and implementing and monitoring those strategies.

Specifically, we plan to include the following strategies in future implementations to mitigate Internet addiction.

These include:

- Raising awareness of the potential for Internet addiction: informally with teacher-researchers; and formally with students through project announcements, such as in project Web 2.0 portals and plain language statements. This can be reinforced in face-to-face meetings: such as in on-campus classes or focus groups.
- Helping staff and students to identify the behaviour indicating Internet addiction: Detailing warning signs to look for in oneself and friends, and providing links to online self-tests (if deemed appropriate).
- Directing students to support services: student counsellors, campus health services, and local public services.
- Providing students with a realistic gauge of the potential time involved to complete a learning task: specifically, giving students an upper limit on the time a learning activity should take online, both on a single day and in total across multiple days.
- Providing alternative learning tasks: Planning for, and informing students who might be at risk that they can complete an alternative learning task (or request to withdraw from the Web 2.0 activity if partially completed, and complete an alternative task).
- Communicating clear mechanisms for students to withdraw from the research project

The strategies outlined above would not only provide protection for student welfare, but also enable teacher-researchers and their institutions to fulfil their duty of care towards students.

Finally, our reflections on the potential of Internet addition also extended to staff. While a delicate matter, we acknowledge that it is also our responsibility to be alert to the potential for Internet addition in ourselves and our colleagues, and then if we recognise it, to act accordingly with diplomacy and respect.

Respect: Use of student-created content

Respect is a relatively self-explanatory principle in human research ethics. We are interested in issues of respect in contexts where teaching staff use examples of student-created content when reporting on investigations of the scholarship of teaching and learning (SoTL). We are specifically interested in the notion that “Respect for human beings involves giving due scope, throughout the research process, to the capacity of human beings to make their own decisions.” (NHMRC, 2007, 1.12). In the context of staff reporting, we are interested in students making their own decisions on whether their content will be published as an example in SoTL reporting, in tandem with the issue of reporting with integrity. Our discussion here does not go to issues of reproducing third-party material and its copyright – simply to original student work and its replication by teacher-researchers for research purposes.

Using student examples when reporting SoTL research is not new. However, in the case studies (such as file sharing with Flickr, social bookmarking and wiki writing), we observed novel characteristics of student-created content in Web 2.0. Whereas making a hardcopy of student work might once have involved laborious photographing or time-consuming photocopying away from the classroom, Web 2.0 and digital technologies can allow teaching staff to copy large quantities of potentially rich data with ease. In addition, staff can hypothetically take copies of student work without students’ knowledge or permission. If human research ethics planning, review and approval processes have been thorough, staff will know that they need to follow a recognised, systematic and transparent process for obtaining agreement to re-use student work. In practical terms, this is often easiest to gain by using an ethics “Plain Language Statement” at the beginning of the learning activity involved in the research. This would be true for re-using student generated texts, oral recordings, social media, digital images or video.

Alongside this, we have also observed the genuine excitement that Web 2.0 student-created content aroused in teaching staff. For some, it was their first opportunity to observe students documenting a process that, in the past, had been conducted away from teaching staff and only presented on completion. There was a sense that staff were gaining new confirmation that learning was happening. Naturally, this was something that staff wanted to report to the SoTL community. However, we were prompted to revisit questions such as:

- What is the aim in reporting SoTL investigations?
- How might student-created content be handled and reported with respect?
- What might reporting with integrity and respect look like?

We were reminded that the aim in reporting SoTL (and other research) is to share new knowledge or understanding, and to hold investigations up to public scrutiny (NHMRC, 2007). However, through our involvement with the case studies, and in our observations when reporting the case studies at conferences, we have seen that it may be tempting for staff to include screen grabs of colourful, attractive student-created content. Taken to extreme, we have seen that content can be included in a way that implied reflected kudos on the teaching staff who are reporting. We have observed teachers appropriating student-created content as their own, reporting with the sense of “Look at what my students have done!” We have also observed at times an inclination to select superior examples of student content to show, when a more even handed approach may have resulted in showing a cross-section of standards. And while students may have provided consent for their material to be disseminated, there is the further question of respecting their moral right to be publically acknowledged as the creators of online material. On the one hand, when we go back to the question of what is the aim in SoTL reporting, it also becomes clear that at times, new knowledge or understanding might be best conveyed through an aggregate or summary of student activity (such as time spent logged on, number of comments posted, number of pages created etc) rather through specific examples of content. However, on the other hand, at times specific examples of student-created content may convey a story that aggregates cannot. A key issue in not overstepping students’ right to their work relies on new tools that go beyond “grabbing” student work, and the semantic web (Tiropanis et. al. 2009) might go a long way to helping us with that.

Justice: Reward for co-created content

While justice has a number of implications in human ethics research, in this context we reflected on whether there was “fair distribution of the benefits of participation in the research” (NHMRC, 2007, 1.4d). We reflected specifically on the issues that arose from using Web 2.0 affordances for student co-created content in tools such as wikis.

One incident that triggered our reflection was raised by a student in an evaluation focus group. This student participated in a case study, where students worked in groups to co-create a wiki text. She described the process that her group followed: they initially met; discussed the assignment; and agreed who would take on which tasks and publish that content via the wiki by certain dates. This particular student took on the task of editing the overall text and creating coherence, once other students had published their content. However, she described her irritation when some group members didn’t complete their assigned tasks, and her growing frustration as the assignment deadline drew closer. Finally, she explained that because she took pride in her work, she decided to produce the content that other group members had failed to produce. This meant taking on more than her share of the group work. It is interesting that in this assignment, students were given individual marks for meeting a minimum number of contributions to the wiki, but not for quality; nor did group members share the same mark. So, the student was motivated to take on extra work by her perception of the overall quality of the wiki text, despite receiving no additional marks for this.

This incident prompted us to think about students’ perceptions and experiences of unfair burdens. We acknowledge that some of these issues simply relate to group work in general. The complexities, drawbacks, and benefits of group work

beyond Web 2.0 environments are well documented (for example see Race, 2001; Fowler et. al., 2006), but this student was bringing our attention to key issues of fairness and justice that deserve further scrutiny in the context of Web 2.0 learning and teaching. In particular, we were led to ask ourselves questions in terms of research in SoTL:

- Why use the Web 2.0 tool?
- How will the Web 2.0 tool be used in assessment of student learning?
- How can the assessment be conceptualised and structured for fairness in Web 2.0?

Asking “Why use the Web 2.0 tool?” (Gray et. al. 2010) is a good place to start when considering whether there is a fair distribution of the benefits of participation in the research. In this case study, we knew that wikis were chosen specifically because they allowed students to co-create content. However, we were also prompted to think about the ways that a wiki also provides affordances to support teaching staff to assess student content. Indeed, we asked ourselves, is the teacher also ethically bound to make use of the Web 2.0 tool for assessment information and to make their marking process transparent? For, unlike assignments submitted in hard-copy, wikis can capture metadata regarding students’ activities such as the timing and frequency of publication online. In this case study, metadata relating to the number of times that students logged on and added, or edited text, was collected as a basis for marks. Due to large class numbers (approximately 770 students) and the small percentage of marks attributed to the assignment, a minimum of two contributions were required from each student.

In the future, we would look to using metadata along with other methods to address this student’s concern about inequitable contributions in co-created content. Essentially, her concern goes to the issue of student accountability. While engaging with metadata is one way to address this, we would also want to give students additional ways to account for their contribution to co-created content. We acknowledge that in a blended learning environment, we cannot assume that metadata provides the whole picture of an individual student’s contribution. We know from experience—and from the student’s story in the focus group—that students might meet and work together in person. Then there are tasks that are completed individually, but off-line, which in this case involved researching. Finally, there may be equity issues, for instance where not all students have access to technology such as laptops with wireless Internet access. One way to allow students to account for their contributions, in addition to metadata, is via project documentation such as project break-down charts.

Research merit and integrity: Reporting unfavourable results

Reports on learning and teaching with Web 2.0 tools can sometimes imply that students have a natural preference for learning with such tools (for example, Prensky, 2001). At its most extreme, we experienced this attitude towards Web 2.0 tools as akin to: “Build it and they will come.” This attitude can potentially influence gatekeepers of public fora—newspaper editors, conference committees, journal editors and peer reviewers—creating a climate in which it is challenging to critique Web 2.0 or to report on Web 2.0 case studies with unfavourable outcomes. While one could argue that this challenge is common to all research studies, we have observed a broad tendency to present Web 2.0 technologies in a particularly favourable light. However, within the values of human ethics research, conducting research of merit and integrity includes “disseminating and

communicating results, whether favourable or unfavourable, in ways that permit scrutiny and contribute to public knowledge and understanding” (NHMRC, 2007, 1.3d).

Within the eight case studies we were involved with, two achieved only low student participation in an elective activity, and a number of others collected student perceptions of adverse effects from involvement. The dilemma then, is how to interpret and report with integrity on unfavourable instances. We would argue that interpreting and reporting needs to be done in a way that interrogates the factors leading to the unsuccessful outcomes, and then presents these in a way that contributes to increased public awareness and understanding.

In one particular case study, we engaged with this aim to produce a suitable report. However, one practical challenge that we have found is that a number of journal editors and peer reviewers have been disinclined to publish reports of unsuccessful activities and inclined to dismiss them as the product of inadequate design efforts. For example, several reviewers suggested that, rather than report that staff and students in one subject did not engage with the technology, the authors should “collect and analyse more data” until better engagement could be observed and reported – an impossibility in this case, since use of the technology in this subject was shelved based on the outcomes from this implementation. On one level, journal editors have an interest to maintain the perceived standing of their journal in the field of educational technology, which may be jeopardised by publishing unfavourable results. Indeed, at a personal level, this conflicting interest is also true for academic staff (including ourselves) who need successful publications to advance professionally. This conflict is at odds with the social responsibility or public interest in reporting unfavourable results with integrity (Lindorff, 2010). These factors combine to create a barrier for Web 2.0 SoTL reporting on complex, unfavourable or adverse outcomes. This requires researchers to work extra hard and persist through multiple rejections to contribute to public understanding.

Conclusion

Web 2.0 technologies present novel circumstances in the area of educational research in terms of the features and affordances they present to students, teaching staff, ethics committees and others. With Web 2.0 tools, one cannot assume that prior experience will necessarily assist or equip researchers with the human research ethics implications. It is important to plan research with renewed care so that it adequately addresses ethical issues of informed consent, beneficence, respect, justice, research merit and integrity.

Accounts generated through reflection on actual case studies illustrate some of the ways in which research into learning and teaching with Web 2.0 technologies is enriched and strengthened when researchers are able to engage earnestly with the complexities of human research ethics. Since new Web 2.0 features and affordances are emerging constantly, teacher-researchers may become increasingly innovative in their research designs and therefore must always be mindful of the implications for the ethical conduct of their research.

In this context, human research ethics offer a framework for reflection, planning and action—especially where there is a requirement that teacher-researchers obtain human ethics approval before commencing research activities. This requirement

could be and often is regarded as an unavoidable, administrative hurdle. However, the human ethics application process offers not just protection but also opportunities for reflection on research aims and methods which may extend established research conventions into new areas, given the novelty of the technologies under investigation.

In summary, strengthening the ethics of research into learning and teaching with Web 2.0 offers the potential to:

- Protect student learning and students' rights throughout the investigation process
- Provide a framework to guide academic staff conduct and to also provide them protection
- Respect the intellectual property of teachers, students and other parties in investigations and projects
- Encourage reflective practice among educators and give greater research status to their endeavours in this field
- Provide a professionally reputable and methodologically rigorous evidence base for learning and teaching innovation and improvement across the sector

Indeed, this paper is framed to encourage a shift away from a compliance approach and towards an approach that conceives the human research ethics application process as a series of measures that protect not only students involved in research projects, but also teacher-researchers, educational developers and technologists, university managers and the universities involved in such research projects. In this way, the ethics application itself can be transformed from a bureaucratic hurdle to a stepping stone in the research process, which benefits all involved. For while the ethics application process is primarily intended to protect students involved in research projects, by protecting students, the teacher-researchers and involved related parties are also protected.

The existing ethics approval process in most universities (whether processed in hardcopy or online) is essentially static and “Gutenberg” in nature. In contrast, Web 2.0 features and affordances could allow a much more dynamic and social approach not only for teaching but also for engaging with and documenting human research ethics processes. This conclusion suggests an intriguing area for future research and development. In addition, where the human ethics application processes extend the professional understanding of, and engagement with, human ethical questions, the processes also deepen the foundations for educational research with technological advancements that are yet to come.

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References

- Alexander, B. (2006). Web 2.0: A new wave of innovation for teaching and learning? *EDUCAUSE Review*, 41(2), 32-44.
<http://connect.educause.edu/Library/EDUCAUSE+Review/Web20ANewWaveofInnovation/40615> Accessed 1 March 2010.
- Bakardjieva, M. (2008). Ethics 2.0: Balancing privacy, publicity and prudence. Paper presented at the Virtual Knowledge Studio, Amsterdam, Netherlands. <http://virtualknowledgestudio.nl/events/lecture-by-maria-bakardjieva/> Accessed 1 March 2010.
- Block, J.J. (2008). Issue for DSM-V: Internet Addiction. *American Journal of Psychiatry*, DOI: 10.1176/appi.ajp.2007.07101556 <http://ajp.psychiatryonline.org/cgi/content/full/165/3/306>. Accessed 12 April, 2010.
- Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: Turning Experience into Learning*, London: Kogan Page.
- Brookfield, S. (1995). *Becoming a Critically Reflective Teacher*. San-Francisco: Jossey-Bass.
- Buchanan, E.A. (2009). Internet research ethics: Past, present, and future (pp. 83-108). In R. Burnett, M. Consalvo, & C. Ess (Eds.), *The Handbook of Internet Studies*. Chichester, UK: Wiley-Blackwell.
- Buchanan, E.A., & Hvizdak, E.E. (2009). Online survey tools: Ethical and methodological concerns of human research ethics committees. *Journal of Empirical Research on Human Research Ethics*, 4(2), 37-48.
- Byun, S., Ruffini, C., Mills, J., Douglas, A., Niang, M., Stepchenkova, S., et al. (2009). Internet addiction: Metasynthesis of 1996-2006 quantitative research. *Cyberpsychology & Behavior*, 12(2), 203-207.
- Chang, R.L, Gray, K., Polus, B. & Radloff, A. (2005). Scholarly teaching practice: Ethics issues and responses in research into teaching in tertiary education. In Brew, A. & Asmar, C. (Ed.s), HERDSA Vol. 28. *Higher education in a changing world* (pp. 93-100). Sydney: HERDSA. Available online:
http://conference.herdsa.org.au/2005/pdf/refereed/paper_284.pdf
- Cherry, N. (2010). Doing qualitative research in the white spaces (pp. 9-17). In J. Higgs, N. Cherry, R. Macklin & R. Ajjawi (Eds.), *Researching Practice: A Discourse on Qualitative Methodologies*. Rotterdam: Sense Publishers.
- Cho, C. (1999). *Internet addiction in Taiwan*. National Science Council Project, under Project no. NSC 87-2511-S-009-013-N.
- Chou, C., Condrón, L., & Bellard, J. (2005). A review of the research in Internet addiction. *Educational Psychology Review*. 17(4), 363-388. DOI: 10.1007/s10648-005-8138-1.
- Clegg, S. (2009). Forms of knowing and academic development practice. *Studies in Higher Education*, 34(4), 403-416. DOI:10.1080/03075070902771937.
- Cunliffe, A. (2004). On becoming a critically reflexive practitioner. *Journal of Management Education*, 28(4), 407-426.
- Dalsgaard, C. (2006). Social software: E-learning beyond learning management systems. *European Journal of Open, Distance and E-Learning*, 2. http://www.eurodl.org/materials/contrib/2006/Christian_Dalsgaard.htm Accessed 1 April 2008.
- Del Carlo, D., Hinkhouse, H., & Isbell, L. (2010). Developing a reflective practitioner through the connection between education research and reflective practices. *Journal of Science Education and Technology*, 19(1), 58-68.
- Dohn, N. (2009). Web 2.0: Inherent tensions and evident challenges for education. *International Journal of Computer-Supported Collaborative Learning*, 4, 343-363. DOI: 10.1007/s11412-009-9066-8.
- DSM5.org (2012). Substance-Related Disorders. <http://www.dsm5.org/proposedrevisions/pages/substance-relateddisorders.aspx> Accessed 3 April 2012.
- Duihua.org (2007). Police document sheds additional light on Shi Tao case. <http://www.duihua.org/2007/07/police-document-sheds-additional-light.html> Accessed 12 April 2010.
- The Economist. (2011). Addicted? Really? *Technology Quarterly* (Q1). <http://www.economist.com/18304258> Accessed 3 April 2012.

- Fendler, L. (2011). Web 2.0 and the future of educational research: pedagogical, political and epistemological implications. In D. Trohler & R. Barbu, (Eds.). *Education Systems in Historical, Cultural, and Sociological Perspectives*. Rotterdam: Sense Publishers (pp.124-141) DOI:10.1007/978-94-6091-827-8_9.
- Fitzpatrick, J. (2009). Five best video sharing sites. <http://lifehacker.com/5343601/five-best-video-sharing-sites> Accessed 1 April 2010.
- Fowler, J., Gudmundsson, A., & Whicker, L. (2006). *Group Work: A Guide to Working in Groups*. Brisbane: Australian Academic Press.
- Franklin, T., & van Harmelen, M. (2007). Web 2.0 for Content for Learning and Teaching in Higher Education. JISC Report. <http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf> Accessed 1 April 2008.
- Gilson, D. (2010). "WikiLeaks Gets A Facelift". *Mother Jones* (San Francisco). <http://motherjones.com/mojo/2010/05/wikileaks-assange-returns> Accessed 17 June 2010.
- Gray, K. (2008). Educational technology practitioner-research ethics (pp. 164-169). In M. Quigley (Ed.), *Encyclopedia of Information Ethics and Security*. Idea Group Inc, Hershey, Pennsylvania, USA.
- Gray, K., Kennedy, G., Waycott, J., Dalgarno, B., Bennett, S., Chang, R., et al. (2009). *Educating the Net Generation: A Toolkit of Resources for Educators in Australian Universities*. Australian Learning and Teaching Council. <http://www.netgen.unimelb.edu.au/outcomes/toolkit.html>
- Gray, K., Thompson, C., Sheard, J., Clerehan, R., & Hamilton, M. (2010). Students as Web 2.0 authors: Implications for assessment design and conduct. *Australasian Journal of Educational Technology*, 26(1), 105-122.
- Greenhow, C., Robelia, B., & Hughes, J. (2009). Learning, teaching, and scholarship in a digital age: Web 2.0 and classroom research: What path should we take now? *Educational Researcher*, doi: 10.3102/0013189X09336671.
- Hutchings, P. (2002). Ethics and aspiration in the Scholarship of Teaching and Learning. In P. Hutchings (Ed.), *Ethics of Inquiry: Issues in the Scholarship of Teaching and Learning*. Menola Park: Carnegie Publications.
- Hutchings, P. (2003). Competing goods: Ethical issues in the scholarship of teaching and learning. *CHANGE*. September/October, 27-33.
- Kanuka, H., & Anderson, T. (2007). Ethical issues in qualitative e-learning research. *International Journal of Qualitative Methods*, 6(2), Article 2. http://www.ualberta.ca/~iiqm/backissues/6_2/kanuka.pdf Accessed 21 January 2009.
- Kennedy, G., Dalgarno, B., Bennett, S., Gray K., Waycott, J., Judd, T., et al. (2009). *Educating the Net Generation: A handbook of findings for practice and policy*. <http://www.netgen.unimelb.edu.au/downloads/handbook/Sec6PolicyGuidelines.pdf> Accessed 10 April, 2012.
- Kennedy, G., Judd, T., Dalgarno, B. & Waycott, J. (2010). Beyond Natives and Immigrants: Exploring the Characteristics of Net Generation Students. *Journal of Computer Assisted Learning*, 26, 332-343.
- Lindorff, M. (2010). Ethics, ethical human research and human ethics committees. *Australian Universities Review*, 52(1), 51-59.
- Liu, E. Z. F. (2011). Avoiding Internet addiction when integrating digital games into teaching. *Social Behaviour and Personality*. 39(10), 1325-1336.
- Moon, J. (2004). *A Handbook of Reflective and Experiential Learning*. London: Routledge Farmer.
- Moreno, M., Fost, N., & Chritakis, D. (2008). Research ethics in the MySpace era. *Pediatrics*, 121(1), 157-161.
- Moschini, E. (2008). The Second Life researcher toolkit – An exploration of in-world tools, methods and approaches for researching educational projects in Second Life (pp. 237-245). In *ReLive08: Researching Learning in Virtual Environments Conference, 20-21 November 2008*, Open University, Milton Keynes, UK. http://www.open.ac.uk/relive08/documents/ReLIVE08_conference_proceedings_Lo.pdf#page=237 Accessed 21 January 2009.

- National Health and Medical Research Council (NHMRC)/ Australian Research Council / Australian Vice-Chancellors' Committee. (2007). *National statement on ethical conduct in human research*. Australian Government, Canberra. http://www.nhmrc.gov.au/publications/ethics/2007_humans/contents.htm Accessed 13 August 2010.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1-6.
- Race, P. (2001). *The Lecturers' Toolkit: A Resource for Developing Learning, Teaching and Assessment*. (2nd Ed.) London: RoutledgeFarmer.
- Reeves, T., Herrington, J., & Oliver, R. (2005). Design research: A socially responsible approach to instructional technology research in higher education. *Journal of Computing in Higher Education*, 16(2), 97-116.
- Richardson, W. (2006). *Blogs, Wikis, Podcasts, and Other Powerful Web Tools for Classrooms*. Thousand Oaks, California: Corwin Press.
- Sachs, B. (2010). The exceptional ethics of the investigator-subject relationship. *Journal of Medicine and Philosophy*, doi:10.1093/jmp/jhp055.
- Schön, D.A. (1983). *Educating the Reflective Practitioner*. San Francisco: Jossey-Bass Publishers.
- Tiropanis, T., Davis, H., Millard, D., & Weal, M. (2009). Semantic technologies for learning and teaching in the Web 2.0 era. *Intelligent Systems, IEEE*, 24 (6), 49-53. <http://eprints.soton.ac.uk/268429/1/ieee-is-tiropanis-et-al-2009.pdf> Accessed 11 April, 2012.
- Vavoula, G.N., & Sharples, M. (2008). Challenges in evaluating mobile learning (pp. 296-303). In Traxler, J., Riordan, B., & Dennett, C. (Eds.). *Proceedings of the mLearn 2008 Conference: The Bridge from Text to Context, 7-10 October 2009*. Wolverhampton, UK: University of Wolverhampton, School of Computing and Information Technology. <http://www.scit.wlv.ac.uk/brendan/mLearn2008.pdf> Accessed 21 January 2009.
- Vella, J. (1994). *Learning to Listen, Learning to Teach: The Power of Dialogue in Educating Adults*. San Francisco: Jossey-Bass Publishers.
- Wang, F., & Hannafin, M. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development*, 53(4), 5-23.
- Waycott, J., Gray, K., Clerehan, R., Hamilton, M., Richardson, J., Sheard, J., & Thompson, C. (2010). Implications for academic integrity of using web2.0 for teaching, learning and assessment in higher education. *International Journal for Educational Integrity*, 6(2), 8-18. Available online at: <http://www.ojs.unisa.edu.au/journals/index.php/IJEI/> Accessed 1 December 2010.
- Young, K.S. & Nabuco de Abreu, C. (Eds.). (2011) *Internet Addiction, A Handbook and Guide to Evaluation and Treatment*. Hoboken: John Wiley & Sons, Inc.