

IT's evolving, they're changing, we're listening: Everybody's learning

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This paper describes a case study approach used to identify changes in the millennial student's educational, institutional, social and economic environment and the impacts these had on teaching practice. Reviewing and reflecting on existing teaching practice, decisions were made in the way teaching photography to first year design students could be delivered in a student-centred blended learning environment. A trial was implemented, employing a new approach to teaching, taking into account all aspects of digital technology and the students' propensity for social interaction and engagement with Web 2.0 technologies. We created a platform for delivering the successful elements of an existing curriculum that included the important components of critical and analytical reviews of images. This case study embraced the realms of digital age, at the same time, maintaining student motivation and peer learning in a blended pedagogy. The creation of a virtual learning classroom environment allowed students to manage and construct knowledge that empowered their learning. Reflecting on teaching practice facilitated a paradigm shift resulting in an innovative delivery that has more than met teacher and student expectations. The students have responded to the new methodology with enthusiasm. Their increased participation, contribution to peer learning and high satisfaction, is evidenced through student and teacher feedback surveys. This has encouraged exploration of innovative teaching practices, transferability of this approach to other disciplines and extended possibilities within teaching scholarship. Information technologies (IT) are continually evolving and need to be considered when making changes to teaching practice to improve student learning.

Keywords: web 2.0 technologies, reflection, blended learning, critical analysis

Introduction

This paper describes how two academics in the Faculty of Design worked as a team to identify what changes in their students' educational, institutional and economic environment impacted on their teaching practice. Specifically this paper discusses; how students in our demographic group are embracing a digital world that is dramatically changing the way they absorb information; how their use of social networks has increased expedientially; and how reconsidering the way we teach can produce improved learning outcomes for these students.

Through a cyclic process of reflective practice and action learning inquiry we developed and evaluated an innovative approach to teaching in 'Introduction to Photography', an integral unit in the higher education communication design discipline. In particular we:

- reflected on and reviewed our educational practice;
- accounted for changes in contemporary photographic practice;
- considered our learners' work/life balance and investigated their use of social networks;
- reviewed approaches to teaching with technologies;
- implemented an innovative approach using technology to support the educational experience, while meeting the needs of learners;
- evaluated the teaching and learning experience; and
- shared our experiences with others for transferability to other disciplines and contexts.

This case study explains how decisions were made in the way teaching photography could be delivered in the millennial age, being aware that the students enrolling in higher education come with diverse experiences and expertise, give high priority to social interaction, work and study commitments.

This paper describes the implementation of an innovative delivery framework that facilitates a blended approach to teaching and learning supported by Web 2.0 technologies. Existing successful elements of curriculum design, development and implementation were not compromised. Maintaining student motivation, engagement and peer learning through analysis, critique and feedback were paramount. While the fundamentals of teaching photography had not changed, it necessitated a review in the light of students' take-up of digital point and shoot cameras, rather than the traditional 35mm film camera.

Discussions across the university and at conferences abound on the potential use of these emerging technologies for teaching and learning, social network sites using Web 2.0 technologies. (Kennedy, Judd, Churchward, Gray, & Krause, 2008; Moore, Moore, Fowler, & Tech, 2005; Ramaley & Zia, 2005; Wager, 2005). This study was keen to embed Web 2.0 into the trial and evaluate both the learning and teaching experience.

Design education and teaching fundamental photography

More than ever, design education must prepare students for change. To this end, it must move from being teaching-centered to a learning-centered environment which enables students to experiment and to develop their own potential in and beyond academic programs. Thus, the role of a design educator shifts from that of only knowledge provider to that of a person who inspires and facilitates orientation for a more substantial practice (Poggenpohl & Ahn, 2002 p. 55).

Key elements in teaching this unit, and design education in general, are the roles that peer review and critique play through critical thinking and analysis. As Taylor & McCormack (2006) highlight, 'Design critique, both in the traditional studio based face-to-face and the electronically delivered context, is a key learning and teaching opportunity to construct creative knowledge. An ability to critique design is an essential professional workplace skill that is not readily taught or learned' (Taylor & McCormack, 2006 p.10). Frascara (2007) adds to this in his summation that... 'the aim of design education should be to foster the development of thinking, judging, collecting information, organizing it, managing resources, and producing visual communications that are effective and sensitive to users, contents, and contexts' (Frascara, 2007 p.67).

The implementation of any Web 2.0 technologies needed to foster and enhance these aspects of teaching and learning as 'Creative review and critique in visual communication education is critical to the knowledge construction and learning associated with creative project outcomes' (Taylor & McCormack, 2006 p.1). Parallel to this was the need to communicate and support others, as well as to develop design skills and knowledge of design principles (Conanan & Pinkard, 2001).

Teaching fundamental photography is about being able to "see" and use a camera creatively and to think beyond the square, i.e. recreating the 3d world in 2d space (Robbie & Zeeng, 2008). Students in this subject need to understand the importance of 'the image' and be able to appreciate the contextual relationship of the photographic image. They need to conceptually relate to design communication and develop ideas and skills that can be transferred to design outcomes incorporating skills learned in other areas of their design disciplines.

Being more creative when taking an image enables analysis and critique of their work and the work of their peers. The critiquing process provides an opportunity to learn from others, and to develop critical awareness and self-reflection. Regular qualitative and formative feedback encourages interaction and engagement with image capture and peer supported learning.

Web 2.0 technologies, social networks and millennial students

Web 2.0 technologies are changing how we live, learn and work. The social presence afforded by them embraces social interaction, collaboration, learning through sharing, exchanging ideas and production of knowledge, allowing an integrated life-long learning experience (O'Reilly, 2005). Web 2.0 technologies incorporate social software, a term used in many different contexts. Anderson (2005) describes the concept of educational social software as '... Networked tools that support and encourage individuals to learn together while retaining control over their time, space, presence, activity, identity and relationship' (

Anderson, 2005 p.4). It is the social presence afforded in these technologies that allow students to have a face and voice that is not only social but also effective in a community of inquiry (Rourke, Anderson, Archer, & Garrison, 1999). As Anderson (2005) suggests, it is 'the pivotal role of social presence in not only setting the educational climate but also in supporting discourse and creating the educational experience' (Anderson, 2005 p.4).

Richardson and Swan (2003), in their research on social presence in online learning environments and it's relationship to students' perception of learning and satisfaction with their teacher, found that 'social presence is correlated with student satisfaction, motivation and learning' (Richardson & Swan, 2003 p. 81). It is with this in mind that we have integrated the social aspects of learning in the design, delivery and instruction of this subject using a blended learning model.

'Social software *is* being used for learning, and is quickly moving past the stage of experimentation by innovators and early adopters into large scale implementations' (Leslie & Landon, 2008 p. 23). Our review of the literature has revealed use of Flickr for sharing and critiquing work (Adams, 2008; EDUCAUSE Learning Initiative, 2008; The New Media Consortium & EDUCAUSE Learning Initiative, 2007) but not on the use of Flickr as a private teaching space in an educational setting.

Millennial students are avid users of these technologies for everyday aspects of their life. We believe that it has become essential to understand and embrace the new social technologies and consider if and how they could be applied to teaching and learning. A decision to utilise Web 2.0 technologies required us to rethink how we teach and specifically how photography needs to be taught in the digital age. While our students are almost certainly more capable of negotiating new technologies, transforming the teacher role has been problematic. Trialling a new approach to teaching, in a social medium our students are familiar with, has provided an opportunity to reflect on existing practices and implement new, more relevant activities, that are more in line with the digital age and embrace a pedagogy with boundaries extending beyond the traditional classroom.

McMahon and Pospisil (2005) found in their studies that millennials 'focus on social interaction and 'connectedness' with friends, family and colleagues, preferring group-based approaches to study and social activities. The characteristics attributed typically to millennial students are an information technology mindset and a highly developed skill in multitasking' (McMahon & Pospisil, 2005 p. 421).

Millennials not only value connectedness and interaction, but they are predominantly visual and active learners. In teaching design, the ability to portray visual imagery and encourage active engagement in an online learning environment supports the needs of these students.

Research methodology

This case study, a longitudinal strategy, reviews the impact of using Web 2.0 technologies as a teaching and learning approach in a first year photography unit. The process involves critical reflection and reviewing of existing teaching delivery and practice and surveying of students seeking qualitative and quantitative feedback. An analysis of the information resulted in reconsidering approaches to teaching and the development of learning activities and resources to support the student learning experience. The study provided an opportunity to explore future research opportunities with other universities, transferability to other teaching contexts and a renewed focus on scholarship of teaching leading to conference presentations and writing for publication.

The process of action learning and critical reflection enabled the adoption of new ways of learning and teaching methods. It permitted a reassessment of teaching photography in the digital age to communication design students who in the majority are millennial learners (Boud, Keough, & Walker, 1985; McMahon & Pospisil, 2005; Mezirow, 1997; Schon, 1987). This case study provided an opportunity to modify practice through a basic action research methodology involving:

- Reviewing current practice
- Identifying an aspect
- Imagining a way forward
- Trying it out
- Taking stock of what happens
- Modifying your plan in the light of what happened and continue with the action
- Evaluating and modifying again
- And so on until you are satisfied with that aspect of your work (McNiff & Whitehead, 2002 p.72).

This research methodology renewed and revitalised an enthusiasm for teaching, which in turn transferred to students. Rediscovering new ways of teaching generated a transformational shift in pedagogy that inspired both teacher and learner (Ramaley & Zia, 2005). In the words of Friedman (2004), 'Good teaching is the art of creating a genuine learning context, coaching students to work constructively with knowledge and make it their own' (Friedman, 2004 p.4). The development and design of a more student-centred model, triggered a paradigm shift that encouraged a re-think of teaching methods and an understanding about how students learn (Biggs, 1999) resulting in a higher standard of student participation, engagement and quality of learning outcomes.

Why Web 2.0 technologies for teaching and learning?

Networking, connecting, and community are philosophies driving the use of social software for learning and teaching and are underpinned by the theories of social constructivism and connectivism (Brown, Collins, & Duguid, 1989; Dalsgaard, 2006; Jonassen, 2000; Vygotsky, 1978). Using social software in a social constructivist approach that engages students' in their learning was most appropriate for teaching photography to design students.

Web 2.0 technologies are used primarily for young peoples' social networks. This study felt that adopting some aspects of these social networks, without pervading every aspect of their learning, could have positive learning outcomes. Instrumental to any changes was our continued emphasis on good teaching characteristics, namely, knowledge; organisation; communication; enthusiasm; flexibility; empathy; and respect. It was also important to embrace qualities of good teaching practice i.e. reflection, creativity and risk taking. This approach was designed to meet the expectations of teaching and learning in higher education in the 21st century.

The changes we made to the delivery method supported the students' propensity for connectedness, multi-tasking, interaction and immediacy, as described in studies of millennial students by McMahon & Pospisal (2005). We were also mindful that while millennial students may be more comfortable with technology than in previous generations, they preferred only a moderate amount of IT in their classes (Oblinger & Oblinger, 2005).

Social network sites comprise three main features: individual profiles, groups and commentary. Flickr, had these features along with a visual dynamic that we perceived would engage design students. Each of these features enabled a more active student-centred learning environment, than our previous reliance on more traditional face-to-face classroom teaching.

Implementation

After a period of research and investigation into its functionality, a trial use of Flickr for teaching and learning seemed appropriate for a visual-based unit such as photography. Flickr, was introduced as a private teaching space at the beginning of semester two 2007 as an innovative approach building on the constructivist and experiential methodology already in place. The private space was set up specifically for students in the unit and related learning tasks. Statistics showed the majority of students in this age group use similar technologies as their main social engagement, therefore, incorporating Flickr into their study life could be an effective learning tool (Carr-Gregg, 2007).

From a social constructivist perspective, we believed that the social setting would greatly influence learning and utilising this concept in our teaching would provide a learning environment that promoted collaboration, sharing and co-construction of knowledge.

Flickr was the most visually oriented of all the social networks investigated and provided various facilities for students to analyse and critique work of their own and their peers. It was perceived that the blended learning environment would also appeal to students less confident to display their creativity in class, provide flexibility in terms of time of access, and meet the needs of time-poor, cash-strapped students. Elimination of printing reinforced environmental and sustainable practice by reducing the amount of paper and chemicals used.

The Flickr features highlighted in table (1) supported concepts vital for teaching photography.

Table 1: Teaching approaches supported by Web 2.0 technology, Flickr

Teaching Design/ Photography students	What Flickr Web 2.0 technology provided
strong visual orientation	• sharing of uploaded images • restricting amount of images, eliminating ill-considered image production • tagging images, giving the teachers and students direct access to categories • metadata in the shooting process provides information on image quantity, quality and time of uploading
active learning and student-centredness	• peer learning • critiquing and analysing others and self • interacting between students • taking ownership of discussion forums • posting or adding topics by anyone within the group • communicating privately and publicly
engaging and supporting students	• using social networks • commenting on any photograph by students and teachers • building confidence through online voice for more reticent students • supporting international students with 8 languages • eliminating constant and costly need for developing and printing
flexibility	• accessing teaching space anytime, anywhere • eliminating restrictions on timetabled classes • providing immediate feedback
sense of community	• creating private teaching space • profiling student with name & portrait • providing a sense of identity not anonymity • interacting across whole student cohort • exposing students to a global society

Explicit in the implementation were well-planned teaching sessions, learning activities and clear guidelines required to make the interaction and engagement in tasks successful. Prior to the commencement of the semester, guidelines and instructions were developed for creating accounts in Flickr, as well as weekly learning tasks, criteria for assessment and for critiquing others works.

The blended approach involved a weekly one hour lecture, a two hour studio class, scaffolded weekly practice-based tasks that included individual reflection, and online analysis and critiquing of works submitted by all students enrolled in the subject. Lectures and studios included theoretical applications and practical demonstrations, review of online contributions and modeling of the critiquing process. The learning tasks involved taking photographic images, uploading them to a personal site and then to a communal site for viewing, analyzing and critiquing. These tasks built on the concepts developed in lectures and studios. Throughout the semester a folio of images and commentary was recorded online and the final assessment was the submission of a printed folio of selected works.

The students collaborated in this ubiquitous and free learning environment, enabling the teacher to facilitate, support and encourage shared knowledge building within an environment where students engaged in using tools they regularly use socially.

Evaluation

The introduction of Flickr had very positive results. Evaluation of the outcomes of the 2007 implementation informed the introduction and trial within a subject in the Film and Television discipline in Semester 1, 2008 and a second iteration in Semester 2, 2008.

Throughout the semester anecdotal feedback occurred during class and in online discussions on students likes, dislikes and progress in the unit as well as reflecting on their learning experience. Feedback indicated that students felt that it had improved their learning by seeing more images and viewing a range of comments. Students conveyed that this approach raised their skill level of critiquing and analysing images and supported them in making better use of the cameras tools.

Flickr's excellent, easy, efficient, fast, no problems...yep, this subjects been great, each week, simple tasks, but all working towards a great goal, good direction, not as vague as some of the other subjects. comments are great, good insight mostly. and no cost lifesaver

I think its good uploading and commenting and all that in your own time and at your own pace. Getting comments and writing your own is a great way to improve your own photography and compare it with others.

Online survey

To formalise the feedback, an online survey tool, using Opinio, was designed and distributed via email and the Flickr discussion forum towards the end of the semester. An analysis of surveys conducted in 2007 and 2008 assisted in reviewing and planning for future iterations and delivery into other programs. While we were able to obtain significant quantitative data, it is the qualitative data that has provided the most influential response to the introduction of Flickr as a mechanism for learning and teaching and enough information to warrant continuing this teaching approach.

Table 2 provides a summary of the student demographics.

Table 2: Demographics

2007	2008
46 of 130 students (34%) completed the survey	37 of 135 students
17% male and 83% female	38% male 62% Female
78% 23 years old or less, 18% 24-29 4% 29+	92% 23 years old or less, 8% 24-29
78 % accessed Flickr 3-5 times or more per week	71% accessed Flickr 3-5 times or more per week

The survey included 32 open-ended and likert response questions. The following series of open-ended response questions provided a wealth of feedback and suggestions for continued teaching improvement.

How has your understanding of lighting in relation to photography improved?

How has your understanding of composition in relation to photography improved?

How has your understanding of shutter speed and aperture in relation to photography improved?

What were the best things about using Flickr?

What were the worst things about using Flickr?

Do you have suggestions about features you would like to see in the future?

Do you have any other comments about using Flickr for learning and teaching?

Likert questions on the survey asked for feedback on a rating scale of 'strongly disagree to strongly agree'. Table 3 indicates the responses from agreement to strong agreement reinforcing that the approach adopted is valued by the majority of students surveyed. Examples of comments, as evidenced below, further verify using Flickr as a valuable pedagogical approach to improve student learning to design students in this photography unit.

Discussion

Results of this innovative delivery have more than met teacher and student expectations. In this case study we have learnt the importance of being aware of the teaching and learning environment, listening to what the students are saying, talking about the possibilities with others, and reflecting on and reviewing our own practice to make informed choices that benefit the student, the teacher, and the wider university.

The functions and features of Flickr work in partnership with the teaching aims and learning outcomes. Flickr's ability to display images, apply upload restrictions and image sizes, and enable discussion of relevant issues, enhances the learning and motivation of the students. Using Flickr has allowed us to embrace the digital age to which our students belong, providing increased incentive and motivation for learning.

I love it, it would be impossible to see everyone's work without this site. The only problem is that every time i log in i seem to lose 2 hours of my day looking at all the amazing photos. It's a good challenge to try and provide a meaningful comment on other people's work, you actually have to think about why you like or dislike an image.

Table 3: Survey responses

2007 n=46	2008 n=37	
93%	95%	liked using the Web 2.0 technology I've really found Flickr to be a useful teaching method, as the ability to upload, review and comment on other peoples work allows for quick responses and learning. I find that it actually pushes my creativity further.... using Flickr is about a billion times more effective in that you can go through images at your own pace and receive decent feedback.....
97%	100%	liked getting feedback online I really struggle with photography as a discipline ... the ease of working on an online interface to be extremely beneficial, especially when I receive (very) constructive criticism. learning lots and hope to (one day) take a half decent photo
85%	97%	liked collaborating with peers Its nice to compare and contrast all the photos and styles of the group. I think it has helped me generate ideas so far if I've been stuck... Great to have access to other students work to see the amazing variety and talent..and receive peer comments and suggestions on our own work!
75%	87%	critiquing assisted my learning From other peoples ideas, thoughts and criticism I have been able to consider more in photography than I would've alone ...I can see other students work whenever I want. I think that make a comment other students about their work is good for improving my analysing, then I can look carefully my work. many students advice me my work, such as, "why don't you changing shutter speed for this image?" or "If you use shallow depth of field for this image, its getting better" something like that is really helpful to me
96%	94%	photographic skills have improved We get to look at everyone else's photos to inspire us and critiquing each others work (although difficult at times) is really good for my own development because I then look for those things in my own photos and Ive found Flickr really easy to use....., I'd never been using my camera to the full potential before and the way the subjects been taught has helped me emmensely.
98%	92%	more confident in taking photos Im now able to compose much more dynamic and interesting images. ...I am more likely to experiment with composition in photography. My understanding of depth of field has improved tremendously. I would also play around with angles more now to create interesting angles.
98%	89%	able to use the camera more creatively at the beginning of this class all I did was point and shoot but now I focus, think...rethink, change balances consider all conditions and then maybe shoot...just shoot. There is no such thing as auto any more! ...massive learning curve I went through was much bigger than I'd anticipated. We were taught so much in the 6 months, an essential skill for all designers.
95%	92%	become more critical and analytical its improved my analytical skills when looking at my photos and I think more about composition when I take photos

Yah, Flickr is a good way to share the experience and learn,for me I've learn it much in here .we can see everybody's amazing photos , and each week we have some work to upload,and people will give comment in it that I can improve. That can give me more inspiration to take photos.

Flickr has kept me motivated ...

The key to the unit's success demonstrates many characteristics of excellent learning and teaching practice. These include:

- importance of active, critical reflection on teaching;
- willingness to adapt teaching approaches to meet the needs of millennial students;
- enthusiasm to try something innovative and new that motivates learners;
- creativity in design and delivery for a dynamic learning experience;
- expertise and knowledge of the content and its relation to the wider design discipline;
- constructive alignment of curriculum components;
- respect and empathy for all students;
- modelling appropriate communication skills through provision of clear guidelines, expectations, criteria and regular and timely constructive feedback; and
- frequent review, evaluation and reflection on practice to facilitate improvement.

The opportunity to take risks and be creative has inspired and challenged us to move forward in our teaching program. We have trialled and evaluated the new delivery, modified it further as a result of feedback and new upgrades in the Web 2.0 environment. The reflective process has encouraged us to further investigate the millennial student and the appropriateness of teaching with new technologies.

A final word on use of Web 2.0 in the educational technology landscape

IT is evolving. Web 2.0 technologies, such as Flickr, are changing rapidly and new ones are emerging. New features in existing tools are appearing that improve functionality. Toward the end of the first iteration of using Flickr we discovered that Flickr could be read in one of eight languages. This is beneficial to many of our international students, however more languages would further support other nationalities. We can now import galleries of images from the group Flickr site and embed them into the Blackboard learning management system to highlight student contributions in other ways.

It is important that we review and assess the viability of the tools we use to ensure that education continues to drive our innovations. We know that we must continue to listen to our students and our colleagues and discover new opportunities and possibilities to enhance our teaching. Of foremost importance, is that student learning outcomes are continually enhanced, and the design of learning environments is improved to promote sharing, innovation and knowledge co-construction.

As identified by McMahon & Pospisil (2005), we believe we have addressed the challenge 'to meet the needs of the millennial student by supporting experiences that are immediate in terms of their access and reliability, are flexible enough to cross the boundaries of study, work, and social lives, and provide them with a connected and information rich environment in which to learn' (McMahon & Pospisil, 2005 p. 430).

As teachers we have been inspired and encouraged by the extensive student participation and engagement and the high quality of learning outcomes. The students have responded to the new methodology with enthusiasm. Their increased participation, contribution to peer learning and high satisfaction, evidenced through the surveys mentioned above as well as formal university student and teacher feedback surveys, has continued to encourage continual reflection on practice, further exploration of innovative teaching practices, transferability of this approach to other disciplines and collaborations with photography /design courses at University of Rowan (USA) and potentially with a university in the United Kingdom.

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