ENCOURAGING CREATIVITY WITH ICT IN EDUCATION

Dr Tim Kitchen
Head of Learning Technologies
Strathcona Baptist Girls Grammar School, Melbourne
http://timkitchen.net

Abstract

Is the use of ICT enhancing or stifling creative learning experiences?

Mitch Resnick (a disciple of the Seymour Papert and keynote at the 2008 ACEC Conference) said, 'Success in the future – for individuals, for communities, for companies, for nations as a whole – will be based not on what we know or how much we know, but on our ability to think and act creatively.' According to the world-renowned educationist Sir Ken Robinson, creativity is as important in education as literacy and we should treat it with the same status.

This paper poses the above question in the light of recent research and anecdotal observation from a wide range of experiences as a teacher, researcher, parent, author and presenter in this area.

Policy restricting creativity

Throughout New South Wales this year, as a result of the Federal Government's Education Revolution policy, thousands of Netbooks (small, relatively cheap laptops) have being distributed to teachers and students with an aim to provide each Year 9 to 12 student with their own personal computer by the end of 2012. At face value, this appears to be a wonderful initiative however, in reality this policy decision has effectively restricted the use of ICT to one particular operating system (in this case the new Windows version 7) and a specific set of application software for the secondary education sector throughout NSW (Gedda, 2009).

When I first was shown a Netbook, I was so impressed with their size, cost and potential that I encouraged my school to purchase six as a trial. Without going into too much detail, it appears that they are fine for simple business style operations such as word processing, spread sheeting and Internet access. However, Netbooks do not appear to handle large file manipulation software such as video and still image editing, which is fast becoming two essential illiteracies especially for those who highly value creative communication in the teaching and learning process.

This is one of many examples of policy dictating and restricting choices and leads to the main question being posed in this paper - is the use of ICT enhancing or stifling creative learning experiences?

Another example is found in the interactive whiteboard revolution. Interactive whiteboards (IWBs) are becoming what some say is an essential tool in the modern classroom (especially the primary classroom). They are well established in the UK and are fast becoming the norm in Victorian schools. It is only recently that companies who profit from sales and installation of IWBs are allowing their software to work on opposition company hardware. Prior to this, when you finally decided on a particular board you were restricted to use the software that that company produced.

One criticism of IWBs in the past has been their tendency to reinforce outdated educational mindsets such as teacher-centred classrooms with the teacher being the main focus at the front of the classroom, controlling the learning. This criticism is somewhat counted with technologies such as wireless tablets that now allow the control of the IWB anywhere in the room by anyone.

Another criticism of IWBs has been that there is little they can do that a computer connected to a data projector cannot do. The counter to this argument is found in the wide range of educational software that has been (and continues to be) developed for IWBs. Worldwide networks of teachers (predominately from the primary sector) are regularly communicating with software developers across the world to enhance and develop educational software that helps enhance teaching and learning. Finally software is being used in schools that has been created for education rather than the business world.

Some of Becta's research into the use of IWBs concludes that their effective use incorporates a variety of teaching techniques that support a range of preferred learning styles. They conclude that IWBs can also support visual, auditory and kinaesthetic learning and that the use of this technology can increase learning opportunities (Becta, 2006). However unless the classroom teacher is given sufficient and practical professional development and the hardware is easy to operate and allows for creative learning experiences, the IWB becomes less effective than a normal whiteboard and sits in the classroom unused. This again leads to the main question posed in this paper - is the use of ICT enhancing or stifling creative learning experiences?

Mindless interactions at school

Researchers such as Cordes and Miller (2000) and Oppenheimer (2003) argue that instead of being creative and using ICT to enhance learning opportunities in the classroom, it has been common to see students involved with mindless and passive interactions.

> Creativity and imagination are prerequisites for innovative thinking, which will never be obsolete in the workplace. Yet a heavy diet of ready-made computer images and programed
> toys appears to stunt imaginative thinking. Teachers report that children in our electronic society are becoming alarmingly deficient in generating their own images and ideas (Cordes and Miller, 2000 p.4).

It has been common to see students involved with mindless and passive interactions with ICT at school and for school (eg copy and paste slabs of text from Wikipedia and using assignment shoping websites), while at home they are using highly imaginative and creative networking and gaming skills to communicate and create highly engaging and interactive learning experiences (Cordes and Miller, 2000; Oppenheimer, 2003). The sooner they get the work done for their teachers, the sooner they can get on with the learning experiences they really enjoy with far more advanced hardware and software than their school (or government) provides. It was not long ago that teenagers went to school to use the latest ICT. These days the latest ICT (mobile devices for example) are being locked out of the classrooms for fear of misuse.

The popularity of trends such as assignment shopping means that many students are getting away with this sort of mindless and deceitful activity and labelling it as

learning. This could be seen as part of the fallout from society's shift from the industrial society to the information society and one of the reasons for a push towards the knowledge society. Some educationalists are now arguing that we are ready for another shift to the creative society.

Encouraging a creative society

The 1980s and 90s saw a shift from the industrial society to the information society (Beniger, 1986). Then, as we realised that having easy access to information was not sufficient in itself to bring about meaningful learning experiences, we shifted from the information society to the knowledge society (Drucker, 1994). Mitch Resnick, a disciple of Seymour Papert, argues that a further paradigm shift is required; a shift from a knowledge society to a creative society (Resnick, 2008).

Resnick (2008) says that aiming for a knowledge society alone is not what education should be about.

> *Success in the future – for individuals, for communities, for companies, for nations as a whole – will be based not on what we know or how much we know, but on our ability to think and act creatively. In the 21st century, we are moving towards the Creative Society* (Resnick, 2008, p.12).

Being creative in expressing knowledge should not be exclusively seen in the realm of Arts departments. Being creative in expressing meaning through knowledge and creatively demonstrating learning experiences is an important part of all learning experience in all areas of education and ICT offers countless opportunities for this to occur.

Sir Kenneth Robinson (2006) argues that all education institutions around the world have the same hierarchy of subjects with Maths & Languages at the top and The Arts at the bottom. As a result, creativity in the teaching and learning process is not taken seriously as it is seen as within the realm of The Arts. What law is there that says we need to teach at least 45 minutes of Maths every day? Robinson says that as children grow up we progressively educate them from the waist up with a focus on their heads and slightly to one side on the brain. It appears that the whole purpose of education around the world is to produce university professors. Is this a healthy state of affairs (Robinson, 2006)?

Robinson (2006) goes on to say that the education system as we know it has to change. He says that our only hope for the future is to adopt a new conception of human ecology where we reconstitute our notion of the richness of human capacity. He relates the current education system to human's abuse of valuable natural resources.

> *Our education system has mined our minds in the way that we have strip minded the earth for a particular commodity and for the future it won't service. We need to rethink the fundamental principles on which we are educating our children* (Robinson, 2006).

This is not a new thought, educational researchers have suggested for many years that the best learning experiences for most students are derived when they are creatively engaged in design and invention not just interaction (Papert, 1980; Resnick, 2002). Traditionally, school systems and practices are very slow to make changes. Many teachers today are still teaching in the same style as they were taught.

Dealing with the change process

Change in technologies is occurring at a rapid rate, which in turn increases the pace of change in all aspects of society. Change is a constant phenomenon, which education systems traditionally find hard to deal with. Michael Fullen (1993) suggests that the systems used to train teachers, organise schools, establish educational leadership and the way that education is treated by politicians all result in a system that is very slow to change. He suggests that change cannot be expected to occur along side a conservative system without expecting constant aggravation.

When change is attempted within such a structure it results in '...*defensiveness, superficiality or at best short-lived pockets of success*' (Fullan 1993, p.3). Society expects schools to prepare its young people to deal with change, yet in most cases schools are far from fulfilling this expectation. Fullan (2003) says that effective and lasting change occurs when a collaborative environment is established and appropriate resources are provided. When people see the value in the change they will respond positively.

Being selective and creative with ICT use

As educators, we cannot control the pace of change in society but we can encourage our students to deal with change in a creative and thoughtful manner. Students are usually going to know more about the latest technologies than their teachers. Jukes (2006) describes the current generation of teenagers as living and operating in a '... *multimedia, online, multitask, random access, color graphics, video, audio, visual literacy world*' (Jukes 2006, p.41). He says that this is the first ever generation in human history to have mastered society's tools before the older generations have, '...*it's their native tongue – a language in which they are digitally fluent*' (Jukes 2006, p.11).

It is the responsibility of teachers and parents to encourage young people to be selective and creative in the way they deal with the mountains of data that are at their fingertips. They need to guide, educate and promote the positive aspects of ICT; to encourage the young people in their care to be aware of the pitfalls and help them make good and wise decisions that promote life long learning and positive relationships with local and global communities.

Creative ICT

There have been many great examples of ICT that encourage creativity and invention. *Microworlds*, *Lego MindStorms* and *PicoCricket* are examples of software that encourages invention, expression and creativity as well as teach a range of programming techniques, allowing users to invent there own software. *Adobe Flash* offers a set of tools that enable users to design their own animation products with programming options (if so inclined) via *ActionScript*. Most presentation software such as *Microsoft PowerPoint*, Apple's *Keynote* and *Open Office Presenter* provide simple tools that also allow for the creation of non-linear stories, games and presentations of projects.

One of the most popular communication mediums today is video. Some consider video as the new essential literacy that should be a mandatory part of the modern school curriculum (Goodman, 2003). Thanks to programs like *iMovie* and websites like *YouTube*, the ability for anyone to make a short video production and have it available for the world to view is now very possible and relatively easy. Viewing TV shows, short video clips and movies on demand via the Internet is fast become the norm.

There are a wide range of excellent video resources available on the Internet that help teach almost any key learning concept in almost any key learning area. Educators around the world are seeing the value of video as a teaching tool and are constantly adding to this vast resource. *TeacherTube.com* is a website that enables educators to freely add their video material for the rest of the world to view and use or, if so required, establish a private collection of video resources exclusively for their school or class.

Some schools are seeing the value of these new technologies and are setting up their own virtual television stations for their school community. Most schools have access to video cameras and simple video editing software like *Moviemaker* and *iMovie* and if there is a lack of expertise in this area amongst the teaching staff, there is bound to be a budding Steven Spielberg amongst the student population. Filming short demonstrations in the classroom of important areas of knowledge or key skills then uploading them to *TeacherTube*, *YouTube* or *Vimeo* (a web site that allows for the public or private storage of videos) for wider students access can be a very valuable teaching tool. Having students produce short video productions to demonstrate their knowledge and learning experience can be a very valuable form of assessment and reflection; a tremendously engaging and creative learning experience for all involved.

Some teachers and students are going to quite an advance level of video production. High definition cameras and industry standard editing software like Apple's *Final Cut* are becoming more affordable. Schools are making their own DVDs of special events and some are even setting up their own regular TV news services for their school community run by interested staff and students. Linking student videos to Web 2.0 sites such as vimeo.com and sharing them with the wider school community via a password is a safe and efficient way of sharing video content.

Web 2.0 initiatives

Vimeo.com is just one of a wide range of Web2.0 tools that can be utilised to enhance creativity in the learning and teaching process. Here is a list of other Web2.0 tools that I have been encouraging that staff at my school to use in their teaching:

- Stixy (stixy.com), a real time collaborative note taking
- PicLits (piclits.com), an annotation tool
- Exlora Tree (exploratree.com), online mindmapping
- Mindomo (mindomo.com), also online mindmapping
- Bubble (bubble.us), onlione brainstorming
- Jing (jing.com), a screen capture tool
- Wikispaces (wikispaces.com), personal wiki or blogging tool, great for establishing individual private online digital portfolios.

There are many ways teachers can make use of modern ICTs to facilitate engaging, creative and effective learning environments for their students. The important thing is that they make an effort to break away from the traditional teacher centred approaches that go back to the start of the Industrial Revolution.

Is the use of ICT enhancing or stifling creative learning experiences? The answer to this question is found when you look for the spark of excitement and engagement in the eyes of the students and the teachers who are using ICT to enhance learning opportunities in the classroom.

References

Becta (2006). *The benefits of an interactive whiteboard,* accessed September, 2009, from
<http://schools.becta.org.uk/index.php?section=tl&catcode=ss_tl_use_02&rid= 86>

Beniger, (1986). *The Control Revolution: Technological and Economic Origins of the Information Society*. Cambridge, MA: Harvard University Press. Bruner, J. (1963). *The Process of Education*. Cambridge, MA: Harvard University Press.

Cordes, C., & Miller, E. (2000). *Fool's Gold: A Critical Look at Computers in Childhood*. College Park, MD: Alliance for Childhood.

Gedda, R. (2009). NSW education drops $150M for 267,000 school notebooks. *Computerworld*, accessed September, 2009, from <http:// www.computerworld.com.au/article/297696>

Drucker, P. (1994). *Knowledge Work and Knowledge Society*. Edwin L. Godkin Lecture, John F. Kennedy School of Government, Harvard University, Cambridge, MA

Fullan, M. 1993, Managing Change, *Restructuring Brief, a publication of the North Coast Professional Development Consortium*, accessed 10 September, 2009, from <http://www.smcoe.k12.ca.us/pdc/PDS/restruct5.html>

Fullan, M. 2003, *Change forces with a vengeance*, Falmer Press, London, UK.

Goodman, S. (2003). *Teaching Youth Media, A Critical Guide to Liteacy, Video Production, and Social Change.* Teachers College Press, New York

Jukes, I. 2006, *Understanding Digital Children (DKs), Teaching and Learning in the New Digital Landscape*, The InfoSavvy Group, accessed 10 September, 2009,
<http://www.thecommittedsardine.net/infosavvy/education/handouts/it.pdf >.

Oppenheimer, T. (2003). *The Flickering Mind: Saving Education from the False Promise of Technology*. New York: Random House.

Papert, S. (1980). *Mindstorms: Children, Computers, and Powerful Ideas*. New York: Basic Books.

Resnick, M. (2002). Rethinking Learning in the Digital Age. In G. Kirkman (Ed.), *The Global Information Technology Report: Readiness for the Networked World* (pp. 32- 37). Oxford: Oxford University Press.

Resnick, M. (2008) Computer as Paint Brush: Technology, Play, and the Creative Society, MIT, USA

Robinson, K. (2006) Ken Robinson says schools kill creativity, *TED Ideas worth spreading* , accessed 10 September, 2009,
<http://www.ted.com/talks/ken_robinson_says_schools_kill_creativity.htm>