

Beyond the Pencil on the Page.

How does the integration of emerging technologies influence teachers' and students' motivation and engagement in literacy practices?

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Abstract

Using vignettes from a selected primary classroom, this paper describes preliminary findings from an ongoing study of literacy teaching and learning in classrooms where teachers and students have ready access to various digital technology devices. It identifies ways in which technology has led teachers to question traditional literacy pedagogy, rethink the literacies required to participate in the twenty first century, and to challenge the school computer cultures created by conditions that no longer exist.

In these classes, students produce their own texts using multimodal and multimedia technologies in a context where they collaborate and share with a wide audience, including other classrooms, schools and communities. Access to various technologies enables students to demonstrate their thinking in many forms-visual, verbal, kinetic, auditory and combinations of each. It also involves students in the critical evaluation of texts used in their learning. The ability to share work on computer screens and other devices motivates students to create higher quality products. Teachers and students also gain expanded literacy understandings beyond traditional print based notions of audience, purpose, genre, form, and context. The technologies are change agents, not only 'tools of learning' in literacy pedagogy.

Data from teacher interviews indicate when technology tools are readily available, students' autonomy and self-efficacy increases. There are positive changes in students' motivation and engagement. Specifically, students are motivated to remain on task for long periods, they make choices about their learning, set personal goals and maintain conscious control over their learning processes and strategies.

Digital technologies are changing what is educationally possible.

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Introduction

The theme of this conference *Critical Capital: Teaching & Learning* lends itself to many interpretations. Naturally, because this paper was to be presented at a literacy conference, I went immediately to the particular World English Dictionary provided by my trusted word processing program for definitions. Starting with *critical*, I ignored definitions that involved words like *life threatening*, *critical mass*, *finding fault*, and settled on *absolutely necessary for the success of something*. Moving on, there were at least nine definitions of *capital* and none of these referred specifically to Bourdieu's expanded idea of categories of capital such as economic, social, cultural and later, symbolic capital (Bourdieu, 1986). I disregarded definitions related to *cities and governments*, *class*, *money* and *capital letters* and chose: *the assets of a business that remain after its debts and other liabilities are paid or deducted*. For me then, the theme of conference becomes: What teaching and learning is necessary to ensure that our children leave school with more assets (or in Bourdieu's terms economic, social, cultural and symbolic capital) than liabilities from their school experiences? In other words the mission of education is "to ensure that all students benefit from learning in ways that allow them to participate fully in public, community, and economic life."(New London Group, 1996).

In order to consider what those *assets* or *benefits from learning* may look like today's society of rapidly increasing information and technological advances it is necessary to re examine our concepts of literacy (or literacies) as well as the traditions of teaching and learning in our schools. This is not new. For many years, educators have suggested that what it means to be 'literate' is constantly being negotiated as we engage with changes in technology and the increasing access to information (Alloway & Gilbert, 1997; Gee, 1992; Green, 1997; New London Group, 2000; O'Brien & Bouchereau Bauer, 2005).

While the definition of literacy in the twenty first century is a contested topic among researchers, educators and society in general, it is difficult to deny that changes are rapid and that technology is driving the debate. Compare the definition from *Australia's language: The Australian language and literacy policy* produced 1991,

with the definition from the *New London Group* just five years later and that provided by *Education Queensland* in 2000.

Literacy is:

The ability to read and use information in a range of contexts. It is used to develop knowledge and understanding to achieve personal growth and to function effectively in our society. Literacy also includes the recognition of numbers and basic mathematical signs and symbols within texts. Literacy involves the integration of speaking, listening and critical thinking within reading and writing. (Department of Employment, 1991).

Literacy involves:

the understanding and competent control of representational formats that are becoming increasingly significant in the overall communications environment, such as visual images and their relationship to the written word-- for instance, visual design in desktop publishing or the interface of visual and linguistic meaning in multimedia (New London Group, 1996).

Literacy is:

the flexible and sustainable mastery of a repertoire of practices with texts of traditional and new communication technologies via spoken language, print and multimedia (Education Queensland, 2000).

The inclusion of the words *flexible and sustainable mastery of a repertoire of practices* in the third definition of literacy is underpinned by the assumption that literacy knowledge and skills emerge from the contexts that reflect a community's core values rather than from a decontextualised body of skills. A further assumption in both the second and third definition is that the purpose of literacy studies is the expansion of *literacies* that function in their authentic contexts, not the development of a limited set of skills or rules not bound by context.

The fairly recent term *multiliteracies* which encompasses the need to consider the diverse context-bound meanings of symbols as well as the new multimodal communication technologies that increasingly combine linguistic symbols with visual,

audio, gestural and spatial meaning making symbols appears to be a sensible way to describe meaning making in a changing world.

There are real contrasts between traditional literacy practices that are likely to reproduce existing knowledge, social orders and values, and literacy practices involving the dimensions of critical reflection and questioning that challenge the status quo (Gee, 1992; Lankshear & Knobel, 2003a; Unsworth, 2002). Furthermore, it could be argued that literacy educators have the right and responsibility to influence the selection and adoption of the pedagogy and content involved in newer technologies and literacies integrated into their classrooms so that students can participate in the society of the twenty first century. Therefore, teachers need the skills and pedagogical knowledge to enable them to question traditional literacy pedagogy, rethink the literacies required to participate in the twenty first century, and to challenge the school computer cultures created by conditions that no longer exist. Digital technologies change what is educationally possible.

Despite the current focus on these more complex aspects of literacy, calls for schools to go ‘back to the basics’ of education continue because some consider this will address the problems of so-called falling literacy standards and indeed, of society in general. In the same way as printed texts changed oral traditions, the emergence of digital modes of communication changes our relationship with printed texts. In fact, some researchers argue that digital tools may support students to improve core competencies in reading and writing (Jenkins, 2006). That said, as teachers, we need to continue to question the limited value of rudimentary definitions of literacy and the effects they could have on teachers who are trying to provide relevant, authentic and contemporary literacy experiences for their students.

When we think in terms of assets, these so-called ‘basics’ on their own will provide a very limited and limiting future for our children. The bread and water version of literacy might sustain life, but at what cost? The ‘basics’ may have worked for some people in more predictable employment eras where skills were learnt and used in a life time job. Those days are past. The rate of social and technological change is such that schools run the risk of becoming irrelevant unless they realise that technological advances mean we can and should do things which we were incapable of doing.

However, the technologies are changed so quickly that skills required today may soon be out of date. Indeed as Leu (2000) states, “Change increasingly defines the nature of literacy in an information age” (Leu, 2000) Therefore, the most important skill is to be able to adapt to and learn to use new technologies. There also seems no doubt that contemporary literacy pedagogy should include the development of a functional, meaning-based metalanguage for the critical and cultural facets of the comprehension and production of multimodal texts (Lankshear & Knobel, 2003b). In a world of networked information sources and resources we cannot ignore the changes to the forms and functions of literacy.

We now know that the supply of various technologies alone will not transform the education system. Current research indicates there is a broad spectrum of teachers who range from those who approach the use of technology with missionary zeal to those who proclaim that the technologies are definitely not the business of schools. The provision of a lap-top computer for every teacher/student, an interactive whiteboard for every classroom, a suite of digital cameras, ipods, scanners, printers, wireless access to the internet, computer laboratories and various other new tools and resources does not guarantee that we will move closer to the understanding that different technologies allow us to adopt different pedagogical approaches.

This small study was not intended to generate data from a representative sample of teachers. Instead, the research sought to gather in-depth information from selected teachers who are relatively advanced in their uses of various technologies in their classrooms. I sought out those who were using technology creatively for multiple purposes and who know what can be done with them. These new literacies are very complex involving various combinations of linguistic, visual, interactive, auditory, gestural, and print media provided by the integration of several technologies. I began to document aspects of stories of teachers as they explored and challenged what new literacies might look like in action in their everyday classrooms. The main emphasis was to document the ways in these teachers made available the literacies that are likely to have currency; and how they dealt with the different pedagogical approaches demanded by the introduction of various technologies. In addition, the study sought to examine what differences the use of technology made to the students’ engagement in

learning and their motivation to learn. Data were collected from semi-structured interviews, classroom observations and collection of students' work.

In this paper, first I describe a school setting that illustrates how one teacher with a strong commitment to social justice and equity as well as a passion for information technologies has contributed to an environment where the community and the school work together to share potent and satisfying literacies. Second, I describe some practices undertaken in the classroom and beyond. Finally, I suggest how the presence of particular conditions and common factors influence the successful adoption of pedagogies that make a difference to students' literate lives as they connect with other communities, schools and cultures.

The school I refer to is Orange Grove Primary School in Western Australia. The small school of only 120 students, is in foothills of outer Perth with 85% of students from outside the suburb of Orange Grove. Parents choose to send their children to Orange Grove rather than their local school for a multitude of reasons. Some families live on 'hobby farms', some live in a caravan park and others in low cost housing in various suburbs. Several children attend the school because they have not had success at their local school. According to Wikipedia, Orange Grove was the first school in Western Australia to produce a podcast with its Podkids Australia Show located at <http://www.podkids.com.au/>.

Pat Nottle the school principal has facilitated the development of technology in the school and staff members have made a commitment to conduct action research based on projects that involve extending and integrating technology and literacy in their classrooms. Support in the form of flexible professional learning time has been built into the school budget so that staff can choose how and when they take time to learn about new technology and pedagogy. Pat believes if there are to be changes in pedagogy it is the leader's responsibility to provide structures and support for ongoing change. At Orange Grove this means giving teachers time to learn, in conjunction with the expectation that changes will be implemented and providing succession planning to ensure that expertise is shared in the future. For this paper, I have chosen to focus on one of the teachers, Paul Fuller.

Although we both live and work on Western Australia, I first heard of Paul Fuller, a classroom teacher at Orange Grove, at a national technology in education conference in Sydney last year where he was presenting some of his ideas and I wanted to see what he was doing. Paul is in his fourth year of teaching. Before deciding to do a Graduate Diploma of Teaching, Paul completed a law degree and then worked in administrative positions. He decided on a teaching career because he believed he could make a difference to children's lives and by all accounts, he is doing that. In this study, he kindly agreed to provide some insights into the way he modifies his pedagogy as he strives to empower his students as literate citizens who consume critically, and manage and control available technologies. In this paper, I would like to highlight some of his students' work as well as his pedagogy and modifications to traditional school literacy practices to provide some insights into what he actually does. Although this study is in its early stages three main themes have emerged from the interviews and observations so far.

In order to make a difference Paul:

- Looks for ways to build enthusiasm around learning in areas that some students find boring and difficult;
- Engages the school community in ways that were not possible before the introduction of new technologies; and
- Builds communities of learners that eliminate barriers surrounding the traditional classroom.

Building Enthusiasm

When he first met his new class, not all of Paul's year 4/5 students were enthusiastic writers and readers so he decided to redesign the literacy curriculum and pedagogies to integrate technologies that empower students and extend their expertise while familiarising them with new literate practices. He said he still remembered the impact of taking a video camera to his school practicum when he was at university a couple of years before. At that time, he was amazed at the enthusiasm his students showed. It was enough to get him started on introducing technology to his current class. Supported by a principal with an interest in the power of technology, the school

acquired a wireless internet connection, and the school community with support from the principal, State and Federal grants, and prizes gradually obtained equipment, computers, video and still digital cameras, data projector, interactive whiteboard, iPods, microphones and so on.

Research has identified motivation as fundamental to learning because it activates behavioural choices, emphasising the role of expected outcomes in determining whether students choose to engage in learning. Paul knew the equipment on its own was not enough to sustain children's motivation and much more was needed. New literacies almost all involve social skills developed through collaboration and networking and this involves helping students to work collaboratively to solve problems. To this end, all staff have attended Tribes© training. In Paul's class he implements many of the strategies to help develop a community of learners and to promote respect, tolerance and acceptance among the students.

There are at least two major social elements that directly affect the motivation to learn. The first is the human need to be accepted as a member of a group, a view supported by a number of researchers, (Deci & Ryan, 1992; Johnson, Johnson, & Stanne, 2000) and the second is the role of emotion and feelings as a motivational construct. Using cooperative learning structures, Paul strives to assist all students to be accepted members of the class social group, and provides an environment which promotes trust and group cohesion. In this environment, students are likely to be motivated to learn.

Paul considers that his students are more likely to become cognitively engaged in literacy learning when they believe they are capable and when they are motivated to learn because they see that learning has intrinsic value. Similarly, researchers have found engagement and motivation are closely linked (Guthrie & Wigfield, 2000). Although student engagement cannot be guaranteed, research based on the extensive observations of conditions in which successful literacy learners operate indicates that engagement is dependent on the presence of particular conditions. Children engage in literacy learning when they: are immersed in a literate environment; see many authentic and purposeful demonstrations of literate acts; expect to succeed and significant others expect them to succeed; share the responsibility for learning; use

their knowledge and skills for purposes that they see are relevant and clear; approximate literate acts; and receive responses that are not threatening or humiliating (Cambourne, 1988).

It was important to Paul to create opportunities for students to develop and use their literacies in meaningful contexts. He also wanted to promote the idea of a learning community where everyone is a teacher and a learner. The introduction of new media technologies provided powerful ways of representing and manipulating knowledge and enabled students to share their expertise. When new devices or new software were introduced Paul often stood back and watched as students who were familiar with the materials demonstrated, problem-solved and shared. Others experimented with and manipulated the materials. Paul took on the role of a 'just in time' coach who provided guidance when it was needed. In Paul's classroom the students are cognitively engaged as they control their application of various technologies to gather, analyse and report data and make connections.

Engaging the School Community

One of Paul's earliest endeavours was the production of podcasts to communicate children's learning and school news to the community. In Paul's words:

“The introduction of podcasts has had a very powerful effect on these children. They are now taking greater pride in the work they do in school and they actually volunteer to do a lot of writing at home to make sure they prepare for their podcasts. The students are really eager to share new podcasts that have been put online. Not only are they writing but they are integrating a range of technologies and writing for audiences across the world” (Interview, March, 2007).

Paul concentrates mainly on audio modes for podcasts “because you get value for time spent”. Students select the genre and content for their writing, write their drafts about the latest learning and then record their presentation using Garage Band. They also select the music to introduce segments, provide smooth segues and a conclusion to items. The podcasts are all available online.

In the past, parents had to rely on the limited information their children give them about their life at school. Typically, the frustrating conversation went something like this in many households:

“What did you learn at school today?”

“Nothing.”

“You must have learnt something.”

“Nup.”

As Paul notes:

“Now the parents of our students are able to go onto the Internet and either listen to the podcasts from within their Web browser or download them to their computer and then onto their iPods. For those parents who do not have Internet access, students burn copies to a CD, which they can listen to on their home audio systems. Alternatively, students take home the iPod players”(Interview June, 2007).

When I asked Paul if he was anxious about expensive equipment (digital cameras, iPods and laptop computers) being taken home to be used by students his response was, “Well Glenda, I just can’t see the point of leaving them in cupboards until they become obsolete [a notion which is supported by the principal]. I have shown the kids how to care for the equipment now I have to trust them”(Interview March, 2007).

Paul’s class recently summarised aspects of their learning in a news broadcast recorded as an audio-visual podcast which is still available on the school website. It is obvious from their presentation that the students have analysed the function of television news and critically analysed, audio, visual and gestural aspects of news presenters and news content. However, Paul has reservations about the amount of additional time it takes to video, edit and produce audio-visual podcasts at the moment.

Albert the Blogging Bear has been another great success. Albert lives in the Year 4/5 classroom and visits children’s homes. The children use a digital camera from school to take photographs of him enjoying time with their families. They write their diary notes and then bring them to school ready to be typed and downloaded to Albert’s blog. Albert has his own email address too. He receives emails from all over the world. The children help Albert reply to his emails. Sometimes they type and sometimes they handwrite and scan their letters in. This simple variation on a ‘literacy

bear' has seen a huge interest from families and students. Students have learnt about the need to present their writing without errors because they never know who may be reading it. They have learnt about the composition and conventions of photographs and often make suggestions about light, shot selection and so on. Parents have joined in the adventures too. Students are now adept at downloading and uploading photographs and text although they always have to "check with Mr Fuller".

Eliminating Barriers

Recently the students undertook an investigation into the Solar System. The study began with a community circle where students were encouraged to share one thing they already knew about the Solar System. They created KWL charts and began to bring in resources from home. Paul arranged for a Spacedome to be set up in the school library. A Spacedome is an inflatable planetarium operated by Scitech staff. It has multimedia shows that combine a special stellar projector with computer generated images and animations of the universe. Students worked with partners to consult Wikipedia for definitions of space terms and then designed a 'guess the word game', which they recorded as a podcast so they could play the game with their families at home.

Working in small groups the students began to build mind maps to record their increasing knowledge about the solar system for a podcast segment. Paul and the students in the class found and viewed Youtube videos about the moon landing and moon phases. Throughout the unit animated discussions took place as students critically analysed the merits of space exploration and tried to decide whether money could/should be spent in different ways.

The students research and development and launching of rockets provided some interesting results. They investigated moon phases, day and night and the properties of planets in our Solar System. Paul organized a family telescope night. There were two telescopes and laptop computers nearby displaying relevant websites to help students gain more understanding about the planets they could see through the telescopes. Parents and students shared their knowledge on this very exciting (and clear) evening.

I was amazed at the way these students then negotiated their way through a program to create their own viable planet. Appropriately and creatively applying their new knowledge of planets and sustainable conditions, they excitedly designed their own planet, using the software to test options about oxygen, carbon dioxide, oceans, population, land masses, temperature, rainfall and so on. This project is not finished yet, but when I left, students were discussing ways of presenting the information in a podcast and deciding whether to focus on audio, audio with still photos or audio and video footage. They already know how to access information, how to analyse sites, record data appropriately and present it in authentic contexts. Remember, these students are nine or ten years old.

Paul helps his students to acquire contemporary literacy practices. He has already made a sustainable difference to his students and the school community by removing boundaries. There have been visits from the state premier and a federal minister as well as other dignitaries. The students have planned and conducted interviews, recording them as podcasts. They have seen for themselves the power of literacies and technologies, which have currency in the community. His students are autonomous learners who have already developed a sense of belonging to world community. They already have durable competencies that will serve them well.

Paul believes that adults look at technology as a tool but

“kids look at technology as the foundation or the basics. They need to know how to use the tools, and how to learn to teach themselves how to use tools - how to make tools do what you want to do. We all know the tools are changing so we need to teach the kids how to teach themselves. It’s not good enough to teach them how to use some software program or some new technology tool. That’s not enough. We all have to have a go and help each other to learn” (Interview June, 2007).

To end, I will go back to the beginning. I began by defining my version of the meaning of the theme of this conference *Critical Capital*. I decided to describe a few aspects of teaching and learning that I believe will ensure that all students leave school with more assets than liabilities. This is small sample from a study that has only just begun. It is exciting and challenging but I believe it is worth seeing how assets can grow. In this class, students produce their own texts using multimodal and

multimedia technologies in a context where they collaborate and share with a wide audience, including other classrooms, schools and communities. Access to various technologies enables students to demonstrate their thinking in many forms-visual, verbal, kinetic, auditory and combinations of each. It also involves students in the critical evaluation of texts used in their learning. The ability to share work on computer screens and other devices motivates students to create higher quality products. Teachers and students also gain expanded literacy understandings beyond traditional print based notions of audience, purpose, genre, form, and context. The technologies are change agents, not only ‘tools of learning’ in literacy pedagogy. They allow us to move far beyond the pencil on the page.

A final comment from Paul:

“You know, sometimes you sort of feel guilty because the kids are having so much fun as they learn. I love watching the way they help each other out. Sometimes I think they don’t need me here at all” (Interview, June, 2007).

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