LEARNING DESIGN AND INQUIRY
IN AUSTRALIAN HISTORY CLASSROOMS

by **Kay Carroll**

Australian Catholic University

Sydney, Australia

Kay.Carroll @ acu.edu.au

Abstract

Global and digital connectivity transform Australian classrooms by creating rich environments for inquiry learning. Developing inquiry learning in this Information Communication Technology (ICT) context is an Australian educational goal. Recently the Australian Curriculum reform and the Digital Education Revolution has become a catalyst for teachers to overcome the ubiquitous disconnect between traditional and digital pedagogies and reconceptualise practice and curricula. The National vision for ICT in School Education (2008) creates opportunities and imperatives for transformative pedagogies to sync with key learning areas and raises questions about how ICT pedagogical disconnect may be overcome. This paper reports findings from multi-site case studies which focus on the bridging the pedagogical disconnect by investigating the ICT experiences and pedagogy of History teachers in K-12 Catholic schools.

Keywords: ICT, IT, pedagogy, history, inquiry, teaching and learning design.

Introduction

Integral to inquiry learning design is the teacher's pedagogical perspective. This perspective comprises teachers' knowledge, practices and understanding. The pedagogical perspective is a dynamic and collective phenomenon that creates optimal learning environments for open-ended, authentic, collaborative, and inquiry-based learning to occur (Niederhauser & Stoddart, 2001; Yelland, Cope & Kalantzis, 2006; Kalantzis & Cope, 2004). Presently traditional forms of teacher pedagogy are challenged by the global connectivity and new technologies to become more innovative and creative (DER strategic Plan, 2008; Webb, 2005; Yelland et al., 2006). Classroom teachers within Australia need to align pedagogical perspectives to respond to students' diversity and develop their adaptability, creativity and critical capacities. The National Educational Goals for Young Australians (2008) identify global integration and migration, accelerated technology and complex social and environmental challenges as a catalyst for students to engage with problem-solving and become socially, technologically and culturally literate. Technological literacy may be

defined as "the ability of individuals to use ICT appropriately to access, manage and evaluate information, develop new understandings, and communicate with others in order to participate fully in society" (MCEETYA, 2006). This construct of technological literacy informs the National Statements of Learning for ICT that describe the skills, understandings and capacities that all young Australians should have to engage with ICT across the curriculum.

Engaging with government priorities has catapulted Australian schools to the frontline of the Digital Education Revolution with the mass mobilisation of laptops and Interactive Whiteboards. Sizeable investment in ICT software, connectivity and hardware has created an imperative for teachers to use Web 2.0 technologies. Prensky (2001; 2010) suggests that in such a world inhabited by digital natives that teachers need to be involved in partnering pedagogies that promote questioning, thinking and effective learning.

Impacting nationally on this ICT rich context is the emergent Australian Curriculum (2008-2011). The Australian Curriculum is the manifestation of federalism and neo-liberal rationalisation. It is currently mandated by a statutory act of the Labor Government and is controlled by Commonwealth funding to independent and non-government schools. The Australian Curriculum is re-defining the key learning areas, stages, knowledge and skills for Australian children and has re-cast the core curricula to comprise English, Mathematics, Science and History from Kindergarten to Year 12 (K-12). Curriculum framing and shaping papers mandate that national schooling outcomes are to be delivered and assessed in specific curriculum areas. The Australian Curriculum dis-tangles traditional concepts of integrated studies particularly in the Social Sciences and creating specific focus on History as a unique discipline within the Key Learning Area of Human Society and its Environment (HSIE).

The Australian Curriculum, Assessment and Reporting Authority (ACARA) identifies History as an "essential characteristic of any civilised society" and considers this a critical field of knowledge that teaches students about the past, forms a narrative about national identity and informs about the present globalised world (Macintyre, 2008, p.5). The teaching of History will be systematically and sequentially introduced from K-12 (Macintyre, 2008, p.5) creating a fundamental need to establish and sustain History pedagogy within the digital age.

Research about learning design in History is limited (Taylor & Young 2004). According to a summary of ICT usage in the British National Curriculum subjects there is limited evidence of ICT teaching within History primary classes and some evidence that ICT supports students' problem-solving and decision-making skills in secondary History contexts

(Cox & Abbott, 2004). Similar studies by the Office for Standards in Education (Ofsted, 2002) had reported a wide variance in the pedagogy and efficacy of secondary History teachers using ICT. The study indicates that History teachers generally do not use ICT as much as other teachers of other subjects but in classrooms where ICT and History are integrated the teaching is of high quality. Australian studies by Taylor & Young (2004) recommend that students in History classes should use ICT to support high-order thinking. This research reports on these questions identified in the literature about how new technologies demand varied modalities of teaching and learning particularly in the core curriculum domain of History within the context of National Goals for Young Australians and the National Curriculum (Luce-Kapler, 2007; Robyler & Knezek, 2003; Strudler, 2003; Thompson, 2005).

Theoretical basis

This research is informed by the work of Taylor & Young (2004) indicating that ICT could be used to support higher order critical thinking in History. Critical thinking in History is conceptualised as historical thinking and understanding (Sexias, 2004; Taylor & Young, 2004). It involves understanding and manipulating sources to know what is historically significant; what is evidence and how to find it and present this; how the past changes and how it is does not; how human agency causes events; the cultural, social and intellectual perspectives that history includes; how to develop historical empathy and reasoning and how to contest alternative accounts of the past. These components of historical thinking inform the research design.

A further theoretical construct about the "Context for Learning and ICT" (MCEETYA, 2006) was used to underpin the project. Identified in the theoretical construct is the connection between ICT and the processes of inquiry and research where students need to locate, organise and evaluate sources critically. Inquiry is a humanistic not a technical imperative which is critical to the operationalisation of this construct. Transformative learning occurs when inquiries lead to the creation of new texts and understanding and a process that more contemporary language would assert as mashing and re-mixing to generate knowledge. Creation is a higher order cognitive process that demands understanding, analysis, evaluation and synthesis to occur in a seamless and innovative moment; it is defined as a process that uses imagination, uses precise skills with a purpose to fashion and craft new ideas, requires deliberate and methodological paths to produce a tangible product and involves an original outcome (National Advisory Committee on Creative and Cultural Education, 1999, p.29).

Communication is the mode for this new meaning to be shared and re-generated by others and allows for cultural, knowledge and cognitive exchange. These cognitive and affective processes are guided and operationalised by one's ability to connect with, understand the ethical implications of sharing in the knowledge community and manipulate the technology. All these elements comprise a synchronistic construct, ICT pedagogy cannot be defined as a technical skill but involves high order cognitive, humanistic, ethical, and cultural processes to occur simultaneously.

The methodology

Multi-site case study methodology informed by the work of Yin (2008) was used to explore context dependent variables within four schools in Sydney. Anecdotal evidence that ICT pedagogy was emerging at these sites was the basis for selection. The two primary and two secondary schools provided proximity to the ICT teaching experiences and enabled pedagogical perspectives to be explored in-situ. This research design contested that there was not one single reality or pedagogical perspective, but multiple realities created through teacher's interactions with their classes. This research design aimed to understand the context, experiences and pedagogical perspectives of the different teachers.

The multiple-site case study design comprised the following research objectives:

1. Identify and describe the experiences and perceptions of teachers using ICT learning design in their History classrooms.
2. Define how historical literacy is supported by ICT practices.
3. Understand how ICT practices may change History teaching modalities.
4. Identify and recommend areas of professional development that are required by History teachers for sustainable and effective ICT practices in their classrooms.

Methods

Four metropolitan school sites were selected to participate in the study based on their geographical similarity and capacity to integrate ICT. Each site was framed by relatively similar socio-economic, cultural and geographical contexts, yet had explored ICT adaptations, changes, in terms of infra-structure and pedagogy in different ways. The school sites were characterised by their close proximity to the city and transport links, and their demographic compositions that included a high proportion of students from Non English Speaking Backgrounds. The following diagram identifies central features of each site.
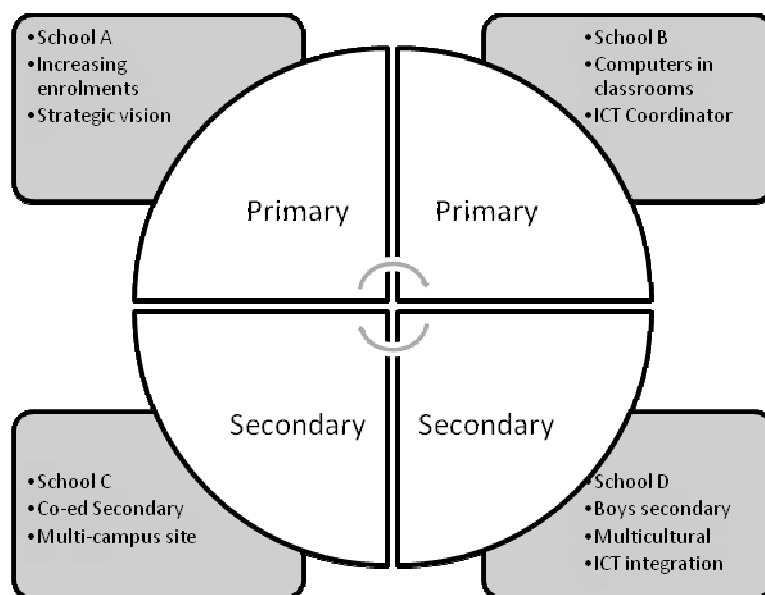
Figure 1: Features of case study schools

Each school voluntarily participated in the study and created opportunities for interviews, site observations and document analyses. Document content analysis was undertaken of school polices, reports, websites; observations were recorded in the field using notes and audio recordings and interviews were taped and transcribed with a range of participants. These interviews used a semi-structured interview schedule. In total eight participants were interviewed at their respective schools for a period of 30 minutes up to two hours. Participants were teachers or executive staff who varied in terms of their expertise, experience, perspective and pedagogical position with using ICT in History. Data from the document analysis and interview transcripts were coded (Strauss & Corbin, 1994) to reveal the main themes and produce findings. The following table uses pseudonyms to introduce and briefly describe the participants and their experience or level of responsibility from each site.

Table 1: Case Study Participants.

School	Position: Teacher	Position: Teacher	Position: Coordinator/Assistant principal
Primary School A	Samantha Stage 1 Teacher	Julie Stage 3 Teacher	Dean Assistant Principal
Primary School B			Mary ICT Coordinator

Secondary School C	Karina Year 10-12 History Teacher	Jeremy Year 7-9 History Teacher	Ian History Coordinator
Secondary School D	Tracy Year 7-12 History Teacher		

Results

School A

Dean is the Assistant Principal at Primary School A, where the student population is steadily increasing and a strategic executive vision about the ICT exists. This ICT vision has introduced Interactive Whiteboards in different classes from Stages 1 to 3 and there are high levels of funding devoted to this priority from the school's budget. The interactive whiteboards are supported in an ongoing manner with relatively high levels of Professional Development which involved contact and training time from Diocese internal and external commercial consultants. Dean has broad experiences of local Australian and international schools in Britain. He is very passionate about ICT and the need to really shift the teaching.

He has three key issues that he is driving as part of the executive team.

1. developing teachers' confidence in using;
2. providing maintenance and delivering technical sustainability;
3. ensuring funding to deliver a suitable level of ICT resourcing.

Julie is similarly enthusiastic and encouraging of ICT, and is captivated with Interactive Whiteboards as a pedagogical tool for her Stage 3 class. She believes the Interactive Whiteboards have created a dynamic pedagogical platform for her to extend, enliven and fluidly re-mix her teaching practice by engaging and affirming students' learning. Julie recognises the instantaneous and authentic interaction and feedback that ICT pedagogy offers. She acknowledges the value of ICT in school as it enables students to understand, learn and communicate in real life socio-cultural contexts and develop critical literacy and source analysis skills.

Samantha is an experienced teacher of Stage 1 who was initially anxious about ICT and Interactive Whiteboards. During the study she experiences a shift in her pedagogical perspective and sees how ICT increasingly benefits her students and enables inquiry learning in History units. According to Samantha;

> Now I have the smart board I cannot live without this. It is so useful. It has changed my
> teaching. I have always used computers but this is so different and so rich. I think the smart

> board is really opened up Human Society and Its Environment subjects: I have taught this unit
> for about 4 years and this has made this time much more exciting and has allowed for
> different levels of understanding. It crosses over so many boundaries for learning. I am
> positively thrilled about this!

Samantha is out there using digital cameras on walks looking at the natural and built environment or site study. She is getting students to record and post what they see and annotate this. This is changing and enriching the experiential site study because of knowledge transformation where students are in a position to collaborate, communicate and create their knowledge.

School B

Mary is an experienced teacher in School B, a primary Catholic school in the inner west of Sydney where due to the completion of the building program and possibly the focus on computers there is an increase in enrolments. In Mary's school there are computers in each class and more recently e-beams or Interactive Whiteboards in the classes. At Mary's school every teacher has had the opportunity to configure the room to incorporate the ICT according to their teaching style and pedagogy. Classrooms observed in the upper primary Stage 3 have computers housed in custom-made desks so that students can see their screens, their teacher and their peers.

Mary has been leading this as the teacher librarian and now the ICT coordinator since the 1990s. When she first came 10 years ago there was one computer, and that was in the office. Her training as a librarian enabled her to gain confidence and then the Principal decided to focus on IT and set up computers for administration and student assessment. A domain name was established with a server and a Microsoft network. Yet according to Mary "it was an absolute failure, it could not cope with everyone being logged on."

Observations conducted at School B show that teachers are competent and confident with ICT for their own purposes, with Mary encouraging and facilitating the staff to see ICT as the pedagogical tool or strategy that is incorporated into their teaching. For example, In Stage 3 History (which is taught through the key learning area of Human Society and Its Environment) there has been a focus on inquiry learning using inspiration mind mapping, and digital movies. The focus is on the History content as opposed to developing technical ICT skills making ICT integral to knowledge transformation but not the learning goal. The innovative ICT rich pedagogical model Mary has explored "is very collaborative and we team

teach". Yet despite the work with teachers and the ICT team, and the regular newsletters, Mary feels somewhat isolated in her role with a great deal of accountability. She notes that as technology has become more reliable the teacher grief (when things went wrong) has shifted and there is new interest in all this, yet still vision and sustainable systems are needed.

School C

Ian is the Coordinator of Human Society and Its Environment in a large secondary school that is divided across two campuses with the junior school located separately to the seniors. Ian likes to model best practice in ICT and uses 'Promethean' boards to initiate joint discussions in the classroom and scaffold knowledge and understanding. Ian notes that students are more engaged in learning and that ICT aids conceptual knowledge and critical source analysis skills.

Like staff from School A, Ian acknowledges that teachers need to be able to initiate the learning with ICT but more professional development is needed and desired by staff.

> When you are teaching year 7 or 8 it is hard to experiment with you ICT ideas because sometimes as a younger teacher you are establishing yourself. It is a false assumption sometimes that younger teachers are more ICT focused. Sometimes younger teachers are not prepared to shift their pedagogy from teacher control whereas more experienced teachers have greater flexibility and opportunities to explore new ideas particularly with ICT.

Jeremy is an early career teacher at School C who has been teaching less than five years. He is a 'Gen Y' who has shifted campus and has come back from an ICT rich integrated vibrant classroom to the more traditional quiet, static, and teacher-directed room. His retrograde adaptation back to the old, traditional teacher centric pedagogy has been difficult, painful and is a constant source of frustration. He has moved from engaging student-centred pedagogy to the bus mode of delivery with every student learning at the same pace and in the same mode regardless of their starting point or desired destination. The sense of loss and change in pedagogical practice is evident;

> Last year when I had Geography I could bring up maps. You could adapt the material to the students, depending on what they are doing. It is a lot clearer too. You can use protractor and rulers and it makes it easier for students to go back over. The students all had the same map and protractor and could move it themselves. The students are encouraged to do this on the board. They find it a novelty, but they learn. I actually did this with year 10 this year. We

> drew this up on the board. I booked a smart board for those classes and was able to do this for
> year 10. Things are different now on this campus.

Jeremy's reversion to old forms of didactic pedagogy is a difficult transition, as it undermines his pedagogic perspective about teaching which comprises inquiry and evidence based practices.

Although on the same campus as Jeremy, Karina's opportunities and experience of ICT at School C pedagogy are different. She is a confident senior History teacher who is savvy with ICT and uses ICT constantly in all classes from year 10 to year 12 History Extension. She uses ICT to connect students to good resources at the point of need and also to improve assessment by live linking to the New South Wales Board of Studies web-site. An example of her practice is creating an ecological footprint in Social Sciences using ICT. Yet Karina has issues around the filtering of sites and usage in History;

> For History I have teach weaponry in WWI (World War One) for Year 12 Modern (History)
> and I can't it is blocked even for Commerce or Work Studies you have to look up costs of cars
> and you are locked out of commercial site. And also because things will work under a staff
> log on and then students cannot access it.

Karina's frustration with security access and issues around ethics and censorship is evident. There are constraints imposed on the learning and teaching due to assumptions and policies around what sites and usage are appropriate for secondary students. These assumptions occur at a systematic or school executive level and impact on the learning experiences. Karina sees such controls as detrimental to learning as authentic contexts for students to engage with are locked away. The policies about censorship exclude students from the learning and block sites that are easily accessible in their homes and the broader society. The disruption to learning creates distractions and leads to additional teacher work in creating simulations of real life texts. This also impacts on teacher pedagogical perspectives by reducing the focus on inquiry learning

School D

Tracy is a highly experienced History teacher working in an all boys' secondary Catholic school that has whole school integration ICT but where;

the challenge is you have an inner city school, boys who are basically disengaged anyway, and we have 80 minute lessons at the school and History it is a compulsory subject and it suffers from this idea that compulsory subjects are not enjoyable.....

In School D, access and support for ICT pedagogy is created through teacher-directed needs and choices about inquiry based practice. The technology provides a platform for critical engagement with primary sources from the past, opportunities for inductive analysis, a mode for constructivist creation and an experience of authentic and socially situated practice, that is sustainable and transformative to individual student's needs.

Discussion

The results of the case studies are analysed using the theoretical construct of MCEETYA Learning Statements (2006) about the multi-modal dimensions of ICT pedagogy.
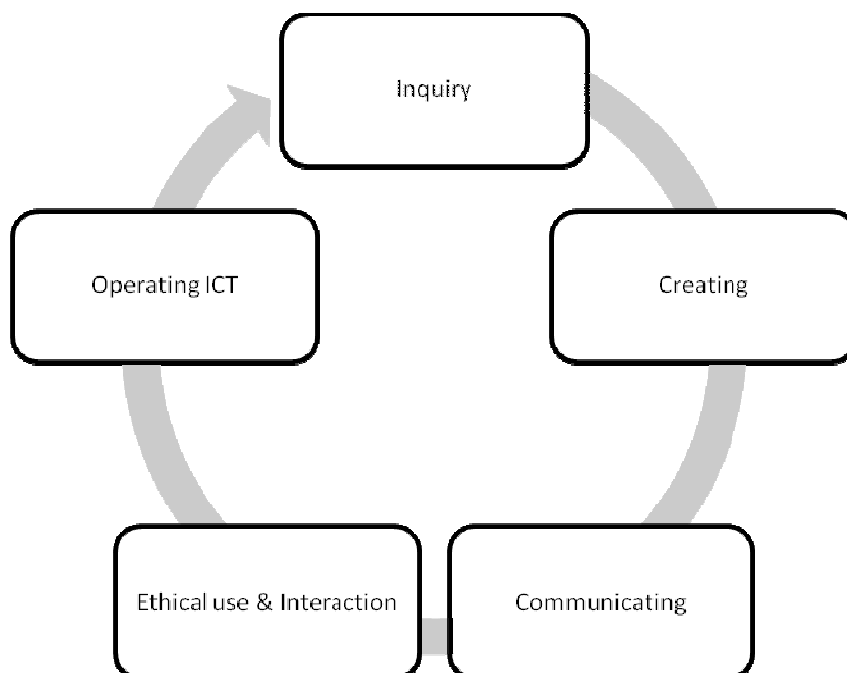

Figure 2: Theoretical mode of ICT Learning

Inquiry, Creating, Communicating

Inquiry within the History Key Learning Area has become integrated with ICT to develop learning acquisition, the creation of new knowledge and re-assert the importance of humanistic endeavour. It has allowed students to solve and pose problems and issues about

their learning of History. In particular it has shifted the learning context, enabling History to be more immediate, relevant and engaging. It has allowed an intertextual approach to History, juxtaposing cultural understanding of the contemporary world with events from the past; such as ' Stars Wars meets the Crusades' as described by Jeremy from School C .

> I used it in History with a Stars Wars theme, it had music, you know set it in a land, far, far way and a long, long time ago. We looked at the Crusades. They know the music....Ideas from popular culture to get them interested.

Similar findings emerged from School D where it emerged ICT pedagogy in History had produced opportunities for local and oral history to be made meaningful and engaging for secondary students and had started a search for the "Lost Boys" of the local area who had served and died during World War One. This project is described in rich detail in the following way:

> I thought I always enjoy a site study and an audio tour, and I thought why can't we do one for the local area? And then turn it into a slash forensic, cold case idea, where they can bring someone to life and hence they are on this little discovery journey, to find a soldier or a name and then how do we bring that person back to life. ...And that is what History is all about it is about stories and people.

Inherent in this description of the learning process is the emphasis on how the inquiry resulted in knowledge transformation, empathetic understanding of the past, critical source analysis skills and high level communication and ICT skills. This pedagogy was not about the development of a podcast, but about the understanding of the experience of war of individuals and the impact on the local community both past and present. This finding supports findings by Taylor & Young (2004) that high order critical historical skills and thinking are robustly supported by ICT pedagogy. In this case the operating ICT was not the enabler or the limiter to the pedagogy. Students' learning was not bounded by the experience or ability to operate ICT, as the learning outcome was the understanding of the soldier's experience and ability to empathise with and make meaning of this. Similarly, teaching was not constrained by ICT competence or confidence as the critical inquiry and interrogation of sources was the focus of the learning. ICT pedagogy was the teaching practice and strategy, used to best meet and extend the needs of the students in a real and valid manner resulting in significant learning that extended into the affective domains.

Ethical Use

Ethical issues such as web safety and censorship particularly with wiki and blog constructions were identified across two sites. In School B Mary suggests:

> I have a bit of a problem with primary students using wikis and blogs. We have a system called my internet which at one stage was supposed to offer wikis and blogs, but not yet. You have the email; you can set up classes in groups. It is an opportunity to use these types of things. It is a protected system, I can track them and see what they are doing, and it is very filtered. We just don't do this, in terms of putting young children up on the net...

Caution around child safety has produced this response which involves filtering and security blocking. The Web 2.0 dimension is live and interactive and conflicts with the boundaries and mandate of school which views its role to create a bubble around the school. The bubble is transparent and flexible allowing the real world to be seen with hazy tangibility, yet it never allows the toxic or harmful influences to permeate through and cause harm to the students. The bubble phenomenon is well supported and informed by a dominant systematic, social views and policies. Tension exists between the ethical protection of children as a pedagogical consideration and the ethical responsibility to create rich and critical learning experiences of the world. Difficulties arise as wikis and blogs become more entrenched social texts and modes of modern communication. Questions about whether schools limit, prevent or replicate in a controlled form the societal textual exchange or should they allow participation and immersion as a form of building critical literacy needs further discussion.

In School C the tension is similarly evident. Karina finds the lock-down of student access to commercial and real life sites unrealistic, problematic, and contrary to inquiry pedagogy. Inquiry pedagogy is situated within the inductive experiences and thoughts of the world. Bubbles are perceived to slow, impede and detract from the learning. Pedagogically the process of inquiry and cognitive analysis of the experience overcomes the need for the bubble as students have the skills of critical social literacy and are able to manipulate and communicate competently and safely in this environment. Ethical use of the technology shifts to become an independent rather than a collective responsibility that enables students to seamlessly transfer skills from school to home.

Operating ICT

The case studies show that Web 2.0 technologies have created new forms of learning and interaction. In the primary sites students as early as Stage 1 were involved in more than mouse clicking and word processing. As Samantha suggests:

> For History in our classes we studying the Natural and built environments so we designed new activities to incorporate ICT. We went for a walk, because we were looking at the natural environment. Before we did the walk we took photos and put them up on the Smart board. We had already given them the map before we started and when we went on the walk we did direction and looked at shelters. Then we used digital photographs and recorded the images and what we saw and them we came back and loaded these onto the smart board. We had different children then working on the computers and on CD-roms putting this all together. We had a real mixture between literacy and HISTORY. The students could download the images onto a CD-rom and then write about this. It was linked to English to explanation. We try and do this linking with all our subjects. When we do community next term we will do this as well. They have to technically turn them on, use headphones, and manipulate the media.

This learning experience incorporate experiential and virtual worlds, engages young students in the process of inquiry in learning about and from the world and enables them to create and communicate visual and written texts about their learning. The learning is sustained, rich and well integrated across a number of Key Learning Areas. Learning to operate the ICT occurred incidentally or deliberately as students grappled with the task. The approach in Stage 1 suggests that while technical skills are important, technology learning outcomes can be more cognitively loaded and integrated across multiple Key Learning Areas.

Conclusion

These case studies identify the transformative potential for ICT rich pedagogy for the History classroom. The ICT pedagogy enables students to engage with the creation of new texts, problem-solve and inquire about the past. Inquiry based learning within History and ICT rich pedagogy are complementary and desirable in this present digital and global context.

Historical thinking and understanding is well served using a portfolio of ICT rich practices and allows students to locate, organise, manipulate and evaluate sources critically and communicate texts in an ethical and exploratory way. This study confirms the contention that students in History classes should use ICT to support high-order thinking, and realise national goals around learning and ICT. These case studies highlight the capacity of History and ICT pedagogy to be inter-twined, effective and sustainable. However, the access and

participation in authentic professional learning, levels of teacher self efficacy and school system support are factors needing further attention.

References

BECTA. (2004). A review of the research literature relating to ICT and attainment. In Cox, M., Abbott, C., (eds.), Department of Education, Employment & Workplace Relations http://www.deewr.gov.au/Schooling/DigitalEducationRevolution/Resources/Pages/Resources.aspx retrieved 1/04/2010

Kalantzis, M. & Cope, B. (2004). *The Learning by Design Guide*. Victoria: Common Ground Publishing.

Luce-Kapler, R. (2007). Radical change and wikis: teaching new literacies. *Journal of Adolescent & Adult Literacy* 51(3) Nov 2007, 214-224.

Macintyre, S. (2008). National Curriculum History Framing Paper. http://www.ncb.org.au/verve/_resources/National_History_Curriculum_-_Framing_Paper.pdf retrieved 11/12/2008.

MCEETYA (2006). *The Statements of Learning for Information and Communication Technologies (ICT)* were managed by Australian Education Systems Officials Committee (AESOC) on behalf of the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), and developed by Curriculum Corporation.

Ministerial Council on Education, Employment, Training and Youth Affairs, *National Declaration on Educational Goals for Young Australians-*, 8 September 2008, p. 3.

Niederhauser, D.S. & Stoddart, T. (2001).Teachers' instructional perspectives and use of educational software. *Teaching and Teacher Education*, 17, 15-31.

NACCCE. (1999). *All our futures: Creativity, culture and education.* Sudbury, National Advisory Committee on Creative and Cultural Education: DfES and DCMS http://www.dfes.gov.uk/naccce/index1.shtml retrieved 2.3.2011

OFSTED (2002). ICT in schools: pupils' achievement: progress report London: HMSO for OFSTED.

Prensky, M. (2001). *Digital Natives, Digital Immigrants*. http://www.hfmboces.org/HFMDistrictServices/TechYES/PrenskyDigitalNatives.pdf retrieved 11/12/2009.

Prensky, M. (2010). *Partnering for Real Learning*. California: Corwin

Seixas, P. (2004). *Theorizing Historical Consciousness*. Toronto: University of Toronto Press.

Strauss, A. & Corbin, J. (1994). Grounded Theory methodology. An overview. In N. Denzin & Y. Lincoln (eds.), *Handbook of Qualitative Research* (pp.273-285). California: Sage.

Strudler, N. (2003). Answering the call: A response to Robyler and Knezek. *Journal of Research on Technology in Education,* 36 (1), 72-76.

Taylor, T. & Young, C. (2004). *Making History: A Guide for the Teaching and Learning of History in Australian Schools.* Canberra: Commonwealth of Australia.

Thompson, A. (2005). Scientifically based research: Establishing a research agenda for the technology in teacher education community. *Journal of Research on Technology in Education*, 37(4), 331-337.

Webb, M. E. (2005). Affordances of ICT in science learning: Implications for an integrated pedagogy. *International Journal of Science Education*, 27(6), 705–735.

Yelland, N.J., Kalantzis, M. & Cope, W. (2006). Learning by design: Creating effective contexts for curriculum and pedagogies in contemporary time. *SITE,* Orlando. March 20-24.

Yin, R. K. (2008). *Case Study Research: Design and Methods*. London*:* Sage Publications.