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Incorporating Technology within Classroom Literacy Experiences

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Abstract:

Educators are challenged to consider ways that Information and Communication Technologies (ICT) can be included within classroom contexts. Such challenges often require the adoption of whole school, team and individual focus as technology is examined in connection with the needs of the learners within the school and the pedagogical understandings and beliefs of the educators.

In this paper we describe an elementary school-based project that focuses on ways that computer-based technology and associated peripherals can be incorporated within classroom literacy experiences. As we examine the planning, implementation and our reflections upon this process some key findings emerged. The need for teachers to work towards shared goals as they refine their ability to manipulate technology in connection with their pedagogical understandings became paramount. So too, was the need to closely observe the response from the students to the experiences and the evidence of learning that emerged. Specific inquiries within the scope of this project will be examined.

Introduction

Within educational research literature, educators at all levels are challenged to modify and modernise their practice to more accurately reflect work and leisure activities of today (for example, Labbo, 2005; Leu & Coiro, 2004; Dearman & Alber, 2005). Technology is identified as integral to the out of school lives of children and young people (Gee, 2004) and, combined with the ability to ‘multi-task’, many are exposed each day to the equivalent of more than eight hours of ‘media messages’ (Roberts, Foehr, & Rideout, 2005). This technology use is embedded within a user’s social context and fulfills their need for building networks and reaching new understandings, rather than existing outside their normal routines and activities - a key understanding for educators to acknowledge.

ICT increases the volume and sources of information available, forcing a change in literate practices and what is valued as ‘literacy’ and challenging the notion of ‘text’ and its associated language features (Cope & Kalantzis, 2000). In engaging students for deep learning in classrooms, Oblinger (2003) and Dede (2005) argue that teaching must be supported by the technology to which students are accustomed. In contextualising the task, teachers are challenged to design open learning experiences that authentically reflect real world problems (Lombardi, 2007) and that value their students’ cultural practices (Nixon & Comber, 2006) in an effort to develop in students the ability to flexibly apply knowledge and skills outside the classroom. The role of ICT in this classroom setting is to *support* the learning rather than to *be* the learning; ICT should not be an ‘add-on’ to the curriculum (Durrant & Green, 2000), but an integral part of a broader learning goal.

Although it is recognised that many teachers have some way to go in incorporating ICT in their regular teaching practice, it is vital that they are acknowledged for the considerable

knowledge they have about their profession – what constitutes ‘good’ pedagogy, the nature of learning and ways to engage students in the classroom. Roblyer (2006, p. v) describes technology as “... above all, a channel for helping teachers communicate better with students. It can make good teaching even better, but it cannot make bad teaching good”. Technology is no substitute for informed lesson design and good classroom practice. It is vital, therefore, that educators articulate a clear rationale and purpose for the integration of technology to support learning in connection with curriculum goals, student learning gains and teachers’ personal philosophies.

The literature focuses on the ways that technology can be meaningfully incorporated within the classroom (for example, Dede, 2005; Herrington & Kervin, 2007; Leu, Mallette, Karcher, & Kara-Soteriou, 2005) and teachers need to be supported as they develop professional understandings and applications of this to their professional identity and subsequent practice. School-based projects are identified as one way to challenge practice as new alternatives are considered. It is undisputed that teachers’ learning is continuous throughout their professional experience, with professional development and professional growth being interrelated, one unable to occur without the other (Danielson, 1996; Mevarech, 1995). However, to reconceptualise practice with the vision to transform it, change grounded not only within theoretical understandings but also classroom practice is critical (Larson & Marsh, 2005). Teachers need opportunities to test if something works through a carefully planned process of action and reflection.

Embedding a project within the specific school context is acknowledged as a powerful approach (Beaudin & Grigg, 2001; Kervin, 2007). Identifying and responding to the specific contexts in which teachers and students work provides understanding of how literacy is shaped

as ‘literacy practices’ (Street, 1995) and ‘literacy events’ (Heath, 1983) are carefully considered.

While our knowledge of schools and anecdotal evidence tells us that there are many school-based projects focused on technology and literacy, few are reported within the literature. Some examples we have located include:

- Reid’s (2006) experiences of developing a whole school approach to information literacy,
- Maugle’s (2006) description of the challenges for teacher-librarians in integrating ICT, and
- Jeffrey, O’Bryan and Phelp’s (2007) description of learning experiences focused around virtual stories.

Each of these examples identifies the importance of having a carefully defined project with opportunities for collaboration, sharing and ongoing learning. In this paper we examine a series of inquiries within a school-based project focused on ways that computer-based technology and associated peripherals can be incorporated within classroom literacy experiences.

Methodology

This article reflects data collected in an independent elementary school in metropolitan New South Wales, Australia. At the time of the inquiry, 230 students, most of whom identify English as their first language, were enrolled in the school. The school is classified as a one-stream school (that is, one of each grade) with a ‘bubble’ of two streams in two grades, the result of a large residential development in the area. There are nine classes in the school.

The school identified the regular and integrated uses of computer-based technologies in all classroom programs as a learning priority. At the time of the school-based project reported herein the teachers and students had access to: 15 iBook computers with airport connection to the internet and intranet, 3 or 4 desktop computers in each classroom, 7 digital cameras and 4 data

projectors (one for Kindergarten, Grades 1 and 2, Grades 3 and 4, Grades 5 and 6). Throughout the year of the project a number of different structures was tried as the teachers considered how equitable access to the technology could be provided to best support teaching and learning experiences. For example, initially the laptops were timetabled so that all students received equal access to the technology in their classrooms. This was then restructured to break the laptop bank into groups of 5, which were then distributed across the stages (Grades 1 and 2, Grades 3 and 4, Grades 5 and 6). The classroom teachers met regularly to share ideas and teaching approaches in an effort to successfully integrate computer-based technologies into daily literacy learning experiences for their students.

This paper reports on a school-based project that evolved over a school year. To explicate this project, three inquiry examples are analysed and reported on; these are summarised in Table 1. Our analysis draws these inquiries together as we comment upon the overarching themes within the project looking at how technology can support classroom literacy experiences.

Table 1: Overview of inquiries with a School-based project

	Project focus	Context	Participants	Inquiry timeframe
Inquiry 1	Creating non-linear text with PowerPoint	Grades 1 and 2	6 students, 2 classroom teachers and an academic partner	6 x 90 minute sessions
Inquiry 2	Conducting research using	Grade 4 class	30 students, 1 classroom	10 x 90 minute sessions

	computers		teacher and an academic partner	
Inquiry 3	Enriching talking and listening experiences through Podcasts/Vodcasts	Grade 5 class	28 students, 1 classroom teacher and an academic partner	20 x 90 minute sessions

Each inquiry within the school-based project presents example of ways that technology can be incorporated within classroom literacy experiences. Data were collected from a variety of sources in an effort to examine and convey the richness and complexity of the learning environment and to contribute to the credibility of this qualitative inquiry (Cohen, Manion & Morrison, 2007). Observations of and interviews with students and teachers formed primary data sources and were ongoing throughout the inquiry. Video footage and still images were used to capture interactions between the participants, the learning experiences and the technology. These data were used to support the analysis of interview transcripts and field notes. Further triangulation was achieved through analysis of artefacts such as student work product, teacher programs and systemic policy documentation in connection with the primary data sources.

Analysis occurred as each researcher coded data from each source, that is: transcripts from interviews, field notes, visual footage and artefacts. Codes were compared between the researchers and emerging themes identified. Subsequent connections back to the primary data sources enabled rechecking of these themes. The following elements were adopted as criteria for

analysis of the data: teacher planning for learning, student interpretation of the task and evidence of achievement of the focus of each inquiry (both literacy and technology).

The analysis enabled the researchers to respond to the guiding question and sub-questions:

- How can a school-based project support the inclusion of technology in classroom literacy experiences?
 - What are the specific activities for teachers in planning and implementing the experiences?
 - What response and learning gains emerge for students during the experiences?

Limitations

This qualitative inquiry was conducted within a single bound site and set timeframe. Whilst the interpretive nature of qualitative research can be perceived a threat to reliability and validity (Cohen, Manion & Morrison, 2007), the design of this inquiry supports the development of trustworthiness and credibility in three ways. Multiple sources of data were gathered within the setting, findings were triangulated both within and across data sets, and peer debriefing was utilised throughout data analysis process to ensure the researchers were not simply ‘finding out what he or she expects to find’ (Merriam, 1998, p. 202). Subsequently, it is expected that the findings emerging from this research in classrooms in will resonate with the experiences of other classroom based researchers and practitioners, allowing connections to be drawn to pedagogy, practice and future research.

Inquiry 1: Creating non-linear text with PowerPoint

Table 2: Overview of inquiry 1

Literacy focus:	<i>Supporting students to:</i> <ul style="list-style-type: none">- Locate, examine and synthesise information from a range of sources- Author texts using new genre emerging from computer technology
Technology focus:	<i>Supporting students to:</i> <ul style="list-style-type: none">- Use PowerPoint to create non-linear texts

The Grade 1 and 2 teachers in this inquiry identified a focus group of six students as needing ‘extension’ with literacy. These students were provided with a differentiated task to meet their learning needs. To begin the period of inquiry, the students explored the notion of non-linear texts. To do this, time was spent exploring different web sites with particular emphasis on how they were organised. A number of examples were deconstructed through explicit modeling to identify key navigational and design features. The students demonstrated awareness of the genre of digital texts.

When presented with the challenge of creating a non-linear text using the PowerPoint application, the students demonstrated ability to transfer their understandings of digital texts to the task. Some of the students were less familiar with PowerPoint and a guided approach was employed to see the process that emerged as the students created the ‘text’. Over a period of six weeks, the teacher and students worked together weekly for an average of ninety minutes. During this time teaching and learning experiences arose from the perceived ‘needs’ from the

students and through negotiation between and among the group members. Such experiences encapsulated learning about the technology in connection with literacy experiences. For example, the need to revisit the original deconstructions to examine technique and gather ideas for text construction occurred.

The students story-boarded their ideas to plan how their text was to look. Their diagrammatic representations of their text demonstrated understanding of the genre, while also acting as a 'plan' for text construction. Throughout the authoring process, the students shared their ideas with each other and the teachers to develop a plan for how their text could look. Working through this process appeared to enable the students to see the different 'parts' that would make up their text, how the reader would view these and to also think about what each of their 'pages' may look like.

The students saw the technology alone as insufficient for the creation of the text. They identified a need for 'information' to be included in the presentation, and this became a key priority. The students used resources such as the search engine "Ask Jeeves", books within the school library, previous classroom learning experiences and 'experts' they identified to support the gathering of information. The technology became one of a range of tools used by the students to create the text. The need to include access to and opportunities for the students to choose their reference tools became essential.

The students worked either independently or with a partner and identified sections during the process of text construction. As the students planned and researched information to be included in the text, opportunities were needed for the students to share their plans and sample information to be included within the text. Interestingly, all students decided to construct their text in their books, which they edited and proofread before entering it into PowerPoint.

Throughout this process of writing ‘information’ for their text, each of the students took the opportunity to conference their writing with the researcher, and other class members. Once they were satisfied with the composed text, they then moved to the available technology to create ‘slides’.

Once the students had written their text and created slides, they revisited their initial plan. This enabled the students to begin to work on the ordering of slides, but also the navigation within them. At this point, the language of ‘webpages’ became apparent as the students began to talk about having a “home page with links”, the need for a “back or home button” and a “next button for when the information was spread over lots of slides”. Structured sessions focusing on the affordances of the technology were needed to explicitly demonstrate the process of creating action peer mentoring became evident as the teaching of these skills spread between students.

Inquiry 2: Conducting research using computers

Table 3: Overview of inquiry 2

Literacy focus:	<p><i>Supporting students to:</i></p> <ul style="list-style-type: none"> • Identify topics of interest and construct open questions for exploration • Critically examine information from a range of sources • Locate, identify and summarise relevant information • Analyse and synthesise information to construct text • Deliver an oral report supported by a visual presentation
Technology focus:	<p><i>Supporting students to:</i></p> <ul style="list-style-type: none"> • Conduct key word searches

	<ul style="list-style-type: none">• Operate between ‘windows’ on the desktop• Select and use appropriate publishing software for the task
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This inquiry investigated the use of ICT to support students as they researched and constructed texts for presentation to their peers. The teacher had pre selected a range of topics from NSW Syllabus Documents and located a range of websites and library resources for the students to use in gathering their data. The topics were drawn from the NSW Board of Studies Science and Technology (BOS, 1993), Human Society and Its Environment (BOS, 1998) and Physical Education, Health and Personal Development (BOS, 1999) Syllabus Documents and addressed topics such as Solar System, personal health and fitness, the transmission of sound and lifecycles. Digital resources were housed on the school’s intranet system, which the students could access at school and in their homes. The students worked on their reports during the literacy block in independent task time for 3 days each week for the course of the term. As the students worked on their projects, the teacher conducted conferences and small group sessions focused on their reports.

The students examined the topics presented by their teacher and selected one of interest. Working in self selected groups (or alone) the students posed a ‘big’ question and 2 contributing questions. The teacher and students worked in conference to ensure the questions were ‘answerable’ and to identify likely sources of information (print, screen and oral). Finally, they worked together to identify suitable key words for effective searching

The students researched their area of interest using the sources and strategies identified from the teacher/student conference, with the expectation that they would read with a critical eye; not all information was ‘good’ information. Text considered relevant was summarised in

one of 2 ways; some students recorded notes and utilised the copy/paste function in Word to transfer text from digital sources into a Word document, while others conducted interviews and took notes by hand in their exercise books. These notes formed the data from which the students constructed both their oral and visual presentations.

Next, the teacher and students conferred again to identify appropriate software for presenting the report. The popular choice was PowerPoint, however, Dreamweaver was also used to create a webpage where the 'home' page posed the big question while the links provided answers to the contributing questions. Interestingly, iMovie was selected by some students and later rejected; reasons for this included its complexity in creating the file as well as the inappropriate nature of the software for the task:

"...first I was going to do an iMovie but then I decided it takes too long and I don't really know what I was going to record..."

"...we started off doing iMovie but we couldn't figure out how to do it and it took ages to load."

In the publishing stage, the students used their draft notes to construct an oral report and a supporting visual presentation. They engaged in the recursive stages of the writing process as they composed, proofed, edited and published both documents. In publication of the visual presentation, issues of spelling and punctuation became a focus as the students considered their audience, as did the modality of the text; *"if I say 'well' it's like I'm talking in conversation. In speeches you normally... cut out the 'well', because you are talking to the audience, you're not just talking to one person"*. Another focus was the layout and presentation of the PowerPoint slides or Dreamweaver frames. It was at this stage that consideration of the audience, their

interest, comfort and preferences impacted the choices the students made. For example, the choice of background colour was important in “*making the writing stand out*” and “*easy to read*”, while the choice of animations and transitions was impacted by the desire to engage their audience, “*we’ve got a few funny pictures here...it gets the people’s attention, so they actually listen and don’t get bored*”. The students presented their reports to the class and their teacher for assessment.

Inquiry 3: Enriching talking and listening experiences through Podcasts/Vodcasts

Table 4: Overview of inquiry 3

<p>Literacy focus:</p>	<p><i>Supporting students to:</i></p> <ul style="list-style-type: none"> - Talk about language features and text organization in oral texts - Identify the different purposes for oral language - Describe the effects different audiences can have on a speaker - Examine the differences between informal and formal oral language - Use oral texts as a way of planning for more extended written texts
<p>Technology focus:</p>	<p><i>Supporting students to:</i></p> <ul style="list-style-type: none"> - Use technology to listen to oral texts - Use technology to plan, create and edit oral texts - Access oral texts to inform written texts

Classroom assessment and the teacher's anecdotal evidence suggested a need for in-depth focus on the talking and listening strand of the English syllabus. The class teacher was interested in the use of iPods and podcasting/vodcasting technologies to facilitate talking and listening and made contact with an existing project coordinated by the academic partner to facilitate this. Involvement with the project meant that the class had access to 6 video iPods (with microphones) in addition to the technology resources already available within the school. A range of experiences was offered over the period of two terms (20 weeks) that incorporated the technology and identified area for literacy learning.

To begin the period of inquiry, the students and teacher took time to listen to a range of podcast oral texts. Audio stories were accessed and downloaded to individual iPods for students to engage with during 'reading' opportunities in the classroom. These were positively received by the students and acted as examples of 'exemplary' oral reading. Connections to websites where podcasts were available for download were made in the course of classroom study (for example, the UNICEF site was used to support a focus on social justice). These texts provided clear models for the students and demonstrated examples where the impacts of audience and purpose could be examined. Opportunities to listen to these texts enabled the students to identify characteristics of language features and grammatical structures within oral texts.

The initial focus on deconstruction, reconstruction and interaction with audio texts appeared to equip the students with a range of skills and strategies centred on talking and listening. To expand upon the process of authoring oral texts, students were given opportunity to work in teams to create podcasts on a variety of topics; for example, personal interest topics and curriculum themes. During these opportunities the students demonstrated their understanding of the construct of oral texts as they planned, recorded and edited their constructions to share with

their peers. The process of creating these oral texts was multifaceted and required a number of 'steps'. Tim described the process:

"...if you want to make a podcast you have to find the information you want to talk about ... you have to have GarageBand 3, when you've got that you click on it and go to podcast when you're there record your information into the computer. Then find some pictures related to the information – this can take a long time to get your meaning right. Then drag the pictures in order to where it matches your recording and there you go! Then you might make some music like a sound track ... the best thing about it is it's so fun..."

The video capabilities of the iPod technology were explored in this inquiry. The teacher selected appropriate movie trailers from the Internet and moved these onto the iPods (in this example 'Zathura' was used from apple.com/trailer). These oral and visual texts (Vodcasts) were viewed by the students in groups. Using the trailer the students were able to compile word banks and phrases to describe key contributors to the narrative genre (such as setting, characters, audience and atmosphere).

Time spent examining the Vodcast was then used to stimulate the writing of a narrative text. The movie trailer provided example of a high quality introduction to a fictional story – it provided a synopsis of the story line, but left many specific details open for interpretation. The time spent deconstructing this as a group provided focused opportunity for discussion about the possibilities within the text as the narrative genre was explored. Each student used their

experience with the trailer and subsequent group discussion as a plan for their own written narrative. Jonathon wrote:

“It was a cool and quiet evening. Mickey was creeping through the back streets of Quirkyville. He was trying to keep quiet because in Quirkyville no one was ever out after dark. He didn’t want to make anyone suspicious. He jumped with a start as something moving caught his eye. Luckily it was only a stray cat. It was getting cold and scary. He pulled his jumper on tighter and trudged on.”

Jonathon’s story continued for 720 words. His narrative was in clear response to the narrative genre and his use of language included much of the vocabulary within the movie trailer and group planning. The opportunity to engage with the vodcast (oral and visual text) with time to discuss it in a group situation appeared to support the majority of students within the class to connect the language modes of talking, listening and writing.

Findings from the Project

In each inquiry the class teacher was working within the whole school vision focused on how technology could support classroom literacy learning. Each teacher responded to this focus quite differently. What remained consistent though, were the connections they made between and among technology use, their teaching philosophy, aptitude with technology and the needs of their students. For example, within the first inquiry, the teacher supported construction of ‘new’ literacy supported by commonly used software in an innovative way, while the teacher in the third inquiry enriched the development of talking and listening within the classroom with the support of relatively unknown (to the school) technology with some external support. Both these

examples profile ways that technology can be meaningfully incorporated in classrooms (Herrington & Kervin, 2007; Leu et al., 2005).

Literacy learning within each inquiry classroom remained at the forefront of the teaching and learning focus. While each teacher had vision for how technology could be used, they also clarified the literacy learning they hoped the students would achieve during the experiences. The description of the literacy and the technology focus for each inquiry provides example of this, supporting Durrant and Green's (2000) assertion that technology should support rather than become the learning.

The interrelationship between the language modes became evident in each inquiry. No single inquiry was able to be located as just writing, just reading or talking and listening. As example, in the third inquiry, while the focus was on the development of talking and listening, powerful writing experiences also emerged. Walsh, Asha and Spranger (2007) remind us that literacy users engage the language modes simultaneously when interacting with technology (for example, digital texts).

In each inquiry classroom, episodes typical to a regular literacy block were evident. The familiar routines, with the purposeful incorporation of technology enabled unique innovation of learning experiences. For example, the language of typical classroom routines bound the description of teaching and learning activities provided in inquiry 1 as episodes of modelling, joint construction and guided experience are described. The literacy learning is shaped by the literacy practices (Street, 1995) and literacy events (Heath, 1983) within the classroom.

Each teacher within the inquiry designed learning experiences that afforded students opportunities to direct their own learning. As the students engaged with the tasks, their interpretations informed subsequent teaching decisions. For example, throughout the first

inquiry, the teaching and learning experiences arose from the students' perceived needs as the learning pathways were negotiated. In the second inquiry, teacher and student conferencing throughout the process informed students' decisions about text construction. The partnerships evident between teachers and students in each inquiry demonstrate the value placed on the unique experiences and practices that each student brings to the classroom (Nixon & Comber, 2006).

Concluding Reflections

The educators involved with the different inquiries embedded within this school-based project were challenged to consider ways that technology can be included within classroom literacy experiences. From our findings, the inquiries demonstrate how individual teachers have worked within a whole school focus as technology is examined in connection with the needs of the learners within the school and the pedagogical understandings and beliefs of the educators. The students in these classrooms negotiated their learning pathways with the close attention of their teacher, providing evidence of learning and direction for teaching.

The findings of this inquiry provide interesting challenges for teachers supporting literacy learning in a range of settings.

- Each teacher in this inquiry interpreted their challenge differently in their classroom, but literacy learning remained at the fore. For teachers working with younger children, or in culturally diverse settings, this interpretation will need to take into consideration the specific and unique needs of these learners to suit both the teacher's philosophy and the context of the classroom.
- Drawing on one's own beliefs and the needs of the children provides teachers with opportunities to embrace the out of school practices of their students in creative and

imaginative ways and to embed them in the pedagogically sound literacy block practices enacted within the classroom.

- This inquiry confirmed what is known about the interrelated nature of reading, writing, talking and listening and the ways that learners use the modes simultaneously. For those working with very young children, those with English as a Second Language or children with diverse needs, other considerations must be taken into account in order to capitalise on children's strengths in each of the modes and to develop areas of need.
- The technologies used in this inquiry are accessible (in our experience) in most educational contexts. We argue that it is not the technology alone that is powerful; rather it is the ways it is embraced within classroom pedagogies. In these instances, it is the teachers' literacy beliefs and philosophy that drives practice.

In meeting the needs of learners today, the challenge becomes being able to conceptualise how technology may look in classroom learning experiences. The inquiries show that it is insufficient to focus on technology alone, rather, the focus needs to be grounded within 'good' literacy practice with a vision of how it can be supported by technology. Educators are challenged to modify and modernise their practices (Labbo, 2005). Although technology may be old, outdated or even superceded (for example, the ideas or the software applications available), the reality for schools is that this is often the technology they have access to. The inquiries show that of greater importance is the ways available resources are accessed, manipulated or even reinvented to complement pedagogical understandings. Our challenge as educators is to find 'new' ways of using technology, rather than falling into the trap of using 'new' technologies in 'old' ways.

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