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# Looking for clarity amongst the challenges faced by teachers as they consider the role of ICT in classroom literacy learning experiences

Jessica Mantei

*University of Wollongong*, [jessicam@uow.edu.au](mailto:jessicam@uow.edu.au)

Lisa K. Kervin

*University of Wollongong*, [lkervin@uow.edu.au](mailto:lkervin@uow.edu.au)

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## Looking for clarity amongst the challenges faced by teachers as they consider the role of ICT in classroom literacy learning experiences

**Jessica Mantei and Dr Lisa Kervin**

University of Wollongong

Primary school teachers today operate within a climate of great change with the rapid infusion of Information and Communication Technologies (ICT) into schools with the expectation that these be included within classroom experiences. Many schools purchased computer hardware and software and have provided professional development for teachers with the expectation that the technology will be put to use. Studies show, however, that many teachers continue to feel ill-equipped to use technology to support learning in spite of these in-service opportunities. Further studies identify the classroom teacher as the major factor in determining whether ICT are an important component of daily learning experiences; teachers who use ICT to meet their personal needs such as planning a school program, downloading music for leisure or paying bills on the Internet are more likely to utilise ICT for learning and teaching than those who find little use for such technologies in their daily lives.

This paper explores the challenges reported by a variety of teachers from Kindergarten to Year 6 from a range of schools across systems as they attempt to use ICT to support their students' literacy learning. Data were analysed through coding of interview transcripts, field notes and video/audio footage and emerging themes identified. Findings of this study reveal common challenges between teachers of differing ages and experience in a variety of school settings. The ensuing discussion identifies current issues and makes recommendations for teachers using ICT to support literacy learning.

Teachers are under increasing pressure to include new technologies in classroom learning experiences as they consider how to best present curricula content in ways that are meaningful to, and connect with, the needs of contemporary learners. The enormous advances in technology have impacted on literacy practices, rendering the tools of reading and writing that learners used in the past, although still necessary, insufficient (Anstey & Bull, 2006). As literacy educators we need to broaden our understanding of texts to include those that are multimodal and screen-based. Further, we need to shift from a philosophy of literacy learning as the accumulation of context knowledge in school to one that fosters the understanding and implementation of a range of skills, strategies and processes that support students to make meaning from their literacy experiences. While these understandings are evident for many teachers, our research has revealed that there are still many tensions and challenges faced by teachers as they consider how to best incorporate ICT into classroom literacy experiences.

This paper begins by reviewing the findings in the literature in two areas of interest:

- Challenges for teachers incorporating ICT into classrooms
- Implications for the teaching and learning of literacy

These areas provide a platform upon which the experiences of our focus teachers can be laid. Each teacher reported on within this paper has been involved in a research project with the researchers where they have looked to incorporate ICT into their classroom literacy practices.

## Challenges for teachers incorporating ICT into classrooms

Descriptions of children as ‘digital natives’ (Prensky, 2001), ‘clickerati kids’ (Hill, 2004) and the ‘Net Generation’ (Oblinger, 2005) portray children as familiar and competent using ICT to achieve their aims. Prensky (2001) highlights the divide between ‘natives’ (school children) and ‘immigrants’ (their teachers), positioning teachers as ‘struggling to teach a population that speaks an entirely new language’ because of the ‘outdated language (that of the pre-digital age)’ that they use (Prensky,

2001, p2). Oblinger observed that primary school aged children access more than eight hours of “media messages,” each day; much of the time participating in multiple simultaneous activities, for example, surfing the Internet while listening to music (Roberts, Foehr & Ride-Out, 2005, in Oblinger, 2005, p69). Although Leu (2002a) and McCombs (2000) argue that children are intrinsically motivated to learn with ICT, and that allowing children some control over their learning will further motivate them to complete tasks, Johnson (2005) warns that ICT alone may be insufficient for true engagement of learners. The literature argues that learners have changed and, therefore, the learning environment must too; this review turns now to investigate the changing nature of the learning environment of the primary school classroom.

The introduction of any new technology seems to be veiled with the notion of ‘promise’ – what it will do to revolutionise the classroom, how it will change the work of a teacher and how it will support and contribute to student learning. The apparent ‘push’ to incorporate technologies into classroom experiences is not a new phenomenon. Indeed, the introduction of technologies of ‘old’ into classrooms – chalkboards, books, pencils, pens, overhead projectors – were surrounded by similar tensions as we see today with the incorporation of ICT, associated peripherals and mobile technologies. There appears an ever-increasing range of technologies to incorporate within classroom learning experiences.

Just as Johnson (2005) asserts that the presence of technology fails to assure student engagement, Abas and Khalid (2007) observe similarly that the purchase and installation of technology is no guarantee that teachers will use it to facilitate learning. It is necessary for teachers to be realistic about what may happen with technology use and how its introduction, implementation and evaluation can be carefully planned for.

Information and Communication Technologies (ICT) have enabled teachers to bring global information and events into classrooms in a way that no previous technology has allowed, delivering a broad range of texts to the ‘fingertips’ of the learner (Leu, 2001) along with the potential to engage with local, national and international audiences (Kankaanranta,

2005) in both the creation and consumption of text. While it is the case that there are risks for children in the location of appropriate material and the need to critique the information that they find (Sangiuliano, 2005), there is no longer a question over whether schools should use ICT – this is given; the focus now is on which contexts and purposes are best supported through the use of technology (Abas & Khalid, 2007). Although the ideal is for all schools to have full Internet connection capabilities with sufficient computer access for all students, the reality is different. Many Australian classrooms require upgrading to carry the extra load required by ICT and reflect pedagogies of the past, with rooms not conducive to collaboration and child driven learning (Frazel & Souza, 2003). Reinking, Labbo and McKenna (2000) concede that schools and the broader community will comprise a blend of print and screen based texts for a long time to come, challenging schools to provide for the needs of learners in a climate where the literacy demands of the future are not known.

While it is recognised that teachers should incorporate ICT in their regular teaching practice, it is vital that teachers 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) describes, “technology is, 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” (pv). Technology is not a substitute for good classroom practice. As such, it is vital for educators to have a clear rationale and purpose for integration of technology in classrooms in connection with curriculum goals, student learning gains and our own personal philosophies.

## Implications for the teaching and learning of literacy

Lewin (1999) argues that without mastery of fundamental reading and writing processes, a child will be unable to successfully manipulate the Internet and other digital technologies because such texts demand faster, more efficient reading and writing skills for sifting through a larger

amount of information than was previously required. Broadening this view, Harste (2003) asserts that the transmission of core knowledge has become a less important function of modern schooling, replaced by a focus on the development of a child's ability to think creatively, to solve problems and to understand the power of texts to position readers in certain ways. Allington's (2002) findings provide a further perspective of literacy, identifying the most important element of successful teaching not as any single commercially available product, but good, effective teachers who make decisions based on sound theoretical understandings about the ways children best learn. Recent changes to schooling are both complex and diverse; nevertheless, in preference to shrinking from the challenge, Leu (2000, p424) asserts that in order to prepare learners for the "futures they deserve", teachers must embrace new information technologies in supporting literacy learning.

Teachers are identified in the literature as the main barriers to successful integration of computer-based technologies in the classroom, but related issues around connectivity and a shifting paradigm also influence the use of ICT to support literacy learning.

The teacher decides whether ICT are used in classroom literacy learning. Teacher reluctance to embrace new technology has been cited as the main hindrance to successful integration of ICT into classrooms (Holland, 1996; Durrant & Green, 2000; Turbill, 2003) because the teacher has the power to allow or forbid access in their classroom. Use (or non-use) of ICT have been linked in the literature to the ways that teachers use technology in their own lives; teachers who use technology to fulfil personal needs are more likely to recognise the benefits and potential and therefore provide opportunities for children to use ICT in their learning (Kuhn, 2001; Leu, 2002b; Lankshear & Knobel, 2003). With experience, teachers develop an informal set of criteria about which practices and experiences will or will not work in classrooms and they design their learning experiences according to this criteria (Snyder, 1999). For a teacher reluctant to use ICT to support literacy learning, breaking down and broadening these beliefs is key to bringing about change.

Teachers are reported to continue to feel ill-equipped to use ICT in their classroom, despite professional development opportunities. Professional development and ongoing technical support are identified as critical factors in determining successful integration of ICT into classroom learning and teaching experiences (Kuhn, 2001; Leu, 2002b; Macleod, 2006). Perceived lack of professional development is problematic in broadening pedagogies for the computer-based climate because teachers who do use ICT in their classrooms tend to use new tools in old ways (Labbo, Reinking & McKenna, 1998).

While such arguments exist, it is important to acknowledge that teachers are experts in pedagogy, not necessarily technology. As such, it is vital to consider how the incorporation of technology supports and connects with understanding of both learning theory and teaching practice; more simply, why is it that teachers do what they do in their classrooms. Technologies need to be incorporated for the goal of supporting specific teaching and learning needs within the cohort of students in a specific context. Educators are in an enormous position of power, as “enlightened shapers of our future. Each teacher must help to articulate the vision for what the future of education should look like” (Robyler, 2006, pv). The role played by information technologies within education is a significant part of this future.

In exploring the role of ICT in literacy learning, Moreillon (2001) observes that rather than making a shift in literacy teaching, teachers are using ICT to conduct school as usual. Such an approach, where teachers draw on traditional literacy practices to reach out to newly emerging skills in reading, writing, viewing and communicating provides a comfortable place to start integrating technology into daily practice (Leu, 2002b; Leu, Mallette, Karchmer and Kara-Soteriou, 2005; Shambaugh, 2000). Rather than labelling such practice an inhibitor to the integration of ICT in literacy learning, Labbo (2005) makes connection to Vygotsky’s (1978) zone of proximal development, arguing that the ‘zone of proximal comfort’, where teachers extend their own knowledge and skills by building on what they know about teaching and learning, is a valid place to start to embrace the challenges of the literacy paradigm of the digital age.

But it is not enough for teachers to remain in this zone. For children to learn to understand and think creatively about the real problems faced by their communities, they require learning experiences that are an authentic reflection of this community (Jonassen, 2003). Herrington, Oliver and Reeves (2003) identify authentic learning tasks as valuable in being able to engage students in the experience because of their relevance to real world situations and the opportunities they afford the learner to pursue avenues of personal interest along paths of preferred learning towards a diverse range of acceptable outcomes.

This complex and somewhat overwhelming state of play led us to ask:

- What are the challenges identified by teachers?
- How are ICT used to support literacy learning?
- What tensions exist between teacher beliefs, classroom practices and professional expectations?

## Methodology

Data collected between 2005 and 2007 have been analysed and reported on in this paper. The teachers were each part of projects with one or both of the researchers investigating the ways teachers use technology to support learning in their classrooms. Data were collected through interview, observation and analysis of artefacts throughout each of the periods of data collection. Analysis of data was ongoing throughout each period of data collection. Further analysis of data was conducted following final data collection, follow up interviews and at the culmination of all projects. Data were analysed through coding of transcripts from interview, field notes and recordings and emerging themes identified. Table 10.1 demonstrates the varied relationships the researchers had with the teachers, the projects that they were involved in and the ways that data were collected and analysed.

<b>Teacher pseudonym</b>	Joshua
<b>Project</b>	iPod Pedagogy: Using the technology of millennial learners in primary classrooms
<b>Description of the research project</b>	The class teacher introduced 12x30GB 5th Generation Video iPods into his Grade 4 classroom. From the period of May to November 2006 (term 2 to mid term 4) the students in this class engaged with a range of tasks that incorporated the iPods within their classroom learning experiences, with emphasis on Talking and Listening. These tasks were planned, implemented and evaluated as the teacher worked through an action research (Kemmis & McTaggart, 1988; Stringer, 1996) process. The students and the teacher were interviewed at regular intervals throughout this period. Work samples were collected and analysed.
<b>Data collection period</b>	Term 2 – mid Term 4, weekly visits, 90 minutes per session (2006)
<b>Teacher pseudonym</b>	Madeleine and Rhonda
<b>Project</b>	An investigation of the process Stage 1 children engage with in their construction of non-linear texts.
<b>Description of the research project</b>	The second named researcher worked with these Grades 1 and 2 teachers for ninety minutes each week over a period of twenty weeks. During these visits the researcher worked with a focus group of students who were identified by the teachers as needing 'extension' with literacy. The researcher collected data with a focus on the process the students engaged with as they constructed their text using computer-based technologies. Data included the use of researcher observations, semi-structured interviews with the teacher, group focus interviews with the students and the collection of student work samples.
<b>Data collection period</b>	Term 2 and Term 3, 90 minutes per session (2005)
<b>Teacher pseudonym</b>	Bob
<b>Project</b>	Investigating the ways that teachers use technology in the teaching of writing in Stage 2
<b>Description of the research project</b>	Data were collected through semi-structured interviews, observation of the teacher at work and analysis of his teaching program. Further data were collected through interviews with this teacher's students and the work they produced as the culminating assessment task in this classroom.
<b>Data collection period</b>	Term 2 and Term 3, 90 minutes per week session (2005)
<b>Teacher pseudonym</b>	Kate and Sally

<b>Project</b>	Early career teachers in virtual writing conferences with Year 5 children
<b>Description of the research project</b>	Early career teachers worked in a final year language elective subject. The teachers were observed and interviewed as they conducted virtual writing conferences with students in Year 5. The teachers and students connected through email and the writing conference was conducted using the tracking tool in Microsoft Word
<b>Data collection period</b>	Session 2 2 hours per week during tutorials (2006)
<b>Teacher pseudonym</b>	Sienna
<b>Project</b>	"GetReel": Primary school students create television commercials
<b>Description of the research project</b>	The second named researcher worked in a Year Six classroom for two hours each week over a period of ten weeks with Sienna, the school's teacher/librarian. Data was collected with a focus on the process the teacher/librarian and the students engaged with as they constructed their multimodal 'texts' in response to the GetReel competition. Data included the use of researcher observations, semi-structured interviews with the teacher/librarian, group focus interviews with the students and the collection of student work samples.
<b>Data collection period</b>	Term 2, 2 hours per week (2004)
<b>Teacher pseudonym</b>	Jemma and Jasmine
<b>Project</b>	'The laptop project' – exploring the ways that teachers accommodate 1-1 laptops in their classrooms
<b>Description of the research project</b>	These data were collected as part of an action research design. Both researchers worked with these teachers to team teach in whole class, small group and individual settings. Data were collected through interviews with the teachers and observations of them at work with the children – each with a laptop computer on their desk.
<b>Data collection period</b>	Term 1 and Term 2, 2 hours per week (2006)
<b>Teacher pseudonym</b>	Kay
<b>Project</b>	Critical friend
<b>Description of the research project</b>	Kay has collaborated with both researchers throughout all periods of data collection. Kay is a co-author with the second named researcher.
<b>Data collection period</b>	Ongoing collaboration

Table 10.1 - Teacher participants and their projects

## Findings

Each research project described in Table 10.1 provided the researchers with considerable data reflecting challenges faced by teachers as they consider the role of ICT in classroom literacy learning experiences. For the purposes of this paper, and to reconnect with each teacher post research project, subsequent interviews were conducted with the teachers. Opportunity to compare and contrast data from the research projects and the more recent teacher interviews revealed a number of emergent themes. Each theme will be explored in connection with the research projects and teacher reflections.

### **Teacher attitudes towards ICT**

The teachers' attitudes to ICT were reflected in the ways they facilitated student use of technology in the classroom. A shift in teacher thinking was identified in the data where teachers described 'fear' as one of the challenges they faced in the past; fear that they lacked knowledge and skills to teach the students. Rhonda is a teacher who described feeling particularly intimidated by the use of ICT in classrooms at the beginning of the project she was involved with. However, in recent interviews, she reported "I do not allow the technology to overwhelm me any longer", suggesting a shift in confidence. None of the participant teachers in this paper identified fear as an ongoing challenge in using ICT to support learning.

All of the teachers perceived ICT as a time-consuming element of their planning and preparation for teaching, but indicated that it was important to be prepared for the lessons on offer by learning to manipulate the technologies available. These teachers reported:

"I also find it a challenge to keep up with new technologies – Web 2.0 tools" (Sienna)

"Time – trying to explore new programs [is a challenge]"  
(Maria)

"[finding] time to play with what is available before implementing" (Joshua)

Jasmine indicated that more responsibility should have been taken by governing bodies in supporting teachers to learn: "the biggest issue is

time ... if we were able to access a number of release days devoted to technology on a regular basis, then I'm sure teachers would become more confident in using technology". Although the demand for time spent learning about the technologies available was identified as challenging by all teachers, it is evident in the data that most of these teachers had embraced the challenge as they continued to plan and implement literacy learning experiences supported by ICT.

Further analysis of the data indicated the motivation for the teachers' investment of their time. Interviews with the teachers revealed their genuine desire to meet the needs of the students in their class in a climate where ICT expose children to information and communication opportunities different from those previously available. Indeed, if we further reflect upon participant involvement in the research projects outlined in Table 10.1, each teacher (with the exception of Jemma and Jasmine) volunteered to take place in the project. Data collected through interview with Madeleine is representative of the reports by the teachers on this subject. She had enrolled in a year long professional development course and described her expectations:

looking forward to a brain fix and how to do Blogs/websites as the Year 4 kids have the knowledge and I have to keep up and offer the best of what is available and continue to provide selection and quality application of technology in my teaching and make their learning effective, efficient too and relevant to their life; even relevant for their future.  
(Madeleine)

Recognition of the need for "keeping up to date, not only with the technology, but the children" (Joshua) was a common theme throughout our observations and interviews with the teachers. What differed between the teachers was the ways that they used the technology to support literacy learning experiences.

### **Connecting ICT with literary experiences**

All of the teachers reported using ICT to meet the professional requirements such as programming, assessing and evaluating. Their programs incorporated the use of ICT across a range of curriculum areas and they described using ICT to support literacy learning in a variety of

ways. During interviews, most of the teachers identified the importance of integrating ICT into the literacy learning experience. This integration was observed in classrooms; Kay described her use of audio books on computers to support reading development as a “roaring success with non literate and highly literate, though reluctant readers”. Further, Kay reported the use of trial and error in selecting suitable technology to support the learning: “we did try [the audio books] on an ipod shuffle, but it was more difficult for students and myself to keep track of where students were up to”. Other examples of integration of ICT into literacy learning were observed in Joshua’s Year 4 classroom. This teacher reported that in deconstructing texts the children could “hear how things are organised” and this then aided the construction of a podcast, which was “heavily scripted and reviewed often to ensure the correct message is heard”. Year 6 children in Sienna’s class also constructed texts with the support of ICT as they wrote scripts and recorded commercials about youth issues in their community. In both examples, the children were highly engaged in the process of deconstructing and constructing texts using the language and text structure appropriate for the genre and intended audience. In examples such as these, the teacher kept literacy learning as the focus while ICT served to support powerful literacy learning experiences.

Not all of the data reflected this shift in understanding of the role of ICT in *supporting* rather than *being* the learning. During data collection periods, some teachers were observed instructing the children to “do PowerPoint” because they had not made one before or for ease of teaching when every child is working at the same task. During these times, the literacy learning was overshadowed by the skills required to manipulate the technology. Such was the problem that emerged in Bob’s Year 4 classroom where the children were working in mixed ability groups to create PowerPoint presentations. Bob explained that because the children had differing spelling and composition skills, he was unable to deliver his planned teaching of spelling and grammar and that his focus would shift to teaching ‘multimedia skills’ during this time of the literacy block instead.

The data demonstrates the differing levels of understanding and pedagogical development between teachers of different age and

experience. Although this degree of difference is supported by Labbo's (2005) observation that many teachers begin in and then move outside their zone of proximal comfort, these differences were observed to cause tension for Joshua. Passionate about the importance of integrating ICT into literacy learning, he identified "teachers just teaching aspects of technology, rather than trying to integrate it in a meaningful way" as one of the issues that continue to challenge him in using ICT to support learning. Such enduring attitudes can have a strong impact on the relationships between and among staff and children.

## **Teacher ownership of technology integration**

Our data consistently indicates relationships among individual teacher's attitudes to technology, their perceived expertise with the technology and their understanding of how the technology fits with their pedagogical understandings; all of which impact upon opportunities for student learning.

Many of the teachers we have worked with felt some pressure to include ICT within their classroom practice. For example, the project that Jemma and Jasmine were involved with was very much guided by the vision of their school principal and the demands of the community within which the school was situated. The ownership and passion for the project was not with the two teachers who were at the forefront of its implementation. As such, the project outcomes differed from those initially anticipated; Jemma and Jasmine were left feeling that their professional expertise was somewhat diminished and they were frustrated by the "imposition" on their literacy teaching. The laptop computers became something "extra" to the demise of their regular teaching program. The attitudes of the teachers, and their frustrations, influenced their promotion of the project with the students. The students saw the laptops as "computer time" rather than tools to support their literacy learning.

In contrast, those projects where the teachers held the vision and enthusiasm resulted in ownership of the project from both the teacher and the students' perspectives. Joshua, for example, volunteered to work with the iPods and used the experience to reconceptualise his teaching of the Talking and Listening strand. He found the need to create a

virtual learning space to support his teaching, challenging the traditional notion of a classroom, which resulted in him and his students taking responsibility for the creation and maintenance of this space. This shared responsibility challenged the role Joshua had previously assumed with his students as they worked together on the project as co-learners.

Analysis of the language used by the teachers to describe their projects revealed much about where the control for the ICT use lay. Jasmine, who was very frustrated when involved with the laptop project, described in more recent interviews, “I am adjusting”, when talking about her latest involvement with technology (in this case interactive whiteboards). Sienna too indicated a shift in her thinking, describing, “in the past I have taught technology in isolation, focusing more on developing particular IT skills or knowledge of a single application”. She further describes having had “separate IT outcomes and these were the focus for our lessons”. More recent discussion of her practice revealed that she now aimed for “seamless integration into all aspects of my teaching and learning”. Many of the teachers (Rhonda, Jasmine, Jemma, Sienna, Madeleine) spoke consistently about the responsibility for the technology and associated knowledge for its use as lying with them as opposed to the students. This was in contrast to other teachers (Joshua, Kate, Kay) who strongly indicated the students’ considerable knowledge as a valuable resource in enriching their classroom experiences. In these cases the ownership and responsibility were shared.

### **‘Managing’ ICT**

Reliable, consistent access to ICT was observed to continue to challenge the ways that teachers are able to achieve integration into literacy learning experiences. Some illustrative examples follow.

In one school, an interactive whiteboard was installed in the Kindergarten classroom at the beginning of the year, at the publication of this paper – some six months later, it is still not ‘functional’ and simply remains unusable on the wall.

In another school, a government grant afforded the purchase of 30 laptop computers for the individual use of children in Year 5.

Unfortunately, the school did not have Internet access in the Year 5 room and, one year on, this situation remains.

Rhonda reported “troubleshooting in younger classes is a nightmare for me” and was observed to retreat from even attempting to use ICT, preferring to assign literacy learning tasks requiring computer use to support teachers and colleagues.

The element of time continued to preoccupy the planning and teaching of these teachers. Several of the teachers were observed to direct children to preselected websites for use during the literacy block. They reported that the websites were “appropriate because they fit the needs of the students or have been designed with the students in mind (Kay)”, “they contain the right information” (Bob) and “it saves time” (Bob). Conversely, Kate reported encouraging the children in her class to “sift through websites to find information that can be useful”. It would appear that the teachers reported on in this study managed the ICT to suit the focus of their lesson (for example, effective key word searching) and the purpose of the task (e.g. locating and identifying information).

## **Issues of equity**

Equity in access to and use of ICT for both teachers and children was an emerging theme in the data.

Teachers reported feeling concerned about children who do not have computer and/or Internet access at home and the ways that they can compensate for this in the classroom. One teacher described it as a “balancing act” between the child who has “everything at home and another nothing”. The perception in the literature is that children are more “tech savvy” than their teachers, but these participant teachers reported a different reality. While some children are highly competent in using ICT, a discrepancy exists between many students’ knowledge about ICT texts and the skills that they have mastered for their creation. For the teachers, managing these different levels of expertise amongst the students is a challenge. Joshua described throughout the iPod project the challenge of establishing mutual understandings and associated metalanguage to describe the technology and connections to learning. He found that he entered the project with the understanding that “iPods

were the technology of the students” but in reality found that many of them didn’t have the experience and expertise he assumed, describing “a technology rich and a technology poor culture within the classroom”.

Further issues of inequity of access and learning for teachers emerged from analysis of the data. Sally felt that providing computer lessons in a lab by a specialist computer teacher without the presence of the classroom teacher was a mistake that only served to “de-skill teachers”, but this was contrasted by observations and interviews with Jemma, a specialist computer teacher in her school. She cited narrow vision by school leaders and the broader schooling system as limiting her development as a classroom teacher integrating ICT into literacy learning experiences.

Accessing funds to replace aging computers and associated peripherals was an element that presented as an issue for teachers. Those with new computers and adequate access to peripherals such as data projectors reported feeling well supported with hardware, resulting in the perception of an equitable classroom environment. What was interesting, however, was that the teachers who reported and were observed to be more confident with the integrated use of ICT in literacy learning reported less on the failure of the technology and more on the multitude of ways that they had experimented with ICT in literacy learning.

## Discussion

In this climate of ongoing change, it is important that educators take the lead in the development of pedagogy and the integration of new literacies into the curriculum (Leu, Mallette, Karchmer & Kara-Soteriou, 2005) rather than leaving it to corporate experts (Luke, 2000) or the information technology community (Leu, 2002a). Each teacher has revealed the need to see the value of the technology in light of their own teaching philosophy and vision for their students. Where this understanding is not evident, we have found that technology has been used in ways that are disjointed, unconnected and separate from other classroom experiences.

We have found that teachers who see purpose in using technology to support their literacy teaching add considerable value and depth to classroom experiences. The wealth of ‘new’ texts, the different ways technology can aid text construction, the affordances of the technology in teaching specific literacy processes and the different opportunities they offer were all identified as enablers of ICT integration.

Our review of collected data has strongly revealed that research by educators, government funding for teacher professional development and commitment by teachers to embrace change is needed to ensure high quality, authentic learning experiences for contemporary school children.

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