

Literacy learning and technology

Curriculum K-12



Education
& Training

These professional learning materials were originally developed as part of the *Focus on Reading 3–6* program.

Literacy learning and technology

Literacy skills for the twenty-first century are skills that enable participation in the new communities emerging within a networked society. They enable students to exploit new simulation tools, information appliances and social networks; they facilitate the exchange of information between diverse communities and the ability to move easily across different media platforms and social networks.

(Jenkins et al, 2006, p. 55)

Introduction

These are times of exciting change and history shows that with changing social contexts, the nature of literacy and literacy learning is redefined. With the advent of new technologies, literacy and literacy practices are changing at a pace never experienced before. Changes in digital technologies are happening much faster than we can monitor their impact. In the process, the look and feel of learning environments, the role of teachers, the nature of the learner and what and how they learn are being transformed. Howard Gardner on February 17, 2008, in his article *The End of Literacy? Don't Stop Reading* in the Washington Post stated: *Literacy – or an ensemble of literacies – will continue to thrive, but in forms and formats we can't yet envision.*

The traditional functions of speaking and listening, reading and writing remain central to being literate however living in contemporary society has created new literacy needs, particularly as a result of technology.

(An introduction to quality literacy teaching, p. 3)

New technologies are transforming current literacies and literacy practices, whether intentionally or unintentionally, these new technologies impact on literacy instruction in classrooms (Hagood, Stevens & Reinking, 2003; Lankshear & Knobel, 2006; Lewis & Finders, 2002). They build on foundational literacies and skills, such as comprehension, phonics, vocabulary knowledge, phonemic awareness, writing, and spelling. Learners need to continue to build on these foundational literacies and skills in order to adopt and adjust to literacies of the future.

The report, *Maximizing the Impact: The pivotal role of technology in a 21st century educational system* states that *technology is an enabling force behind globalisation, knowledge work and entrepreneurship.* The report also states that it is critical that today's students be *critical thinkers, problem solvers, innovators, effective communicators and collaborators; and self-directed learners* (p.3). Bundy (2004) points out: *Of the responses to the many challenges facing the world, none is more important than growing the global community of the informed and questioning as rapidly as possible* (p. 7). "An introduction to quality literacy teaching" (2009) specifically states that in order to maximise the teaching and learning potential of technology, students need to be taught:

- How to be critical and informed users of technology
- To locate, evaluate and synthesise information
- To interact safely and responsibly online
- To make informed choices when creating texts, considering how purpose audience, contexts and choice of medium influence texts (p. 29).

Learning traditions of the past will not adequately equip students for the unimagined literacies of the future. According to *Australia's national goals for schooling in the twenty-first century (1999)*, it is vital that students leave school confident, creative and productive users of new technologies, particularly information and communication technologies (ICT) and understand the impact of these technologies on society.

Acknowledging the social context for change

Leu et al (2004) point out that changes in how literacy is defined and taught must be considered within today's social context. They identify three forces at work to change the nature of literacy:

1. global economic competition within economies based increasingly on the effective use of information and communication
2. the rapid emergence of the Internet as a powerful new technology for information and communication
3. public policy initiatives by governments around the world to ensure higher levels of literacy achievement including the use of the Internet and other information and communication technologies (ICT) (p.1575).

A social revolution is underway as homes and workplaces embrace the use of digital technology as a normal part of everyday life. With increased access to the Internet comes increased opportunities to access information, conduct transactions, communicate in multiple modes via social media sites and to be entertained. Social contexts for learning are changing and as an example, Lebo (2003) explains that Internet users report an increase in the time they spend on the Internet and a decrease in the time they spend viewing television. In addition, Lenhart et al (2005A) studied the technology habits of 1100 teenagers and found that 84% owned one or more personal media device, 87% used the internet and 51% went online daily. As consumers of Internet content and active content creators, students are interacting and learning through networking and collaboration.

In the study *Supporting student learning environments in a digital age: Listening to young people*, two key concepts that are of a socio cultural nature and central to how young people learn in a digital environments are identified. The first is defined as *cognitive* and involved the learner being actively engaged in the medium and message of the learning. The second is *social interaction* and involves the development, questioning and analysis of what is being learned through social and machine mediated processes. Foundational to this study was the work of Green and Hannon (2006) involving 200 NSW students in which they identified four user "types":

Types of digital users	Characteristics
Digital	Blogging before the phrase was coined
Creative	Build websites, post movies, photos
Everyday	SMS, blogging, emailing, texting
Information gathers	Google, wikipedia, cutting and pasting

Redefining literacy

Traditionally, literacy was defined from a print-based world – a world of books and other print media, a world of two dimensional print and images. A definition from the past cannot accommodate new ways of meaning-making, such as locating information across multiple modalities, participating in audio-visual conferences, responding to emails, virtual environments or creating a personal website, blog or wiki. Readers are no longer confined to simply decoding and comprehending the printed word. They author texts, respond to and critique texts and comprehend information from multiple perspectives. There is no set of blackline masters to guide their participation and determine what they pay attention to. Readers are expected to make sense of a complex design that includes a myriad of images, pop-ups, hyperlinked texts and icons. With modelled and guided literacy teaching, students are supported to critically analyse, synthesise ideas, identify purpose and audience, interpret messages within messages and engage in reflective practices.

Students today, living in a knowledge economy in a global environment, where technology has transformed communication, require far more sophisticated literacy skills than those that have been required in previous eras.

(An introduction to quality literacy teaching, p. 6)

Defining literacy in today's context could be seen as an elusive task. As new technologies for information, communication and collaboration continually appear, new literacies emerge (Bruce, 1997a; Leu, 2000b; Reinking, 1998). As Leu & Kinzer (2000a) point out: *Literacy, therefore, may be thought of as a moving target, continually changing its meaning depending on what society expects literate individuals to do. As societal expectations for literacy change, and as the demands on literate functions in a society change, so too must definitions of literacy change to reflect this moving target* (p. 108). No single theoretical perspective has yet to explain the full range of the changes to literacy resulting from the digital revolution. The pace is moving too fast for research to catch up!

Ultimately, education should equip students to become critical creators and consumers of the information they encounter through a range of technologies (Alvermann, Moon & Hagood, 1999; Muspratt, Luke & Freebody, 1997). As the definition of literacy changes and new technologies emerge, the nature of what it means to be a literacy learner also changes. *An introduction to quality literacy teaching* highlights some of the new decisions learners face in a technological world, for example, they need to know how to establish reliability and credibility of multiple sources of information, know how to validate information, scan websites to locate information and navigate between links, be aware of online privacy and safety guidelines, and use images, print, music and narration to communicate ideas. According to Leu (2000b): *Literate individuals will be those who can effectively assess their individual purposes for using the Internet and then seek out, from the Internet's many offerings, the particular tool and form that best meet their needs.*

Curriculum change

The ever-increasing demand for a technological-savvy and literate workforce has ramifications for literacy instruction in classrooms. In summary, Leu, Kinzer, Coiro and Cammack (2004) point out that the curriculum of the future will demand students:

- 1 apply problem-solving skills
- 2 identify problems and seek appropriate solutions
- 3 locate useful information relevant to problems
- 4 critically evaluate information, sorting out accurate information from inaccurate information, essential information from less-essential information, and biased information from unbiased information
- 5 synthesise information
- 6 rapidly and clearly communicate solutions to others.

Learners will be called upon to be discerning and confident users of websites and search engines, participants of social networking sites, scrutinisers of complex mazes of information, strategic and critical explorers. As Jenkins et al (2006) specify students will be required to: *distinguish fact from fiction, argument from documentation, real from fake, and marketing from enlightenment* (p. 44). In summary, they will need to know how to question and critique what they hear, see and read. They also have to consider the ethical choices they make as participants and communicators and to consider the impact that their choices have on others.

Negotiated curriculums will emerge as students complete the same tasks using different search strategies while accessing different information from a range of diverse sources. What they pay attention to will inform their processes of learning. Their paths to learning about the same topic could be as various as their conclusions. The speed with which students locate, evaluate, use, communicate and disseminate information will also be a central instructional issue.

Curriculum perspectives on literacy and technology

A number of perspectives have been influential in determining curriculum and the integration of technology and literacy. Such perspectives reside within a balanced, integrated, explicit and systematic literacy teaching model as outlined in *An introduction to quality literacy teaching*. To varying degrees and across all perspectives, modelled, guided, and independent teaching strategies are essential in supporting the literacy learning of students and their use of technology.

Four Literacy Resources model

Effective literacy learners draw on the following four resources when they interact with and create any print-based, spoken, visual or digital texts:

- Code-breaking** is the ability to break the code of written texts by recognising and using the fundamental architecture of written language, including the alphabet, sounds in words, spelling, structural conventions and patterns.
- Meaning-making** is the ability to understand and compose meaningful written, visual, spoken, digital and multimodal texts.
- Text-using** is the ability to use written, spoken, visual, digital and multimodal texts in functional ways within and outside the school setting.
- Text-analysing** is the ability to critically analyse written, spoken, visual, digital and multimodal texts and understand that texts represent particular points of view and influence people's ideas.

Critical literacies perspective

From a critical literacies perspective, readers are critical, discerning and strategic. Readers consciously evaluate the message within the message, question the information they read and rethink everyday assumptions. They ask who is using the information and for what purposes. Lewison, Flint, & Van Sluys, (2002) claim that a feature of critical literacies is the learner's willingness to question what appears "normal". Brantlinger (2003) adds that critical literacy also involves expressing opinions and being engaged in discussions about local and global conditions.

Multiliteracies perspective

From a multiliteracy perspective, literacy is not a single entity but consists of a set of multiliteracies that incorporate different cultural contexts and different communication technologies. According to Anstey and Bull (2006), to be multiliterate, a student must first recognise that a context requires different literate practices – multiple modalities of communication. Students build an awareness of different literate practices and use these in new and different ways. They go on to explain that "multi" refers to the multiple forms of knowledge and understandings about literacy and social contexts that enable readers to make informed decisions about what is appropriate and relevant to successful life outcomes.

Media literacy perspective

From a media literacy perspective, the focus is on new literacies demanded by new media. Considine et al. (2009) point out that media literacy is not merely teaching with or through media or technology but includes teaching about media. This includes the language of media, the codes and conventions, the analysis an author's stance and motives and the critical evaluation of the message itself.

Role of teacher

The International Reading Association *position statement: Integrating literacy and technology in the curriculum* (2000) states that literacy educators have a responsibility to effectively integrate new technologies into the literacy curriculum in order to prepare students for the literacy future they deserve.

Research indicates that teachers' pedagogical beliefs and knowledge are important factors in their quest for technology integration (Abbott & Farris, 2000; Niess, 2005, 2008; Otero et al., 2005; Russell, Bebell, O'Dwyer, & O'Connor, 2003). Cammack (2003) acknowledges in her review of Alvermann's (2002) edited volume, that *differences in technology use and perceptions of value between teachers and students can effectively act to block change in the integration and use of technology in literacy pedagogy* (p.189). The demands on teachers to develop a critical disposition toward technology while keeping abreast of current technologies is a challenging task. Learners bring to school a rich and different set of literacy practices that often go unrecognised and unacknowledged in classrooms. Considine et al (2009) state that teachers not only need to understand what today's media and technology "do" for students but also what students do "with" it.

It is not uncommon for students to know more than teachers about new literacies. Research by Chandler-Olcott & Mahar, (2003) states that increasingly students are coming to school more literate in the new literacies than their teachers. In the future, students' knowledge will be central to curriculum as they collaboratively share and use what they know about technology and literacy to shape classroom literacy practices. In short, learning experiences will need to be managed so that the instructional role of the teacher includes less "sage on the stage" as described by Gordon (2009, p. 61) and more "guide from the side". Teachers are increasingly being called on to be agents of change, technology leaders and facilitators of learning. The teacher will be responsible for organizing the distribution of knowledge. Levy (2000) argues that in such classrooms, everyone knows something, nobody knows everything, and what any one person knows can be tapped by the group as a whole. In such learning environments, students interact with many devices, people and artefacts.

A changing pedagogy

Transmedia navigation, where learners follow the flow of information across multimedia modalities, is an essential pedagogical consideration. More and more, students will be responsible for searching for, synthesising and disseminating information. Collective intelligence involving the pooling of knowledge and the sharing of common goals and problem solving will be at the core of classroom practices. The 2005 study conducted by the *Pew Internet and American Life project* (Lenhart & Madden, 2005) claim that 57% of the teens using the Internet could be considered media creators. Media creators are those who have created a blog, webpage, posted original art work, photography, stories or videos online or remixed online content into their own creations. In addition, learners co-construct meaning through the use of blogs, threaded discussions and interactive chats and, in doing so, take advantage of what others know and they want to understand.

Classrooms are becoming more collaborative communities in which students exchange and share their understandings. Working in isolation and valuing quiet, independent work will be reduced in classrooms where technology and literacy merge. Interactions and the co-construction of knowledge will be vital.

Unfortunately, research by Kirkpatrick (2001) concludes that *despite calls for fundamental rethinking of pedagogies for the eEnvironment, to date our attempts to invent new pedagogies have been limited both by conventional attitudes to teaching and learning and the wider socioeconomic context* (p. 46).

Considerations

Literacy learning requires more than software

It is important to stress that simply using technology in the classroom does not assure that students are acquiring new literacies. Mastering a software application does not ensure that essential skills and strategies for making informed decisions and literate choices automatically follow. Successful learners are thoughtful, critical consumers and creators of information, not passive participants in a software application designed to do little more than a workbook page. Nimon (2003) adds the following cautionary note:

It is vital that the technical facility to manipulate electronic communications is seen for what it is, the ability to lay the groundwork for a task of making meaning from information, but it is not equivalent to the completion of the task itself. The pastiche of clipped pieces of data glitzed with downloaded images must not be mistaken for the product of thought.

(Nimon, 2003, p. 132)

Hattie (2003) is adamant that it is the teacher rather than resources or policy that has the most profound impact on student achievement. He claims that resourcing and policy initiatives therefore must engage with and support classroom teachers to shape and revolutionise digital futures in a range of learning environments.

Digital divide vs. informational divide

Equitable access to technologies and technical support are critical and directly influence what teachers and students accomplish. DEEWR's 2008 promise of a computer for every student in Years 9 to 12 is a move to address what is referred to as the participation gap, that is, the fundamental inequalities in students' access to new media technologies and the opportunities for participation that they represent.

Solomon (2002) and Lebo (2003) claim that the Internet is a reading context where *digital divide* issues abound. From their research, it is apparent that advantaged students have far greater Internet access at home than disadvantaged and minority students. In addition, Warschauer (2003) expresses the concern that those who have greater access to the Internet at home have consequently greater learning opportunities and hence greater chance of mastering skills, such as comprehension. Accessing the web at home allows an individual to play in the digital world and skip from webpage to webpage. More confident users and competent readers are advantaged as more information is accessed more quickly and easily.

While Jones (2008) claims that the digital divide is decreasing, he is adamant that educators remain vigilant to issues of equity and access.

Lack of research

There is a growing body of information on the impact of technology on curriculum, pedagogy and literacy. Research is growing in the area of new skills and strategies required to effectively use technology. According to Lankshear & Knobel (2003), far too little research has been conducted in this area for far too long. Jenkins et al. (2006) contend that more discipline-specific research is needed to more fully understand the use of technology as it is applied in professional practices, including those of scientists, historians, artists. Furthermore, there is a need for better understanding the technological world of students. Research contends that there is a partition between the technology that is used in everyday life and that that is used in many classroom settings (Dede, 2005). Limited access to digital technologies and Internet filtering in schools can constrain the possible links between students' real worlds and classroom practices.

Assessment

When it comes to assessment in literacy, the literacy skills needed to access and use new literacies are generally overlooked. Assessments that examine a student's ability to locate and analyse the information on a webpage for example, are generally considered "not test-worthy" when compared to a student's ability to answer multiple-choice questions at the end of comprehension passage. In the area of assessment, questions arise that have not had to be considered in traditional pedagogies. How are students assessed for collaborating and co-constructing text in a wiki? How can sharing knowledge and expertise with others be assessed? How do teachers evaluate participation in chat sessions and the impact of contributions to online discussions? New approaches to what is assessed and how it is assessed are essential considerations in creating literacy-rich and dynamic classrooms in the 21st century.

Social changes

Results from an extensive US study on teens and their use of digital media, *The Digital Youth project* (2008) found that although many young people are developing a broad range of sophisticated new literacy and technical skills, they are also facing new challenges in how to manage their visibility and social relationships online. The research suggests that this rapid pace of change presents challenges for both adults and students as they struggle to keep up with technology and related social changes.

While many parents are technologically astute and actively involved in their children's technological explorations, others claim to be overwhelmed and lacking in competence. While these parents have limited opportunities to engage with technology, their children's saturation and often daily involvement with technology leaves them frustrated and restricted to a gate keeper role. More attention is required to better equip parents with the skills and self-confidence to assist their children. Few sites provide parents with up-to-date forums to discuss their concerns and issues regarding the monitoring and support of their children's participation.

Conclusion

What will it take for educators to adjust to literacy practices and instruction in the 21st century? It will take transforming traditional practices and continuing conversations about literacy and language learning with a commitment to embrace pedagogical and technological change. It will take teachers who are skilled in the effective use of digital technologies for teaching and learning. It will take a curriculum that integrates new literacies and pedagogies. It will take courageous and bold initiatives that include *yet unimagined information and communication technologies* that result in the development of unimagined literacies.

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Recommendation: Video *Did you know* available at www.shifthappens.workspaces.com/

Glossary

ICT **Information and Communications Technology.** The Australian Council for Educational Research's (ACER) National Survey of Information and Communications Technology Literacy defines ICT as *the ability of individuals to use ICT appropriately to access, manage, integrate and evaluate information, develop new understandings and communicate with others in order to participate effectively in society.*