

Paper

One essential direction: information literacy, information technology fluency

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Abstract The 2001 Australian *Information literacy standards* state that information technology (IT) literacy or fluency requires more intellectual abilities than the software and hardware knowledge associated with computer literacy, but that the focus is still on the technology. Information literacy (IL), however, is an intellectual framework developed since the mid 1970s for recognising the need for, understanding of, finding, evaluating and using information. This may be supported in part by IT or eLiteracy, in part by sound investigative methods, but most significantly through critical discernment and reasoning. Eliteracy, however it is defined, should therefore be contextualised within the IL framework, not apart from it. Revision of a paper presented at *eLit 2003: second international conference on information and IT literacy* held at Glasgow Caledonian University 11-13 June 2003.

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. Whether those challenges are democratic, economic, geopolitical, environmental, health or sustainability, what they have in common is that their solution can only be advanced by people who are literate, information literate, can ask informed questions and who are prepared to so—people who, to quote a recent Australian writer on the issue of misinformation

Read more widely, see more clearly, think more clearly. Challenge authorities on every occasion. More importantly challenge (themselves) (Adams, 2003)

This is the essence of the challenge for all educators in the 21st century.

The information literacy divide

Among those educators, librarians are particularly committed to social inclusion through knowledge equity. They have been long aware of the criticality of literacy and of information awareness, access and capabilities to social inclusion. In a complex information intensive society they see that the greatest divide is between those who have the understandings *and* capabilities to operate effectively in that society and those who do not. This is the information literacy (IL) divide, of which the digital or edivide is but one important aspect. They also recognise that there has been too little attention given in formal education to how people develop their sense of information need and that it can be developed, rather than relying on an innate awareness by students of its importance.

An iteration of this IL divide is to be found in the Australian Library and Information Association's 2001 *Statement on information literacy for all Australians*. It is a statement which readily translates to a global context, and the message of which should be embedded in the mission, curricula and pedagogy of all universities and other formal educational institutions.

Indeed, it is surprising that no university worldwide seeking a distinctive vision—as they all do—has used a lead statement like ‘Educating for the new world of information’ and then focused its mission, programs and pedagogy around that vision. The reality is that the three levels of formal education—primary, secondary, tertiary—do not connect about this issue. Nor do they usually demonstrate that they have really grasped the implications of a world of infoglut, or of the impossibility of an information illiterate person being able to be a lifelong learner and a full participant in society.

The first object of the Australian Library and Information Association is ‘To promote the free flow of information and ideas in the interest of all Australians and a thriving culture, economy and democracy’.

A thriving national and global culture, economy and democracy will be advanced best by people able to recognise their need for information, and identify, locate, access, evaluate and apply the needed information.

Information literacy is a prerequisite for

- participative citizenship
- social inclusion
- the creation of new knowledge
- personal empowerment
- learning for life

Library and information services professionals therefore embrace a responsibility to develop the information literacy of their clients.

They will support governments at all levels, and the corporate, community, professional, educational and trade union sectors, in promoting and facilitating the development of information literacy for all Australians as a high priority.

Educational change and information literacy

In another paper (Bundy, 2003) I have reflected on the issues which are driving curricular and pedagogical change in progressive universities and on the need for stronger curricular, pedagogical and information literacy partnerships between teachers and librarians. That paper also reviews the Australian contribution to information literacy. A seminal contribution has been the 1997 publication of Christine Bruce's *The seven faces of information literacy*. In her introduction Bruce suggests why information literacy has taken global root by observing that

The concept of information literacy has its roots in the emergence of the information society, characterised by rapid growth in available information and accompanying changes in technology used to generate, disseminate access and manage that information...(it) has been widely adopted by the information and education professions. This interest in information literacy is largely a result of its close association with the idea of lifelong learning. (Bruce, 1997)

Two more recent Australian contributions have been the 2001 publication of the *Information literacy standards* and the establishment of the Australian and New Zealand Institute for Information Literacy, www.library.cqu.edu.au/anziil/home.htm, both initiatives of the University of South Australia.

A matter of definition

As Curran (1993: 257-66) points out, the term information literacy comprises two common words, first linked by Paul Zurkowski in 1974. This was about the time that lifelong learning also entered the language of education. Those two words, information and literacy, educated people understand. *Information* means interpreted data, news or facts. *Literacy* is conventionally the ability to read, but increasingly has become associated with the ability to understand or to interpret specific phenomena. Examples are visual literacy, numerical literacy, cultural literacy, computer literacy, digital literacy, IT literacy and now electronic literacy.

Combined, *information* and *literacy* are appropriate to describe the understandings and capacities essential in a world where information, however provided and accessed, is the pervasive commodity, and where the requirements of 21st century living give impetus to the concept. Information literacy was a longstanding need and concept awaiting a descriptor, which it received 30 years ago. Electronic or eLiteracy seems, however, to be yet another catchy descriptor, awaiting useful conceptualisation beyond that already embraced within information literacy.

Bawden provides in his comprehensive paper 'Information and digital literacies: a review of concepts' (Bawden, 2001: 218-259) an analysis of the terms related to information literacy which have been used in the literature. Excluding literacy itself, there are six, some of which have others used synonymously

- information literacy
- computer literacy *synonyms* IT/information technology/electronic/electronic information literacy
- library literacy
- media literacy
- network literacy *synonyms* internet literacy, hyperliteracy
- digital literacy *synonym* digital information literacy

It is perhaps appealing to spend much time discussing the finer points of sometimes contradictory definitions, but as Bawden states

To deal with the complexities of the current information environment, a complex and broad form of literacy is required. It must subsume all the skill

based literacies, but cannot be restricted to them, nor can it be restricted to any particular technology or set of technologies. Understanding, meaning and context must be central to it. (ibid: 251)

Information literacy is that complex and broad form of literacy. Nonetheless, how information technology literacy or fluency relates to the IL framework is not settled, as indicated by the curious proposition that IT literacy *plus* IL now equals eLiteracy. This proposition is clearly invalid if the information literacy framework embraces IT literacy or fluency, as many consider it must.

One Australian educationalist notes

At one level, the skills needed to retrieve information are quite different and separate from those required to make informed judgements about information. If, for instance, a researcher were to engage a research assistant to locate and retrieve information for him or her, then in principle at least, the quality of the information could be judged without regard to the technology used to locate or retrieve it. In practice, however, there is a blurring of information literacy and ICT literacy. To some extent this is because information in the digital environment is at least partly an artifact of the technology itself... (Candy, 2002)

In similar vein, from a schools perspective, Dr Jamie McKenzie asserts that

It is time we replace the term IT (information technology) with IL (information literacy). IT is mainly about flow—the movement of information through networks...IL is about interpretation of information to guide decisions, solve problems and steer through uncertain, complex futures (McKenzie, 2000: 1)

This kind of assertion is consistent with one of the three objectives, www.nclis.gov/libinter/infolitconf&meet/goals-objectives-participant_responsibilities.html, of the 2003 meeting of the Unesco sponsored Experts on Information Literacy held in Prague.

That objective is

- To affirm or strengthen the working definition of information literacy
People are information literate who know when they need information, and are then able to identify, locate, evaluate, organize, and effectively use the information to address and resolve personal, job related or broad social issues and problems

The other meeting objectives are

- To develop a clever and more comprehensive vision of the role of information literacy in support of individual, organisational and national goals in all sectors of society and in all segments of the economy
- To establish the goals, themes, and primary logistics of a global congress on information literacy

Thirty one White papers from around the world informed that meeting, www.nclis.gov/libinter/infolitconf&meet/papers/papers.html. They, and the meeting itself, demonstrate why IL is an enduring concept and not a passing fad, as one sceptic claimed it was over a decade ago. There are buzz words and concepts which flourish and then fade in the vocabulary of education and society, some of them vacuously prefixed by the letter 'e'. This fate appears unlikely, however, for information literacy or for that icon of 21st century formal *and* informal education, lifelong learning.

The Australian *Information literacy standards*

The first edition of the Australian *Information literacy standards* was published, mainly for higher education, early in 2001. A second edition is in preparation for publication by the end of 2003. Spanish and Bahasa Indonesia versions are available, and versions have been adopted for use in Australian technical and further education colleges and public libraries. In May 2003 Ireland also sought approval to adapt them.

They derive from the 2000 US *Information literacy competency standards for higher education*. In reviewing the US standards consideration was given to the implications of Australian research, theory elaboration and practice which was not available or accessed when those standards were developed. Bruce's relational model (1997) of information literacy was considered in this context. The major difference between the US and Australian standards is the addition of two standards, one of which addresses the ability to control and manipulate information, and the other which represents IL as the intellectual framework for lifelong learning. The title of the Australian standards deleted 'competency' which has a pejorative connotation in Australian universities. It also deleted 'higher education', as it was considered this would narrow their utilisation. To date, although their application has been largely within higher education, they are being used in law firms, public libraries, technical and further education colleges, and high schools. In at least one large primary school they are being used as a framework for a whole of school information policy.

The standards derive from the following definition

Information literacy is an understanding and set of abilities enabling individuals to 'recognise when information is needed and have the capacity to locate, evaluate, and use effectively the needed information'. An information literate person has *learned how to learn*, and is able to

- recognise a need for information
- determine the extent of information needed
- access the needed information efficiently
- evaluate the information and its sources
- incorporate selected information into their knowledge base
- use information effectively to accomplish a purpose
- understand economic, legal, social and cultural issues in the use of information
- access and use information ethically and legally
- classify, store, manipulate and redraft information collected or generated

- recognise information literacy as a prerequisite for lifelong learning

The seven standards and outcomes are

1 The information literate person recognises the need for information and determines the nature and extent of the information needed

Outcomes

- The information literate person defines and articulates the need for information
- The information literate person understands the purpose, scope and appropriateness of a variety of information sources
- The information literate person consciously considers the costs and benefits of acquiring the needed information
- The information literate person re-evaluates the nature and extent of the information need

2 The information literate person accesses needed information effectively and efficiently

Outcomes

- The information literate person selects the most appropriate investigative methods or information access tools for finding the needed information
- The information literate person constructs and implements effectively designed search strategies
- The information literate person retrieves information using a variety of methods

3 The information literate person evaluates information and its sources critically and incorporates selected information into their knowledge base and value system

Outcomes

- The information literate person assesses the utility of the information accessed
- The information literate person summarises the main ideas extracted from the information gathered
- The information literate person articulates and applies initial criteria for evaluating both the information and its sources
- The information literate person validates understanding and interpretation of the information through discourse with other individuals, subject area experts, and/or practitioners
- The information literate person determines whether the initial query should be revised

4 The information literate person classifies, stores, manipulates and redrafts information collected or generated

Outcomes

- The information literate person extracts, records, and manages the information and its sources
- The information literate person preserves the integrity of information resources, equipment, systems and facilities
- The information literate person legally obtains, stores, and disseminates text, data, images, or sounds

5 The information literate person expands, reframes or creates new knowledge by integrating prior knowledge and new understandings individually or as a member of a group

Outcomes

- The information literate person applies prior and new information to the planning and creation of a particular product
- The information literate person synthesises main ideas to construct new concepts
- The information literate person compares new understandings with prior knowledge to determine the value added, contradictions, or other unique characteristics of the information
- The information literate person revises the development process for the product
- The information literate person communicates the product effectively to others

6 The information literate person understands cultural, economic, legal, and social issues surrounding the use of information and accesses and uses information ethically, legally and respectfully

Outcomes

- The information literate person understands cultural, ethical, legal and socioeconomic issues surrounding information and information technology
- The information literate person follows laws, regulations, institutional policies, and etiquette related to the access and use of information resources
- The information literate person acknowledges the use of information sources in communicating the product

7 The information literate person recognises that lifelong learning and participative citizenship requires information literacy

Outcomes

- The information literate person appreciates that information literacy requires an ongoing involvement with learning and information technologies so that independent lifelong learning is possible
- The information literate person determines whether new information has implications for democratic institutions and the individual's value system and takes steps to reconcile differences

The 2003 review of those standards has accepted, from experience, that a national framework is necessary to progress IL in education, to inform curriculum development and provide a basis for assessment and benchmarking. It is recognised that of great importance is the scope of each standard, how it is written and for whom it is intended. There will be changes to the standards, and their retitling as *An information literacy framework*. Some changes will also be made to their five page introduction, which has as its sections

Information literacy defined
Information literacy: the need
Information literacy and lifelong learning
Information literacy and higher education
Information literacy and pedagogy
Use of the standards
Information literacy and assessment

Under *Information literacy: the need* it is stated

Information literacy is required because of proliferating information access and resources. Individuals are faced with diverse, abundant information choices—in their studies, in the workplace, and in their lives. Information is available through community resources, special interest organisations, manufacturers and service providers, media, libraries, and the internet. Increasingly, information comes unfiltered. This raises questions about authenticity, validity, and reliability. In addition, information is available through multiple media, including graphical, aural, and textual. These pose special challenges in evaluating, understanding and using information in an ethical and legal manner. The uncertain quality and expanding quantity of information also pose large challenges for society.

It is also emphasised that

Sheer abundance of information and technology will not in itself create more informed citizens without a complementary understanding and capacity to use information effectively. It is this assertion which is explored in the section on IL and lifelong learning.

... With digitisation of scholarly publications and the growth in online delivery, 'fluency' with information technology requires more intellectual abilities than the rote learning of software and hardware associated with 'computer literacy'. The focus is still, however, on the technology itself. Information literacy, on the other hand, is an intellectual framework for recognising the need for, understanding, finding, evaluating, and using

information—activities which may be supported in part by fluency with information technology, in part by sound investigative methods, but most importantly, through critical discernment and reasoning. Information literacy initiates, sustains, and extends lifelong learning through abilities that may use technologies but are ultimately independent of them.

Complementary Australian developments

Two other Australian developments related to the standards have been progress towards information literacy assessment, and the establishment in May 2003 of the Australian and New Zealand Institute for Information Literacy (ANZIIL).

The former, led by Dr Ralph Catts from the University of New England, will allow for

- benchmarking information literacy attainment across universities by disciplines
- benchmarking within institutions, across disciplines
- diagnostic assessment of individual student information literacy needs
- comparability of research into effectiveness of information literacy strategies

A pilot study in Law and Education has involved

- development of a pool of indicators against the national information literacy standards through workshops with academic staff and librarians
- administration of a self report inventory
- student interviews
- comparison with student academic achievement

The latter development, ANZIIL, is the second such institute worldwide and the first to be transnational. Initiated by the University of South Australia and supported initially across higher education in Australia and New Zealand, it will assist organisations and individuals in both countries in the promotion of information literacy and its embedding in the total educational process. It aims to identify and foster best practice through

- professional development
- promotion, marketing and advocacy
- research

Investing wisely

No one knows how much is invested institutionally, nationally or globally on developing information literate students and citizens. If it could be calculated it would probably be far less than the very large expenditure on ICT in education which is unproductive and does not improve learning outcomes. This begs a major question about expenditure on ICT in formal education in all developed countries, and in particular about the tendency to attempt high cost technological solutions to complex educational issues when, as Larry Cuban, professor of education at Stamford has stated in *Oversold and underused: computers in the classroom*

Why should we spend billions on the latest technology when schools are begging for so much other support? The most serious problems afflicting

urban and rural poor schools...have little to do with a lack of technology
(Cuban, 2001: 2)

It is salutary that as far back as 1969 it was argued in a book *Run, computer, run: the mythology of educational innovation* (Oettinger, 1969) that IT could lead to genuine improvements in education, provided it was not force fed, oversold and prematurely applied. The author found however—this before the development of the pc—that it *was* being force fed, oversold and prematurely applied, notably by the US Office of Education, a new breed of learning corporations and IT leaders. That saga continues 30 years later against increasing scepticism, from Clifford Stoll onwards, about the waste of funds, unresearched and uncritical self assessments of learning outcomes, IT marketers, the IT industry, the technolusts, and the gullibility of information illiterate politicians and bureaucrats.

One of the latest sceptics is Australian academic Tara Brabazon (2002) in her entertaining book *Digital hemlock: internet education and the poisoning of teaching* in which she contends that

Internet based learning is a response to consumerism and the reduction in government funding. This has been an unfortunate context for the expansion of online pedagogy... Elearning has failed through the desire to make money—and quickly (Brabazon, 2002: 6-32)

Not unlike others, such as McKenzie who uses the terms ‘powerpointlessness’ and ‘toolishness’, Brabazon asserts that if she could uninvent one piece of software it would be PowerPoint. She also points to the difficulty in unraveling

...the belief that the internet and computer mediated communication will invariably improve the quality of education (ibid: 41)

Racing to waste

This tendency to promote technology as the educational panacea has been particularly evident in Anglo Saxon educational systems. It has, in effect, been at the expense of investment in educational fundamentals, improved pedagogy, better libraries, and a focus on the systematic development of information literate students and teachers.



*"What matters most is being first."
"But why are we in this race?"
"Shut up and keep running!"*

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See more at Jerry King's
website
<http://www.jerryking.com/> and
From Now On <http://fno.org>

There has also been the problem that where national information policies exist they tend to be driven by bureaucrats and politicians wearing politically tuned ICT blinkers. Thus we hear that a nation's commitment to ICT, in education in particular, will drive economic development, innovation and global connectivity. The facile rationale is also that it will reduce the information divide in the population, when all it may do is to reduce the *digital* divide. It is assumed that the information and digital divides are synonymous, and reducible simply by ICT expenditure. As with education generally, the issue of the information divide at the local, national and global levels is, however, more complex than to be susceptible to just an ICT solution.

The real information issue

The real issue is the *information literacy* divide, global responses to which require recognition that much of the world's population lacks basic reading literacy and basic ICT, and has yet to hear a telephone ring. This recognition seemed to have escaped the *eLit 2003 conference* program committee. The conference website stated that 'In the age of print, the ability to read was the key to knowledge', which implied that this ability is somehow no longer the key. Yet we will continue to live in an age of print for the indefinite future. The ability to read, whether on a screen or on paper, will continue indefinitely to be substantially the key to information access, to knowledge—and perhaps even wisdom.

This point was well made in one of the White papers for the 2003 Prague information literacy meeting. Wedgeworth (2002) wrote

The basic requirements for information literacy are a challenge for the world's most information intensive nations. For the rest of the world...it is a formidable barrier. Most discussions of information literacy assume basic

literacy. Yet current estimates are that one adult in five in the world lacks basic literacy skills.

If we persist in assuming a higher level of capability than evidence demonstrated, the outcome can only result in creating an even greater digital divide than is popularly known to exist...we must begin by embracing the full dimensions of the literacy problem...The Unesco Decade of Literacy is a timely vehicle for reaffirming the need to embrace the full range of adult capabilities in pursuit of the goal of an information literate world (Wedgeworth, 2002)

ELearning and eLiteracy

Elearning, like every other technologically focused development, is experiencing its own hype cycle, but much so-called eLearning remains effectively eTeaching. The provision of lecture content online to the single learner is not eLearning. It is poor eTeaching, a term—curiously—never used in an e-context.

As Nimon (2003) has noted

It is vital that the technical facility to manipulate electronic communications is seen for what it is, the ability to lay a 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: 132)

However, as Brook and Gilding (2001) conclude, eLearning

...can be used in numerous different ways ranging from the use of a simple electronic technology to facilitate communication to a sophisticated interplay of content, pedagogies, and online technologies...It is a sign of the emergence of the field that a shared set of definitions is not yet firmly in place... (Brook and Gilding, 2001: 7)

The pedagogical issue

Although multilearner activities like chatrooms promise greater engagement and interactivity they are rarely part of a structural sequence aimed to achieve particular learning outcomes. Australian Dr John Dalziel thus suggests that *eLearning content is dead* but that *learning design* can breathe new life into eLearning.

As elsewhere in the developed world, teaching and learning with the flexibilities over distance, learning style, performance, and time provided by electronic mediation, is under development by every university in Australia. This is impacting on academic tasks and roles, workload, teacher central, learner central, curriculum, content ownership, and other boundaries. Yet Kirkpatrick (2001) is not alone in concluding 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 by the wider socioeconomic context (Kirkpatrick, 2001: 46)

Much, however, of the important debate about pedagogy and change in higher education has been stimulated by eLearning potentialities, but as Martin and Webb (2001) point out

There are advocates who believe it to be an almost unqualified goal. Others believe it to be an unqualified disaster. We suggest that eLearning in itself is neither good nor bad; it is one of several different ways of teaching. What best helps students learn should dictate the choice of method whether traditional, virtual or a combination of both (Martin and Webb, 2001: 49)

What we are really seeking is technology mediated, not technology focused, pedagogy.

In responding to that proposition, to broadbanding, the massification of the university undergraduate population and commercialisation imperatives, the professional identity and role of the academic teacher must—it already is—change through disaggregation. There is already wide recognition in Australian education of the need to balance, in the curriculum and pedagogy, content acquisition with the development of lifelong generic qualities by students. This is because much of the content of professional first degree programs, in particular, has a short use by date. Those programs still tend to focus on answers which continually change, not on questions which rarely change.

Evidence of this recognition of need is the graduate qualities movement, in which the University of South Australia has since 1995 been a leader, and is now again leading in a focus on assessment and on research student qualities. What is significant about its seven graduate qualities is that only one is content focused. The others are all underpinned by explicit or implicit understandings that learning how to learn through recognising information need, and the capacity to find, evaluate and apply information is the enduring legacy every educational institution—primary, secondary and tertiary—should bequeath its students. If they do *not* do so, suggests one writer, they should be held accountable for sending into their careers students ‘who are unprepared to function effectively in the complex information environment’ (Ianuzzi, 1999: 304)

One essential direction

If the present and lifelong learning needs of students are truly given priority, account must therefore be taken of all aspects of their information literacy development at every level of formal education. Information literacy is not a library issue—it is a whole of education issue. Better partnerships between teachers, librarians, learning developers and instructional designers are therefore needed to embed information literacy in the curriculum, pedagogy and assessment.

A significant information literacy partnership in progressive primary and secondary schools is that between teacher librarians and classroom teachers. The evidence from

the Colorado studies and elsewhere is that there are significantly improved learning outcomes and test scores if this occurs.

In universities a significant partnership should be between academic teachers and academic librarians. This is because the latter have much to contribute from their one-to-one and group engagement with students, their knowledge of information and learning issues, and their commitment to the information literacy framework. That framework necessarily embraces electronic, digital and ICT literacy or fluency. There is nothing to be gained from defining and contextualising ICT or eLiteracy outside of that framework. In terms of the holistic development of information enabled learners there would, indeed, be much to be lost.

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