

This is the author-created version of the following work:

Bruce, Christine (2011) *Information literacy programs and research: an international review*. Australian Library Journal, 49 (3) pp. 209-218.

Access to this file is available from:

<https://researchonline.jcu.edu.au/55451/>

Copyright 2000 Christine Bruce & ALIA

Please refer to the original source for the final version of this work:

<https://doi.org/10.1080/00049670.2000.10755921>

Information Literacy Programs and Research: An International Review
Christine Bruce, School of Information Systems, QUT

Abstract

This paper provides an overview of contemporary information literacy research and practice. While the content is highly selective, the intention has been to highlight international and Australian developments which have achieved significant recognition, which are representative of similar trends in other places, or which are unique in some way. There are three main foci in the paper. Firstly, an exploration of ways of interpreting the idea of information literacy. Secondly, a synthesis of various efforts to seek new directions in educational, community and workplace contexts, beginning with the major initiatives being undertaken in the United States. Thirdly, an introduction to some recent research, concluding with a summary of my own investigation into different ways of experiencing information literacy.

BIOGRAPHY

Christine Bruce is Senior Lecturer in the School of Information Systems, and Associate Director of the Information Systems Management Research Centre. She teaches information organisation, professional practice, information user instruction and research methods. Christine has been involved in information literacy research and practice since 1989. She regularly conducts workshops for library staff and other educators, and has consulted to a number of universities on the implementation of information literacy programs. Her recent monograph *Seven Faces of Information Literacy* won the ALA CARL Instruction Section Publication of the Year Award for 1999. E-mail address: c.bruce@qut.edu.au

Acknowledgements

This paper is based on one presented to the LIANZA '99 Conference in Auckland, New Zealand. It draws extensively from Bruce, C. and Candy, P. (eds) (in press) *Information Literacy Around the World: advances in programs and research*. Charles Sturt University, Centre for Information Studies. All papers cited as (ILAW) are to appear in that volume.

Information Literacy Programs And Research: An International Review

Originally conceived in the 1970s, the idea of information literacy has captured the imagination of librarians, other educators and information professionals around the world. In the last few years, the result has been significant innovations in collaboration, staff development, standards and policy making, research, sourcing funding, the use of technology, and program implementation. This paper reviews contemporary information literacy research and practice, highlighting interesting international and Australian developments, some of which have achieved significant recognition. Others represent similar trends elsewhere, or are unique in some way. The examples cited come from many continents, represented by the United States and Canada, the United Kingdom, Sweden, Singapore, South Africa, New Zealand and Australia. While other countries, for example, Japan and China, are also working with the idea of information literacy, literature from these places is more difficult to access.

Three themes form the foci for this paper. The first section explores ways of interpreting the idea of information literacy that appear in the literature. The second draws together a range of efforts to seek new directions in educational, community and workplace contexts, beginning with the major initiatives being undertaken in the United States. The third introduces some recent research, and concludes with a summary of the author's own investigation of different ways of experiencing information literacy.

Contemporary Views

Descriptions of information literacy have taken many forms over the years. The most familiar of these are still likely to be the descriptions put forward by Christina Doyle as a result of her Delphi study conducted in the early 1990s; and by the ALA Presidential Committee's Final Report on Information Literacy:

Information literacy is the ability to access, evaluate and use information from a variety of sources. (Christina Doyle, 1992)

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information ... Ultimately, information literate people are those who have learned how to learn. They know how to learn because they know how knowledge is organised, how to find information, and how to use information in such a way that others can learn from them. (ALA, 1989)

In Australia, the description promulgated by Candy, Crebert and O'Leary in their influential report *Developing Lifelong Learners Through Undergraduate Education* is widely promulgated, particularly in the university sector:

- Knowledge of major current resources
- ability to frame researchable questions
- ability to locate, evaluate manage and use information
- ability to retrieve information
- ability to decode information
- critical evaluation of information. (Candy, Crebert and O'Leary (1994)

Research into users' information literacy experiences within the educational sectors has resulted in descriptions of information literacy that focus on engagement with information, rather than on the skills prerequisite for such engagement. These descriptions are beginning to find favour with educators adopting constructivist and relational, rather than behavioural approaches to teaching and learning. In the United States, Carol Kuhlthau (1993) concluded that: information literacy is not a discrete set of skills, but rather a 'way of learning'. My own research, summarised towards the end of this paper, leads me to conclude that:

IL, like phenomena such as teaching and learning, does not have a life of its own, rather it is a way of thinking and reasoning about aspects of subject matter. (Bruce, 1997)

Similar conclusions are reached by researchers such as Bonnie Cheuk (Cheuk, ILAW) and Louise Limberg (ILAW). Both of these focus on groups, such as students, engineers and auditors using information in very specific contexts, and discover that many dimensions of information literacy are closely related to the context.

Seeking Directions, Providing Signposts

Much of what is presently happening under the banner of information literacy can be drawn together under a range of themes. Many of the programs described came into being as a result of seeking new directions, and have ended by acting as signposts along the way to others who are designing or redesigning their programs. A number of initiatives that are presently underway in the United States operate at a national level, and as these have already been highly influential I discuss them separately.

- **The United States – leading the way**

The United States continues to take the lead in many areas of information literacy. Prominent initiatives at present are: the Information Literacy Institute (www.ala.org/acrl/nili/nilihp.html), an ALA funded staff development program for training librarians; the creation of Information Literacy Competency Standards for Higher Education; and the hosting of Think Tank III (www.lib.utexas.edu/is/projects/thinktank/), as a means of seeking directions for the future. The main idea of the Information Literacy Institute, headed by Cerise Oberman, is to provide intensive training at introductory and advanced levels, to academic librarians. The information literacy competency standards are likely to provide a useful framework for higher educators. The committee responsible visited Australia in December 1999 to seek feedback from the Fourth Australian Information Literacy Conference.

Information Power (ALA&AECT1998) continues to be the major influence in the School Sector, having been recently revised. The 'FITness report' (Fluency in Information Technology) (Committee on IT Literacy, 1999) is causing information literacy advocates to consider the close relationship between IL and other literacies, as well as the possibility of promoting the idea of 'information fluency'. Other important, recent publications from the United States include Spitzer et al's (1998) *Information Literacy: Essential Skills for the Information Age*, Breivik's (1998) *Student Learning in the Information Age*, and the ALA Presidential Committee's (1998) Progress Report on Information Literacy.

- **Staff Development**

As the roles of librarians, and other educator's, continue to blur, staff development for all parties is becoming increasingly important. The need to provide continuing education for librarians in particular has produced a range of staff development models. Relevant programs are presently still focused in the educational sector. In the United States, the Information Literacy Institute (www.ala.org/acrl/nili/nilih.html) has recently commenced teaching programs for librarians involved in information literacy education. These programs, both introductory and advanced, have attracted interest, and participants, from all over the world.

While the Information Literacy Institute operates under the banner of the ALA, EDULIB (<http://ukoln.bath.ac.uk/services/elib/projects/edulib/>), in the UK is associated more closely with higher education staff development programs, having gained SEDA accreditation. Materials are available from this project to be used for academic librarians by an appropriate facilitator, a scenario already being taken advantage in Australia. Online staff development for information literacy is offered in Europe through a program named DEDICATE (Fjallbrant, ILAW), and a series of workshops have been successfully trialled for school teachers in New Zealand (Moore, ILAW). Also in Australia, academic librarians and lecturers are taking advantage of the many Graduate Certificate's in higher education, some of which include opportunities for all participants to explore information literacy strategies and issues (Bruce, Weeks, and Crebert, 1995). In universities, development opportunities for lecturers and librarians are also created through inhouse workshops and seminars which may be facilitated by staff developers, librarians or external consultants.

- **Curriculum design for information literacy and lifelong learning**

In the educational sector, 'curriculum integration' is the major issue for most IL educators. Considerable energy goes into determining what this means, and how to 'do it' effectively. In various parts of the world teaching teams are experimenting with approaches to curriculum integration, researching curriculum development and outcomes (Radomski, Hepworth, ILAW), and reflecting on what it means to work within different educational cultures. There is also a focus on influencing policy across the institution and employing staff outside the library to adopt an advocacy or change-agent role (Karelse, Radomski, Wright and McGurk, ILAW).

Bruce and Candy (ILAW) suggest that one way forward may be to adopt Bigg's (1999) principle of constructive alignment. This involves designing learning activities in such a way that students are required to change their usual ways of learning; for information literacy educators, this will usually mean designing learning strategies so that students learn through the process of effective information use. It would seem that the very term 'curriculum integration' is a barrier to effective curriculum design as it suggests the need to 'add-on' yet more content or 'skills'. Using a model such as that proposed by Biggs would allow us to abandon the terminology such as 'curriculum integration' and replace it with phrases such as 'Curriculum design for information literacy and lifelong learning'.

- **Workplace Explorations**

Despite recognition of the importance of workplace information literacy (see for example Kanter,

1996, Spitzer et al, 1998), reports of relevant initiatives are still rare. Here I highlight two that have recently emerged. In Australia, Gasteen and O'Sullivan (ILAW) report the development of an Information Literacy Strategy for Blake, Dawson and Waldron, a legal firm with offices in a number of cities across the country. Their strategy is based on the argument that '...a firm's information literacy, on an organisational level, impacts on its success in the market place'; and revolves around the library, important resources such as precedents and their Infobank database, as well as human resources and training. Gasteen and O'Sullivan have also developed a 'profile of an information literate law firm', and are considering the importance of knowledge management to the information literacy endeavour.

In Singapore, Bonnie Cheuk (ILAW) has been researching the information literacy experiences of auditors and engineers in the workplace. She has developed a workplace-based, recursive model of information literacy that challenges a number of conventional assumptions. Amongst these she suggests that, in the workplace, information seeking is not always necessary; information seeking is often by trial and error; is not 'getting the answer'; is not linear; is not a one man job; & that relevance criteria change. Like other researchers she also challenges us to recognise the importance of helping people to take a critical approach to information systems and sources, the collaborative nature of information literacy, and the development of personal heuristics in information seeking and use.

- **Community Focus**

Librarians have always recognised the importance of information literacy in community, as opposed to workplace and educational contexts. Interest in information needs for the social and civic arena is growing. More research is being conducted, and more emphasis is being placed on this sector in the professional literature. Weiner (1997) for example, explores the expanding role of public libraries in bringing information and IT to the community. The 'community', however, is a diverse population, and it is important that non-traditional groups of users be served. Australia's indigenous community (Mortimer, ILAW), and New Zealand's Maori community (Jones, 1997) have recently been assisted with special programs designed to help them become autonomous users. Owens (1995) establishes the importance of an informed citizenry in his discussion of the Hindmarsh Island Bridge.

- **Large scale funding**

Information literacy projects are being funded in a growing range of ways. Until now, sources of funding have been largely government agencies. Diverging from this pattern is the INFOLIT project commenced in South Africa in 1995, and funded by the Readers Digest. INFOLIT, originally under the direction of Cathy-Mae Karelse, aims to promote information literacy in the tertiary sector, schools and communities of the Western Cape Region of South Africa (Karelse, ILAW). Several pilot programs have been established and extensive research conducted to profile information literacy related skills across five Western Cape tertiary institutions. Sayed's (ILAW) analysis of skills and confidence across different cultural groups is probably the largest such study undertaken by information literacy researchers.

- **Hi-tech solutions**

Those of us responsible for the implementation of information literacy education are naturally turning to new technologies for solutions to problems of access and communication. In Canada, John Parboosingh (ILAW) has developed a product called PC-Diary for use with continuing education of physicians. PC Diary allows the recording, sharing and monitoring of learning in staff development programs. The Swedish Into Info project (previously EDUCATE), has developed a range of electronic, subject specific, learning materials for information access and use by researchers and students (Fjallbrant, ILAW). In Australia considerable work has been done exploring the use of technology for information education in distance learning programs (Appleton, ILAW).

Research Directions

Information literacy research is still in its infancy. Not only is the number of studies completed relatively small, the agenda is ill defined and suitable theoretical frameworks are only just beginning to be explored. Nonetheless, studies that have been completed to date are revealing important insights into the nature of information literacy. They are also drawing upon a range of 'user' or 'people-oriented' theoretical frameworks, which are making possible outcomes that are highly relevant to professional practice. Some of these studies are using existing disciplinary bases, such as information seeking and use research, or educational research. Overall, directions are being established which will make information literacy research a significant source of knowledge for educators, librarians and other information professionals. Work in progress may be loosely categorised as research-in-practice, applied research or pure research.

- **Research-in-Practice**

Research-in-practice is usually undertaken by people directly involved in information literacy programs, or in collaboration with them. The researcher is usually subjecting some aspect of their situation to rigorous scrutiny, and seeking new knowledge, new ways of doing things as a result. Such research is likely to be driven by critical theory, in that it is intended to be empowering, emancipatory and participatory. Action research, one approach driven by critical theory, has been used for developing information literacy programs in higher education (Radomski, ILAW), and schools (Moore, ILAW). It has also been used as a framework for evaluating information literacy instruction in the University of Queensland Physical Sciences and Engineering Library (Hill, 1999). Other examples of research in practice are the development of the profile of an information literate law firm (Gasteen and O'Sullivan, ILAW) and the development of PC-Diary (Parboosingh, ILAW).

- **Applied Research - problem solving**

Applied research investigates problems that are pertinent to practice. User needs analyses, such as those conducted in South Africa (Sayed, ILAW) and Singapore (Hepworth, ILAW) identify user profiles which may then drive the development of information literacy programs. In Australia Genoni and Partridge (ILAW) analysed the information management skills of research students in order to develop courses to assist them with this aspect of their studies. A perennial problem faced by educators is that of assessment for IL education. How does one appropriately assess

learning in this domain? This has been the focus of work by Catts (ILAW) at the University of Central Queensland.

- **Pure Research- seeking new directions**

Pure research seeks insights into the nature of phenomena. A number of studies have been conducted recently which fall into this category. They usually deliberately employ a well articulated theoretical framework and provide the research and practitioner community with new ways of thinking about important aspects of information literacy. Examples of such studies include:

- 1) Bonnie Cheuk's (ILAW) use of sensemaking to explore the nature of IL in the workplace;
- 2) Louise Limberg's (ILAW) use of phenomenography to determine varying ways of experiencing the information seeking and use process;
- 3) Helmut Klaus' (ILAW) use of phenomenography to identify different ways of experiencing thesauri when searching databases;
- 4) Christine Bruce's (1997a) phenomenographic exploration of people's varying experience of information literacy; and
- 5) Ross Todd's (1999a) cognitive analysis of adolescent girls' use of heroin information.

The question of theory has begun to tease information literacy researchers. Consequently, various attempts have been made to spell out useful theoretical directions. Todd (ILAW) explores a cognitivist approach, Mutch (ILAW) explores critical theory, Bruce (1997a,b) articulates the relational approach, and Cheuk (1998) claims to be working within a constructivist paradigm. The need for stronger theoretical frameworks was reinforced by Ross Todd (1999b) in his address at the Fourth Australian Information Literacy Conference.

- **Research Agendas**

What research agendas are being set by the directions presently being followed? While each researcher establishes different research directions and agendas, broad questions and foci may be summarised as follows:

- The nature of knowledge, information and IL in different cultures;
- IL experiences of individuals and groups;
- What motivates people to walk the IL path?;
- Barriers to the implementation of IL programs; and
- Strategies for helping individuals and communities to become information literate (Bruce and Candy, ILAW).

The Seven Faces of Information Literacy

This last section of the paper focuses on my own research into how information literacy is conceived or experienced. The *Seven Faces of Information Literacy* (Bruce, 1997a) are derived from a phenomenographic investigation of variation in the experience of information users. Their relevance to information literacy practices stems from their close association with the everyday life-world of professional practitioners. Relationships can be established between the seven faces and workplace processes, which effectively links information literacy to the learning

organisation. The seven faces also suggest directions for educators and may be of use in community settings.

When information literacy is interpreted as part of the character of the relation between users and information some interesting features of the phenomenon become apparent. These include:

- varying emphases on technology;
- emphasis on the capacity to engage in broad professional responsibilities, rather than specific skills;
- social collaboration or interdependence between colleagues, rather than emphasis on individual capability;
- need for the partnership of information intermediaries; and
- emphasis on intellectual manipulation of information rather than technical skill with IT.

Significant features of the Seven Faces are presented in Table One below:

First Face : The IT Experience	<ul style="list-style-type: none"> • IT used for information awareness • IT helps users stay informed/communicate • a social experience
Second Face : The Info-Sources Experience	<ul style="list-style-type: none"> • bibliographic • human • organisational • assistance of intermediaries emphasised
Third Face : The Info-Process Experience	<ul style="list-style-type: none"> • linked to problem-solving, decision-making • requires personal heuristic • a 'creative art'
Fourth Face : The Info-Control Experience	<ul style="list-style-type: none"> • recognising relevant information • managing that information • making connections between information, projects, people • interconnectedness between information and parts of projects
Fifth Face : The Knowledge Construction Experience	<ul style="list-style-type: none"> • emphasis on learning • developing personal perspective with knowledge gained • dependent on critical thinking
Sixth Face : The Knowledge Extension Experience	<ul style="list-style-type: none"> • personal knowledge + experience + creative insight/intuition • mysterious experience • develops new knowledge/approaches to tasks/novel solutions
Seventh Face : The Wisdom Experience	<ul style="list-style-type: none"> • personal quality • values and ethics combined with knowledge • information used for the benefit of others

Table One: Features of the Seven Faces of Information Literacy

- **Seven Faces in the Workplace**

The Seven Faces of Information Literacy appear to be closely linked with workplace processes, making them a useful tool for managers and educators. The correlations I propose appear in Table Two below.

Information Technology Experience	Environmental Scanning
Information Sources Experience	Becoming Familiar with and using information sources and services
Information Process Experience	Information processing; packaging for internal/external consumption
Information Control Experience	Information management
Knowledge Construction Experience	Corporate memory
Knowledge Extension Experience	Research and development
Wisdom Experience	Professional Ethics

Table Two: Seven Faces and Workplace Processes (Bruce, 1999)

- **Seven Faces in Education and Training Programs**

The seven faces may also help in education and training programs in at least three ways. First, by allowing educators to diagnose the existing range of learners' information literacy experiences. Second, to help us deepen those experiences with which they are familiar; and third to enable us to usher them into previously unfamiliar experiences. Further suggestions for using the seven faces in education and training programs are available in the *Seven Faces of Information Literacy* (Bruce,1997).

- **Seven Faces in the Community**

The Seven Faces of Information Literacy were not developed in a community setting. However, as it is a simple matter to associate each face with community information processes, it is likely that they will be relevant in that arena. For example, the IT conception may be considered akin to using IT for purposes such as shopping and communicating. Sourcing information in community contexts is also likely to occur individually, collaboratively or via a mediator. Problem solving, getting organised, getting informed, innovating and applying wisdom are arguably all also part of the experience of everyday life.

Conclusion

The many contemporary developments in information literacy programs and research suggest that considerable energy is being expended in this area. The idea is beginning to move beyond the educational sector, which has been its primary home for twenty years or more; into the workplace and community. It seems, however, that librarians are still the primary initiators of most new

developments. This should not be surprising, as our profession has an intimate awareness of the information environment and critical abilities to communicate and work with information users. As we leave the twentieth century we can expect to see information literacy issues being taken up more firmly outside the library community, which will challenge us to provide new kinds of leadership to interested others. But what of research? Information literacy researchers are beginning to open new research territories and to provide important insights into people's experience of information literacy in various contexts. Largely, however, its applicability to the practitioner community is yet to be tested. Thus, new challenges will arise for researchers and practitioners to work together to establish the relevance of completed work and to develop further research paths.

References

- American Library Association. (1998) *A Progress Report on Information Literacy*, ACRL.
- American Library Association Presidential Committee on Information Literacy. (1989) *Final Report*, ALA, Chicago
- American Library Association and Association for Educational Communications and Technology. (1998) *Information Power: Building Partnerships for Learning*, Chicago, Author.
- Biggs, J. (1999) *Teaching for Quality Learning at University*, Open University Press, Buckingham.
- Breivik, P. (1998) *Student Learning in the Information Age*, ACE, Oryx Press, Arizona.
- Bruce, C.S. (1997a) *Seven Faces of Information Literacy*, Auslib Press, Adelaide.
- Bruce, C.S. (1997b) The relational approach: a new model for information literacy. *New Review of Information and Library Research*, vol. 3, pp.1-22.
- Bruce, C.S. (1999) Workplace experiences of information literacy, *International Journal of Information Management*, vol. 19, no.1. pp. 33-48.
- Bruce, C.S. and Candy, P.C. (eds) (in press) *Information Literacy Around the World: Advances in Research and Practice*, Charles Sturt University, Centre for Information Studies.
- Bruce, C., Weeks, P. and Crebert, G. (1995) Teaching lecturers: modelling information literacy education, in *The Learning Link: Information Literacy in Practice*, ed. Di Booker, Auslib Press, Adelaide.
- Candy P., Crebert, G. and O'Leary, J. (1994) *Developing Lifelong Learners Through Undergraduate Education*, NBEET Commissioned Report No 28, AGPS, Canberra.
- Cheuk, B. (1998) An information seeking and using process model in the workplace: a constructivist approach, *Asian Libraries*, vol. 7, no. 12, pp. 375-390.
- Doyle, C. (1992) Outcome Measures for Information Literacy within the National Education Goals of 1990. ED351033, p.2.
- Hill, C. (1999) Improving information skills programs using action research. Paper Presented at the Fourth (Australian) National Information Literacy Conference, Adelaide, December, 1999.
- Kanter, J. (1999) Guidelines for attaining information literacy, *Information Strategy: the Executive's Journal*, vol.12, no.3, pp. 6-11.
- Kuhlthau, C. (1993) *Seeking Meaning: a Process Approach to Library and Information Services*. Greenwich CT, Ablex.
- Jones, E. (1997) Literacy for Maori: a cultural perspective. In Booker, Di (ed), *Information Literacy: The Professional Issue*, Adelaide: University of South Australia Library, 70-73.
- Owens, R. (1995) 'Chilling the community: information literacy and the Hindmarsh Island Bridge' in *The Learning Link: Information Literacy in Practice*, ed. Di Booker, Auslib Press, Adelaide.
- Spitzer, K., Eisenberg, M. and Lowe, C. (1998) *Information Literacy: Essential Skills For The Information Age*, ERIC Clearinghouse on Information and Technology, Syracuse University.
- Todd, R. (1999a) Utilization of heroin information by adolescent girls in Australia: a cognitive analysis, *Journal of the American Society of Information Science*, vol. 50, no. 1, pp. 10-23.
- Todd, R. (1999b) Grounding information literacy in a stronger theoretical framework. Paper presented at the Fourth (Australian) National Information Literacy Conference, Adelaide, December, 1999.
- Weiner, R.G. (1997) Information access illiterate, *Public Libraries Quarterly*, vol.16, no. 3, pp. 53-6.