

Information Literacy Futures: From data to information to knowledge

**A submission to the Information Futures Commission
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Introduction

It is this paper's contention that in a competitive higher education market, a well planned in-depth, evaluated information literacy program, presented through the library in close collaboration with academics, can enhance the student experience significantly. This paper is therefore provocative in embracing information literacy as a multifaceted model, which goes well beyond one-off classes to an integrated program that can be evaluated in terms of student achievement and experience.

To accomplish this "the skill set for librarians will continue to evolve in response to the changing needs and expectations of the populations they serve, and the professional background of library staff will become increasingly diverse in support of expanded service programs with library facilities and services increasingly integrated with research, teaching, and learning programs across campus". ([ACRL 2007](#))

Much has been written about the "net generation" of students being digital natives and technologically savvy, but are they information savvy? Are they information literate? In this paper we will not address the myriad of tools that facilitate access to and the communication of information, but rather we will focus on the guiding intellectual principles that we feel should underpin the strategic directions for information literacy at the University of Melbourne.

Information literacy is an area of professional concern for both academics in their learning and teaching programs as well as for librarians in their role of information professionals providing support to the students engaged in those programs. This paper asks whether, within the University of Melbourne Library, the librarian as information professional responds to the information literacy needs of the student to the extent that the professional bodies expect of us, as outlined in the Australian Library and Information Association (ALIA)'s guidelines *A library advocate's guide to building information literate communities: Information Literacy Forum Advocacy Kit 2003* and *The Australian/New Zealand Information Literacy Standards 2004* from the Australian and New Zealand Institute for Information Literacy (ANZIIL), or the International Federation of Library Associations' *Guidelines on Information Literacy for Lifelong Learning*. The core of this paper is the question of the relationship between the library, the academic and the student as teachers, learners and researchers for the best possible outcome to make the University of Melbourne experience meet the critical demands of learning and research.

This paper also refers to exemplar work at Queensland University of Technology as a model to which we should also aspire.

Beyond Library Skills

This paper can only skim the evidence to support the argument that the consideration that information literacy practice within the University of Melbourne Library needs to go beyond the current concept of “library skills” which currently is consumed with the delivery of SuperSearch and EndNote training (although there are some notable exceptions referred to in the Conclusion of this paper on which we can build).

Various models put forward by leading exponents of information literacy will be used to support this argument. This paper will pose questions along with suggested areas for further discussion and exploration, rather than present answers about the role of librarians as information professionals, and the relationship between librarians and academics in the information literacy continuum.

We also ask the question “should librarians be concerned with concepts of student learning” and strongly suggest that we should. We need to respond to the learning and teaching aspirations embodied in the new Melbourne Model, and in particular in supporting the generic skills embodied in the graduate attributes. A recent Teaching @ Melbourne seminar on curriculum design attended by one of the authors emphasised that assessment criteria for learning objectives should also include generic skills i.e. the graduate attributes. These attributes, identified as typifying the University of Melbourne graduate, expect that their experience will enable them to become:

- Academically excellent:
 - have a strong sense of intellectual integrity and the ethics of scholarship
 - have in-depth knowledge of their specialist discipline(s)
 - reach a high level of achievement in writing, generic research activities, problem-solving and communication
 - be critical and creative thinkers, with an aptitude for continued self-directed learning
 - be adept at learning in a range of ways, including through information and communication technologies
- Knowledgeable across disciplines:
 - examine critically, synthesise and evaluate knowledge across a broad range of disciplines
 - expand their analytical and cognitive skills through learning experiences in diverse subjects
 - have the capacity to participate fully in collaborative learning and to confront unfamiliar problems
 - have a set of flexible and transferable skills for different types of employment

The facilitation of these attributes is at the core of information literacy.

Definitions

At this juncture, it is appropriate to review the definitions of information literacy provided by library organisations, ALIA and ANZIIL, that support the argument of this paper:

ALIA:

- Information literacy means being information wise. It means knowing when a book may be more helpful than a computer. It means knowing how to find, evaluate and use information in all forms
- Information literacy is more than print literacy, computer literacy or media literacy
- It means knowing when you need information, where to find it and how to evaluate and use it in your everyday life.
- Information wise people know that what is true today may not be true tomorrow, *that information is not the same as knowledge* (author emphasis).

ANZIIL identifies six standards to apply to the information literate person. These are:

- *Standard One* The information literate person recognises the need for information and determines the nature and extent of the information needed.
- *Standard Two* The information literate person finds needed information effectively and efficiently.
- *Standard Three* The information literate person critically evaluates information and the information seeking process.
- *Standard Four* The information literate person manages information collected or generated.
- *Standard Five* The information literate person applies prior and new information to construct new concepts or create new understandings.
- *Standard Six* The information literate person uses information with understanding and acknowledges cultural, ethical, economic, legal, and social issues surrounding the use of information.

ANZIIL also identifies that the issue of graduate attributes came to the fore in Australian higher education with the report on developing lifelong learners through undergraduate studies. Information literacy was identified in the report as an essential element for lifelong learning. Each of the attributes was envisaged as a continuum of capacities, and at higher levels each attribute is inevitably demonstrated in conjunction with others. Information is often transmitted between people working together. It is natural, therefore, to expect that people will demonstrate their capacity for teamwork by the way they transfer information. Communicating ideas and information is integral to information literacy. Providing useful spaces for collaborative work can enhance information literacy capacity

Knowledge Facilitation

The University of Melbourne's Library of the Future has created an operational section entitled Knowledge Facilitation, within which lies the responsibility for developing information literacy standards and guidelines and ensuring delivery appropriate to the aspirations of the Melbourne Model. A parallel program Research and Research Training looks to the specific needs of research faculties – students and staff. Why knowledge facilitation and not information facilitation? Because knowledge is the medium of the university. The Melbourne Model emphasis for its students in the new degrees is on academic breadth as well as disciplinary depth to ensure that our graduates will have the capacity to negotiate their way successfully in a world where knowledge boundaries are shifting and reforming to create new

frontiers and challenges almost daily. It is the ability to engage with students so that they are able to function and lead in the global knowledge economy for which the Melbourne Model is designed. It is knowledge that we wish the student to acquire, and thus it is this knowledge acquisition that the Library needs to consciously and actively support.

Information is the means to knowledge but not the endpoint. The library stores and provides gateways to information resources in the form of databases, websites, service provision information, books, journals etc. However, although knowledge is derived from information, it is richer and more meaningful than information. Information is converted to knowledge when critical thinking is applied to that information. “The most amazing scholarly article, peer reviewed and disciplinary prize-winning though it may be, is just information until a reader takes it and integrates it into his or her own knowledge base/worldview/ paradigm.”

<http://pbj.cltl.wsu.edu/oenglish/archive/2005/03/04/2512.aspx>

Information literacy is the pathway to critical thinking skills. Information literacy facilitates knowledge. The University of Melbourne Library and its Librarians must be at the forefront of this practice, building student skills in order to meet those aspirations. As the Australian Library and Information Association (ALIA) ‘s guidelines state, when asking “why information literacy?”, – that good decisions depend on good information. Our nation faces a critical new challenge in the 21st century: helping people cope with a bewildering amount of information. Technology is changing how we live, learn and work. The ability to read or even use a computer is not enough. You must also be able to evaluate and apply information.

Information overload

However “too much irrelevant information floating around can hamper you in the creation of new (or new to you!) knowledge.”

(<http://pbj.cltl.wsu.edu/oenglish/archive/2005/03/04/2512.aspx>). With the proliferation of information, information literacy needs to encompass not only showing which sources – print and digital – are available but ways of using the information to an end where those ends demonstrate that knowledge acquisition, whether it be an essay, a research paper, a book, a scientific experiment, or a web page to name a few. Pathways to knowledge through guides need to be produced, learning objects and tutorials which help with library research should be embedded in the learning management system as a suite of options for academics. The evaluation of books, journal articles, databases and data sets, depends on discipline bases, and has a subjective element.

Recent research on scholars' methods of identifying quality and reliability in Web resources and a survey of research on factors influencing perceived credibility on the Web reinforce basic points. We should acknowledge the level of sophistication it takes to really effectively use the Web. With too much irrelevant information floating around both cognitive support tools as well as IT tools are required in order to access specific and useful information. For example, in one integrated information literacy course delivered at this university, students were required to keep a reflective journal on why they chose their information sources.

<http://pbj.cltl.wsu.edu/oenglish/archive/2005/03/04/2512.aspx>

It is essential that students learn ethics of information use, citing correctly, copyright requirements of information use, avoiding plagiarism. However with the growth of sources, often the easy way out is not the best way to finding the essential piece of information; therefore information literacy needs to be considered as an essential element to help sort out essential information. In an information overloaded world, knowing how to find the key journals in a field of study, the best ways of storing and retrieving pdf's and short-cuts to valuable sources, is worth resourcing. So much of what is retrieved on the web may not be accurate, up-to-date, or the best information available. Part of the critical thinking process is the ethical use of information, where an understanding of copyright and intellectual property issues are not only dealt within the legal framework, but also in the context of the benefits of gaining real understanding and an authentic voice, which precludes plagiarism.

The Academic concern for information literacy

Information literacy is also an area of professional concern for academics, as evidenced by Dr Kerri-Lee Harris from the Centre for the Study of Higher Education in another recent Teaching @ Melbourne seminar when she referred to information literacy as part of the teaching and learning practice

There has been significant research in the academic environment around the concept of information literacy in the teaching and learning context. We refer to the work of Associate Professor Christine Bruce (1997) in *Seven Faces of Information Literacy in Higher Education* (<http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.php>) and Christine Bruce, Sylvia Edwards and Mandy Lupton (2006) *Six Frames for Information literacy Education* (<http://eprints.qut.edu.au/archive/00005011/>), as well as, Sylvia Edwards and Christine Bruce (2006) *Panning for gold: understanding students information searching experiences*, in *Transforming IT Education: Promoting a culture of excellence*.

In *Seven Faces of Information Literacy in Higher Education* Bruce outlines seven categories through which a student learns to be information literate:

- *Category one:* the information technology conception – information literacy is seen as using information technology for information retrieval and communication.
- *Category two:* the information sources conception – information literacy is seen as finding information located in information sources.
- *Category three:* the information process conception – information literacy is seen as executing a process.
- *Category four:* the information control conception – information literacy is seen as controlling information.
- *Category five:* the knowledge construction conception – information literacy is seen as building up a personal knowledge base in a new area of interest.
- *Category six:* the knowledge extension conception – information literacy is seen as working with knowledge and personal perspectives adopted in such a way that novel insights are gained.
- *Category seven:* the wisdom conception – information literacy is seen as using information wisely for the benefit of others.

In which category space is it relevant for librarians to operate and which for academics? We would suggest that current information literacy practice at the University of Melbourne is in either *Category one*: the information technology conception where “information literacy is seen as using information technology for information retrieval and communication” or *Category two*: the information sources conception where “information literacy is seen as finding information located in information sources”.

Both are important, but in the context of the Information Futures Commission is this adequate?

Category three of Bruce’s model deals with processes as strategies implemented by information users confronting a novel situation in which they experience a lack of knowledge (or information). How information is used is very much a consideration in this experience. Information use forms the next level of awareness. Information technology is only one feature of this experience. Essentially, information literacy is seen as the ability to confront novel situations and to deal with those situations on the basis of being equipped with a process for finding and using the necessary information. The precise nature of the process, however, varies from person to person. Effective action, problem-solving or decision-making is the outcome of the experience.”

Bruce et al (2006) also developed the Six Frames for Information Literacy as a conceptual tool to help participants in the IL education arena reflect on, and analyse, the varying implicit or explicit theoretical influences on their contexts. These frames, they explain, were developed through bringing together thinking about variation in approach to teaching, learning and IL with thinking about approaches to curriculum design and the idea of viewing problems through identifiable frames. The six frames presented:

1. The Content Frame
2. The Competency Frame
3. The Learning to Learn Frame
4. The Personal Relevance Frame
5. The Social Impact Frame and
6. The Relational Frame

Partnering to promote student critical thinking and lifelong learning attribute

ANZIILL (2004) also refers to Bruce’s relational model in the context of supporting the graduate attributes, saying that if we imagine information literacy as the many sided figure represented by the relational model then, at another level of abstraction, each of the graduate attributes can be considered to be a face of a many sided object that represents lifelong learning capacity.

Therefore, is the librarian’s role in information literacy also about facilitating the student in acquisition of critical thinking characteristics? Should the librarian intersect with information as a multifaceted conception as presented by Bruce, and if so how? The authors would suggest that it is, that they should. Some of these frameworks and categories (Bruce etc) help in shaping the kind of information

literacy programs we need to develop to be cutting edge, and should be emphasized as a core frame of reference for the University of Melbourne's librarians, as they are at Queensland University of Technology's Library, in order to achieve this. Melbourne should aspire to be at the forefront of information literacy theory and practice; of what to do and how to do it and to acknowledge that theory and practice are interlinked.

One of the top ten assumptions in the Association of College & Research Libraries 2007 Environmental Scan on the future of Academic Libraries and Librarians is that the skill set for librarians will continue to evolve in response to the changing needs and expectations of the populations they serve, and the professional background of library staff will become increasingly diverse in support of expanded service programs. The Scan also identified as an emergent issue that Library facilities and services will become increasingly integrated with research, teaching, and learning programs across campus.

At the University of Ontario, university librarians and teaching faculty collaborated in all aspects of an information literacy course including; curricular development, assignment development, in-class teaching, office hours for individual student development, and assessment activities. The outcomes were very positive. (<http://ojs.lboro.ac.uk/ojs/index.php/JIL/article/view/RA-V1-I3-2007-3>)

In an excellent examination of how careful we need to be in thinking about our information literacy programs (Buschman & Warner, 2004) make some useful observations. They talk about the "complex nature of the interactions between faculty knowledge and expectations, the existing intellectual skills and backgrounds of students, and the relationship of academic librarians to the two when research assignments are made." (P.17). They note "undergraduates do not conceive of research in [the same] way [as faculty], do not have a very high tolerance for the patience and faith aspects of the process,...do not know how to narrow either their reading or their topic [and] were intolerant of the uncertainty inherent in the process." (Buschman, J., & Warner, D. A. (2004). Researching and Shaping Information Literacy Initiatives in Relation to the Web: Some Framework Problems and Needs. *The Journal of Academic Librarianship*, 31(1), 12-18.)

The authors suggest that a close collaboration between faculty, Academic Board, and the Teaching and Learning Development Committee (TALDEC), in course design may provide some answers.

Queensland University of Technology (QUT) Experience

QUT defines information literacy (IL) is an intellectual framework for recognising the need for, understanding of, finding evaluating, and using information. These activities may be supported in part by fluency with information technology, by sound investigative methods, **but most importantly, through critical discernment and reasoning** (author emphasis). IL encompasses a wide range of lifelong enabling concepts and competencies which lead to good information practice and which contribute to the development of graduate capabilities (i.e. UoM Graduate Attributes) at QUT and supports the Teaching and Learning goals as set by QUT's Learning and Teaching Plan (i.e. UoM Nine Principles Guiding Teaching and Learning)

QUT Library has developed a policy on information literacy which can be found at http://www.library.qut.edu.au/about/planning/documents/POL_InfoLit_14Dec04_FIN.pdf. QUT Library regards information literacy as an ongoing strategic focus and undertakes a leading role in the development and implementation of systemic, systematic and sustainable initiatives which promote information literacy as a key competency for lifelong learning, fundamental to the teaching, learning and research focus of the QUT community. Their goal is to enable and empower students as critical and independent users of information by embedding information literacy skills, as an “emerging skill” and key generic capability, into the whole learning experience. See Edwards, S.L. & Bruce, C.S. (2004) “The assignment that triggered change: Assessment and the relational learning model for generic capabilities.” *Assessment & Evaluation in Higher Education (Special Issue: Learning Communities and Assessment Cultures Conference)*, 29(2), pp.141-157. ([QUT e-print](#))

The Library undertakes a leading role in the development and implementation of systemic, systematic and sustainable initiatives which:

- Promote information literacy as a key competency for lifelong learning
- Fundamental to the teaching, learning and research focus of the QUT community
- Enable and empower students as critical and independent users of information by embedding information literacy skills, as an “emerging skill” and key generic capability, into the whole learning experience
- And achieve and promulgate models of effective practice for the implementation and evaluation of information literacy in terms of students’ learning outcomes, curriculum structure and assessment.

Conclusion

We suggest in this paper that the University of Melbourne Library has a significant role to play in the achievement of Melbourne Model aspirations for its students. Initiatives undertaken in the past by University of Melbourne Library staff in partnership with their academic colleagues have produced exemplar programs, for example ArtSmart and Researching History and parts of the UpSkills program delivered by the School of Graduate Research. The award winning Graduate Essentials (<http://www.gradstudies.unimelb.edu.au/programs/pge/>) is an excellent example of library intervention in a learning program. However these initiatives have been sporadic and although we can build on our successes, e.g. develop a series of strongly branded online programs – BusSmart, MedSmart, EcoSmart etc. – ensuring that all students are exposed to similar high quality programs can only be achieved through developing a systematic, cohesive and coherent information literacy program, underpinned by pedagogically sound theory, in close collaboration with faculties, Academic Board, and the Teaching and Learning Development Committee (TALDEC).

The library’s relevance in the future depends not only on its spaces and technology infrastructures, its provision of access to the myriad of web and open access digital repositories, and to its information resources embodied in its electronic and text based collections, but also in the skills of its people and how the library interacts with the learning community to enable scholarly information to become scholarly knowledge.