

Information Literacy Research in Australia 2000-2005

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Introduction – A Developing Information Literacy Territory

Information literacy researchers see their research as belonging to the information literacy domain or 'territory', and as they widen the scope of that research they construct the domain (Bruce, 2000, p.92).

The information literacy (IL) research territory has been maturing over the last decade. As

Bruce (2000) suggests, this research territory may be described in term of five dimensions: 1) the sectoral location of the research; 2) ways of seeing IL; 3) what is being investigated – the research object; 4) how the object is being investigated – the research approach; and 5) disciplinary influences. She also suggests likely trajectories for future IL research:

- Growth beyond the educational sector.
- Attention to a wider variety of cultural settings.
- A firmer more consolidated research agenda.
- Greater collaboration between researchers.
- An agenda driven by funding priorities.

This paper reviews the development of IL research in Australia from 2000 through to 2005, and considers future directions. It presents a picture of evolving understanding of IL and a diversification of research contexts and approaches. Although educationally focussed projects predominate, increasing research activity is occurring in workplace and community settings. Interest in different cultural settings is also emerging, with investigations being initiated across cultures and into cultural influences.

The Australian Information Literacy Scene

The developing IL concept

In Australia IL researchers and practitioners commonly define IL as: ‘An understanding and set of abilities enabling individuals to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information’. Information literate persons are considered to be those who “When they need information, and are then able to identify, locate, evaluate, organise, and effectively use the information to address and help resolve personal, job related, or broader social issues and problems” (Bundy 2004, p.3).

The concept and application of IL in Australia has developed gradually, in line with an increasing recognition of its social and educational relevance. It has evolved from library-based, task-oriented bibliographic instructional procedures in universities and schools to a web of theoretical understandings and practical applications that promotes a critical approach to information use and underpins independent lifelong learning in formal and informal settings across the community. Its ongoing development in Australia can be traced against a series of significant milestones, which are outlined below.

Although various approaches to teaching information/research skills had occurred in school and university libraries since the 1970s, IL education in Australia really started to gain momentum in the early 1990s, influenced by the American Library Association Presidential Committee’s *Final Report* (American Library Association, 1989) and the current climate of educational reform stimulated by a series of significant government reports. The most important of these reports from the IL perspective was *Developing lifelong learners through undergraduate education* (Candy, Crebert & O’Leary, 1994) which emphasised the need to foster lifelong learning in undergraduate education. It identified IL as one of four essential elements in the undergraduate curriculum, stating that graduates need a range of information skills and strategies to equip them as competent professionals and community members.

At the same time new theoretical understandings of IL were emerging, notably through the work of Doyle (1992) in the United States and Bruce in Australia. In the *Seven faces of information literacy* (Bruce, 1997a) creates a model featuring different ways of experiencing information that focuses on the use of and reflection on the use of information. She represents IL as seven facets that are separate yet inter-connected, which reflect different information user perspectives, namely:

- Information technology (IL seen as using information technology for information retrieval and communication).

- Information sources (IL seen as finding information located in information sources).
- Information process (IL seen as executing a process).
- Information control (IL seen as controlling information).
- Knowledge construction (IL is seen as building up a personal knowledge base in a new area of interest).
- Knowledge extension (IL is seen as working with knowledge to gain new insights).
- Wisdom (IL is seen as using information wisely for the benefit of others).

Bruce's relational model represents a paradigm shift in IL education since rather than prescribe required behaviours, it highlights variations in people's experiences, focusing on the information and the user's engagement rather than the technology. In this way it encourages a reflective approach to learning associated with engagement in relevant information practices.

Further momentum was created by the publication in 2001 of the *Australian information literacy standards* - later revised as the *Australian and New Zealand framework for information literacy* (Bundy, 2004). These standards, which were modelled on the American *Information literacy competency standards for higher education* (Association of College and Research Libraries, 2000), provide a definition of IL and a cohesive framework for embedding it into the higher education curriculum, as well as promoting a collaborative approach between academics, librarians and other associated professionals. As a consequence, the majority of Australian universities have now established IL frameworks or programs (Bundy, 2004, pp. 41-48).

These advances in IL theory and practice stimulated a gradual shift of emphasis away from 'bibliographic instruction' and 'user education' to a holistic approach to IL in higher education that enables students to learn how to learn and provides a foundation for graduate's continuing growth and role as informed citizens (Lupton, 2004). Correspondingly, the role of many academic librarians is evolving as they take a more active role in curriculum design. They are acquiring the pedagogical capabilities necessary to develop collaborative partnerships with academic colleagues and engage in educational debate and decision-making (Bruce & Pham 2001; Duskatsch, 2003; Peacock, 2001).

Over the last few years, recognition of IL has extended beyond the educational sectors with growing awareness of its social and economic importance to local, national and international communities. In 2001 the Australian Library and Information Association (2001) designated IL as a prerequisite for 'participative citizenship' and 'learning for life'. Several Australian representatives participated in an international conference that produced *The Prague Declaration* (Information Literacy Meeting of Experts, 2003). This document identifies IL as 'a

prerequisite for participating effectively in the Information Society' and 'part of the basic human right of life long learning'.

The IL research community in Australia

The preceding overview demonstrates the dynamic nature of the IL research community in Australia. This is reflected in the formation of collaborative research groupings – such as QUT's IL group – and in the activities and advocacy of professional organisations such as The Australian and New Zealand Institute of Information Literacy (ANZIIL), the Australian Library and Information Association (ALIA), and the Australian School Library Association (ASLA). IL research is further promoted at international conferences held in Australia, such as the three International Lifelong Learning Conferences held in 2000, 2002, and 2004, and the Evidence Based Library Conference organised for 2005. Although this paper focuses mainly on academic research, it is important to acknowledge that significant practice-based enquiries are being conducted in many Australian schools, colleges and workplaces.

Overview of Current Information Literacy Research in Australia

Current IL research in Australia can be divided into three main categories: IL in higher education, IL in the workplace, and IL in the community. This overview presents a selection of recently completed and ongoing projects that illustrate the scope of Australian research activity in these areas.

Researching Information Literacy in Higher Education

Much IL research concentrates on the higher education sector. It includes investigation into: general IL experiences of university students; discipline-specific IL experiences; the development and evaluation of higher education IL programs; IL as expressed in information seeking behaviour; IL as a generic skill or graduate attribute.

General IL experiences of university students:

Two studies have considered the IL experiences of university doctoral students (Genoni & Partridge, 2000; MacAuley, 2001). Both studies considered aspects of how doctoral students collect, store, retrieve and manage their research data, and also investigated students' supervisory expectations and experiences. Both made recommendations to improve existing IL programs to meet the specific needs of the research students.

The idea of IL as an approach to learning (Kuhlthau, 2004; Bruce, 1997a) is continuing to appear, with findings from Lupton's research into the nature of IL and its relationship to learning reinforcing this

view. Her work identifies an approach to learning as one way in which learners conceive of IL (Lupton, 2003, 2004). She is currently undertaking a research project that investigates later-year undergraduates' ways of experiencing IL in particular disciplinary contexts, in order to develop a model of the relationship between IL and learning. Anticipated outcomes will provide a basis for curriculum design for IL education and increase understanding of the nature of IL as a generic skill and graduate attribute.

The acquisition of specific IL knowledge and skills by university students has also been the focus of attention. Pavey (2003) has found that while both university academic staff and their students have good levels of communication and IT skills, staff are more confident than the students in this area. This latter finding lends weight to a study which indicates that the level of IT skills in first year undergraduate students is variable. Lim & Lee (2000) argue that IT training for university students is an urgent necessity in order to satisfy employers graduate skill requirements, and more importantly, to achieve successful learning outcomes when computer use in tertiary institutions is widespread. Research by Oliver and Towers (2000) also supports the need for IT training. They found disparity between university and TAFE (Technical and Further Education) students' access to and level of skills in using ICTs (information and communication technologies). The finding that most minority groups are to some extent disadvantaged in terms of ICT access and skills is significant in regard to IL programme development.

Using a cognitive psychology approach, Macpherson (2004) used concept-based teaching methods to teach undergraduate students information searching processes. This approach produced an improvement in the students' knowledge of the search process and in the ability to locate credible literature. Another study (Handzic & Lin, 2003) supports the idea that taking an extended cognitive style perspective on learning may lead to improvements in idea generation, problem solving, and inquiry approaches. Stern has called for the higher education sector to improve their understanding of how students gather information as a basis for devising curricula to teach students the ways in which information is managed in digital formats.

The work by Middleton (2005a) on library support for online education has relevance to, and implications for IL. This research is concerned with the effective provision of remote online library services in tertiary institutions, based on the research assumption that many library users undertaking courses now make use of digital services irrespective of whether they are undertaking distance education courses. The resulting case studies of representative services are likely to expand understandings by providing rich information on the current state of online library service delivery. In addition to providing a situational analysis of library support for remote users, the research is expected to provide a model for effective continuing provision and development of such services.

Discipline-specific IL experiences:

Cuffe and Bruce (1999) have investigated the information and IT use of law students. They conclude that despite the rich information and information technology environment in which law students undertake their tertiary studies and the high level of skills training, present legal curricula have not succeeded in the task of educating students in effective information problem solving that is critical in legal practice. Their investigation has prompted the development of a curriculum model that inculcates these educational imperatives and shifts the paradigm from legal research training to legal IL education.

Development and evaluation of IL programs:

Brewer (1999), raises concerns about the value of IL programs. The evaluation of a curriculum-integrated IL program for undergraduate students showed that participation in the program had little or no long-term impact on students' searching skills. On the other hand several other researchers who used a variety of research methods to assess the implementation of IL programs have found evidence supporting their value (Douglas & Murdoch, 2000; Hill, 1999; Hiscock & Marriott, 2003; Holden & Cribb, 2004; Yu, 2004). The need for improvements to teaching methods and modes of delivery of these programs has also been indicated (Drew, Abbott, & Orr, 2001; Salisbury & Ellis, 2003). A study at Macquarie University (Talay-Ongan, Edmonds, & Gosper, 2001) provided evidence that the integration of IL programs into course assessment and task design led to a more relevant and highly successful learning experience. However, the authors suggested that this integration should not be done "at the expense of scaffolding necessary for the unit content, learning processes and assignments".

Other studies that have considered the effectiveness of librarians and academics, or researchers, collaborating in IL programs (Ivey, 2002; Smith & Martina, 2004; Tucker & Palmer, 2004). It appears that the challenge for the teaching staff, and the librarians who work together with them, is to ensure that the skills taught in IL programs are relevant, regularly repeated, well publicised, have sound instructional design and relevant modes of delivery, and are extended into all areas of the curriculum (Hartmann, 2001; Turnbull, Frost, & Foxlee, 2003; Wallace, Shorten, & Crookes, 2000). Hartmann particularly found that while student learning is influenced by their previous experiences they will engage with IL programs as a "subject matter only to the extent that they perceive lecturers and tutors require them to". Each of these authors also questioned students' abilities to seek and use information.

Student information seeking and behaviour in context:

Various studies attempt to understand university students' information seeking behaviour and use. Cunningham, Reeves, & Britland (2003) have suggested that the design of digital music libraries could benefit from studying the information behaviour of the music public in music stores and public libraries. Klaus (2000) conducted a phenomenographic

study into thesaurus use by a group of online information searchers which sought understandings of how users conceived the thesaurus in the process of searching online indexing and abstracting tools. He speculates on the importance of including thesauri as pivotal elements in IL programs in higher education.

Another phenomenographic study by Parker (2001), found that while student learning and information behaviour are probably closely related, “their relationship has been framed by a narrow interpretation of 'information' in the higher education literature and considered beyond the scope of Information Science”. Parker researched students completing assessment tasks aiming to understand the complexity of the interaction between learning and information and suggests this is an area needing further research.

Phenomenography was also used by Edwards to determine variations in university students' web-based information searching experiences (Edwards, 2004, 2005a; Edwards & Bruce, 2002, 2004). Her findings into the ways students learn how to use the internet and library databases provide a basis for recommending teaching and learning strategies for curriculum design that is based on managing student's experiences.

The impact of cultural and linguistic attributes on information users' online experience is the subject of an ongoing project by Hughes (2004). She seeks deeper understanding of international students' use of online information resources with a view to determining the IL learning needs of students from culturally diverse backgrounds.

IL as a generic skill or graduate attribute:

Another important higher education aspect is the integration of information literacy into the curriculum, either across the whole university or embedded into specific courses. Abbott & Peach (2000) provide an overview of the work at Griffith University to integrate and further develop IL as a generic attribute in the curriculum. Similar work at Curtin University is documented by Briguglio (2000). Patrick & Crebert (2004) suggest there is a “need to consider the role of personality or nature as an influence on the perceptions of importance of further development of generic skills”. They call for the exploration of strategies to raise awareness of the need for lifelong IL skills.

Finally, in considering students' graduate attributes and their ability to transfer them to the workplace, Yashin-Shaw, Buckridge, & Ferres (2004) suggest that students may be assisted by acquiring an explicit rather than a tacit understanding of graduate attributes. They contend that this understanding may enable students to better represent themselves when seeking graduate employment and to be more proficient at transferring their skills in the workplace. This research has implications for IL research in both higher education and the workplace.

Researching Information Literacy in the Workplace

The scope of IL research is extending beyond the educational sector into the workplace. Researchers have already directed their attention to: the need for IT skills in the workplace; the transfer of IL and IT skills from formal education to the workplace, the development of effective workplace IL programs; information use and behaviour in the workplace.

Transfer of IL skills from formal education to the workplace: -

As the previous study (Yashin-Shaw et al., 2004) indicates, there has been recent research into the transfer of IL skills from formal education into the workplace practice. Searle, Dwyer, Jirowong, and Hinton (2000) who studied nursing graduates have called for the introduction of IL workshops in clinical areas, with an increased participation of health librarians in professional development sessions. They also suggest that undergraduate students are encouraged to undertake further collaborative research projects in the clinical and community settings.

Need for information technology skills in the workplace:

Recent workplace-related research also recommends improvements in both IL and IT skills in university curricula. For example, Lawson and de Martos (2000) examined the experiences of BA graduates to investigate the demand trends for IT skills in the workplace. Their findings discuss the implications for future BA degrees.

Development of effective workplace IL programs:

In a study of journalists working with librarians in the workplace, Bradley (2003) has suggested that “there is a lack of research examining the transition from university/formal learning to the workplace”. Bradley proposes that further research is needed into how librarians plan training for journalists, how they can work together to develop training resources, and what teaching methods will promote optimum outcomes for journalists. Significantly Bradley suggests that the librarians’ reasons for introducing IL programs needs further exploration to establish the benefits of such programs in different contexts.

Information use and behaviour in the workplace:

The relationship between individual and organisational IL has been explored recently. Bruce (1999) suggests that workplace IL experiences are closely related to the usual workplace processes, such as environmental scanning, information management, corporate memory, and research and development. This area has also been closely investigated by Kirk (1999; 2002; 2004) whose findings show that there are five qualitatively different ways of experiencing information use in the workplace: packaging information, enabling flow of information, developing new knowledge and insights, shaping judgements and decisions, and influencing others. Use of information and information behaviours in specific workplace settings have also been investigated; examples include Lloyd’s (2004) work with firemen and a study of

university technical support workers (Cunningham, Knowles, & Reeves, 2000).

An ongoing project by Middleton (2002) will contribute to current understandings of scientific and technical information service genesis and development in Australia and will provide a task analysis of information management practitioners. IL-related outcomes will include the development of programs that incorporate learning about application of information and knowledge systems in the workforce, for those who are not information specialists. This is an important factor in preparation for employment.

Researching Information Literacy in the Community

Recent research into IL needs in the community provides further evidence of the widening perspective of IL research in increasingly varied cultural settings. Key issues in this sector regard information access, and the use of ICTs (information and communication technologies).

Use of ICTs (information and communication technologies):

By synthesising current statistical reports and other reliable public domain information resources Funston and Morrison (2000) have provided an overview of the use of the Internet and other ICTs by Australian young people. They suggest that while Australia is still a world leader in Internet/ICT use, the 'digital divide' between information "haves" and "have-nots" is still evident. Family status, household income and educational levels are proving to be the key determinants.

In a study loosely connected to IL, Hardy (2002) scans the local authorities efforts in Victoria, Australia. His findings show that many of the organisations are engaged in identifying, organising and redistributing information to their constituency. While Hardy found that there was a high demand for basic courses in 'tool literacy', the report findings suggest that a more sustained approach to professional development of key personnel within the organisations could be an efficient way to develop the information capacity of those community organisations. Hardy further suggests this could be an area for library/community partnerships.

Information access for social action:

This final sub-topic of IL in the community has implications for social justice and action. A study of adolescents' information use in they way they sought and analysed their knowledge about the drug heroin suggested implications for information practice and instructional design to drive the actions in this social problem area (Todd, 1999). Another study into the service implications for the supply of information to blind and sight impaired people showed that resources other than the Internet, such as radio stations, should specifically cater for the blind and vision

impaired (Williamson, Schauder, & Bow, 2000). The authors contend that these services are vital to the blind and vision impaired community and, as such, need to be maintained at their current levels.

Partridge's (2002a, 2002b, 2003, 2004) current research aims to explore the human dimension of the digital divide. It develops a new theoretical framework through which to view the division between information 'haves' and information 'have-nots' within society, illustrating that the digital divide involves more than just the availability of resources and funds to access those resources. The research will develop an Internet self-efficacy scale that is appropriate for use within the context of the general population. It will allow organisations (for example public libraries) involved in the digital divide solution, to develop and tailor services and programs to more accurately and effectively narrow the gap between information rich and information poor, thus allowing all community members to have an equal chance of establishing and maintaining productive personal and professional lives in the rapidly emerging digital age.

The information needs of people with long-term physical disabilities are addressed in continuing research project led by Tilley (Tilley, Hills, Bruce & Meyers, 2002). The researchers state that technology itself could provide strategies for independence and thus facilitate self-empowerment. However, the process that gives a sense of control and is empowering, is also capable of being disempowering. Empowerment and disempowerment are intersecting processes because of digital divide issues and the fact that virtual reality for people with physical disabilities may be a 'double-edged sword'. These findings will inform recommendations for developing a theoretical framework and propose strategies for implementing a virtual community model based on user information needs for Queenslanders with long-term physical or mobility disabilities.

Also concerned with the digital divide is McMahon & Bruce's investigation of IL needs in cross-cultural settings (McMahon & Bruce, 2002). It examines the differences in perceptions of IL needs among local workers and western development workers. The findings suggest several considerations that should inform policy and practice within the context of cross-cultural development projects. aimed at bridging the digital divide, in a manner which maximises opportunities for sustainable project outcomes.

Women's information needs were examined on behalf of the New South Wales Department for Women (Urbis Keys Young, 2002). Women's Advisers from Australian and New Zealand governments participated in the project which reported their information-seeking behaviour with regard to government publications.

Information Literacy Research Methods

A wide range of methodological approaches have been applied to the research projects described above, ranging across survey method, case study, grounded theory, critical incident technique and phenomenography. They are summarised in Figure 1. Interestingly a great deal of contemporary work in the IL field draws on research approaches that are best described as qualitative, interpretive or even critical in orientation. While each one meets specific research needs, perhaps phenomenography is the one most closely identified with IL research in Australia and so warrants further description here.

Phenomenography is an interpretative research approach for “mapping the qualitatively different ways in which people experience, conceptualise, perceive, and understand various aspects of, and phenomena in, the world around them” (Marton, 1986). It has been primarily used as a research approach in education, and more recently in IL (Bruce, 1997a; Edwards, 2000; 2004; 2005a; Limberg, 1998; Lupton, 2003; 2004). Phenomenography looks at the relation between the person (subject) and the part of the world in question (object) (Bruce, 1997b; Marton, 2000). It describes the variation and meaning behind the way in which people experience a phenomenon (Edwards, 2005b). The outcome of a phenomenographic inquiry is the identification of the different ways people experience a phenomenon and the structural relationships between these different ways of experiencing, expressed as a finite set of categories – such as the *Seven faces* of Bruce’s (1997a) model of IL.

Future Directions for Information Literacy Research in Australia

This overview reveals the vibrant and productive nature of IL research in Australia. There is a widening of focus from the higher education to community, workplace and cross-cultural domains, a deepening of understanding about the concept and practice of IL, allied with the adoption of a broader range of research approaches. However, this is still a developing research territory that offers a range of possibilities and challenges. A number of significant factors need to be addressed to ensure continuing growth and maturity. Key issues currently confronting the Australian IL community include:

1. Developing a firmer, more consolidated research agenda, that takes account of previous and current national and international initiatives.
2. Fostering greater collaboration between researchers across institutions and across national and international boundaries.
3. Seeking and optimising funded research opportunities, whilst retaining academic integrity and commitment to altruistic

research conducted outside the funding framework, and including support for the work of research students.

1. Research agenda

There are various parties who have a stake in this area including the Council of Australian University Librarians, and as mentioned earlier in the paper ANZIIL, ASLA and ALIA. In the case of ALIA, a newly reconstituted research committee can be expected to foster priority areas identified by ALIA's National Policy Congress. These include IL skills in areas such as the role played by libraries in relation to young adults.

2. Collaboration

An initiative that may lead to greater collaboration between institutions is an annual seminar on research applications. The first of these was held at QUT in 2004 (Middleton, 2005b). It helped to identify areas of mutual interest in academic institutions for library and information research generally. Naturally this included a number of aspects of IL.

The seminar also involved a number of practitioners who provided responses to academic papers. Increasing involvement from this quarter is anticipated, especially with respect to evidence-based practice. This seminar series will be continued in 2005 by Charles Sturt University in association with the National Library of Australia, and in 2006 by Curtin University of Technology.

Collaborative efforts also are taking place within institutions. The experience of QUT's IL research group illustrates this situation. This is an embryonic group - interested in an embryonic research territory. However it is an energetic grouping of academics and research students with a growing thesis and publication record. Some of their work has been referenced in this paper. More detail is provided by Edwards, Bruce and McAllister (2005). Similarly the 'Matching using with information' group at Charles Sturt University includes researchers pursuing IL research (Harvey, Hider, & Lloyd, 2005).

3. Funded research

Despite the collaborative endeavour, there have yet to be initiated significant funded research projects, and much groundwork is still required before this happens. For example QUT IL is presently exploring alternative sources of funding. In addition to traditional (government-sponsored) academic research grants it is seeking partnerships with commercial entities and with related organisations such as the National Library of Australia, Queensland State Library, City Councils, and TAFE (technical and further education) institutions.

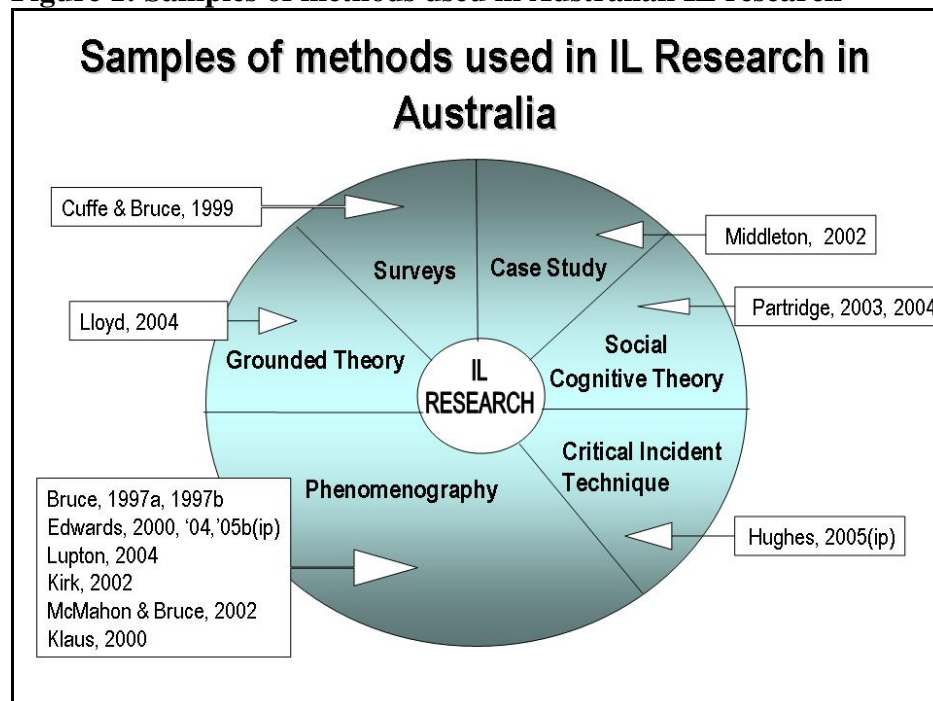
In order to progress the IL research agenda it will be necessary to establish strategic alliances across disciplines and institutions and to forge industry partnerships.

To achieve this we must work to bring together a research community that is ready to cross boundaries and forge relationships with other groups. We also need to overcome the primary weakness of our current IL research agenda – which is that it is set by those devoted to IL. Progress will be slow unless we can establish links with the priorities of research funding bodies or we can lobby to influence those priorities.

Conclusion

The IL research agenda in Australia is practical and real – it is about real people, doing real things in real life contexts. While the higher education sector remains the major focus for IL research there is increasing interest and activity in community and workplace contexts. The cultural diversity of Australian society and the social and economic impacts of globalisation are also attracting the attention of IL researchers. The value of IL research relates to its potential to empower individuals, support economic and social well-being and foster lifelong learning. The IL research opportunities are waiting to be created and taken.

Figure 1: Samples of methods used in Australian IL research



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