THE THREE TIERS OF INFORMATION LITERACY:
A MODEL FOR DEVELOPING LIFELONG LEARNING AT A TERTIARY INSTITUTION

Richard Wartho
University of Otago
New Zealand

ABSTRACT

The University of Otago Library has created a three-tiered model to develop transferable information literacy skills that support lifelong learning. These tiers are standards-based and consist of traditional, user, education-based tours and classes (tier 1), a generic information literacy competency guide (tier 2), and the embedding of information literacy into academic curricula (tier 3).

INTRODUCTION

The University of Otago is a multi-campus tertiary institution based in Dunedin on the east coast of New Zealand's South Island and is the most southerly of the 50 universities in Australasia[1]. Founded in 1868, the university is the country's oldest, and it currently has approximately 18,000 students (16,000 efts [equivalent full-time students]) spread across four academic divisions: Health, Business, Science, and Humanities. While most students are based in the Dunedin region, approximately 3500 students, mostly studying post-graduate Health Sciences, reside elsewhere in the country, and overseas. The library system includes five Dunedin-based libraries: Central, Science, Law, Hocken (NZ collection and archives), and Medical, as well as medical libraries in both Christchurch and Wellington. The Central Library is based in the heart of the Dunedin campus in the new NZ$42 million Information Services Building that was officially opened in 2001. There is a common information and resource access management system (IRAMS) based on Voyager software that was introduced in mid-2003. The new system was implemented by LCoNZ (formally CONZULSys), a consortium of four New Zealand university libraries – see Hudson & Dewe (2004).

The decentralised nature of the University of Otago Library has resulted in the development of a diverse and subject-specialised professional staff but it has also presented coordination difficulties, particularly regarding the development of information literacy (IL). These problems have been exacerbated by the need to move away from traditional user education

[1] 39 in Australia, 8 in New Zealand, and 3 in Papua New Guinea.

programs and to develop a more flexible learner-centred model. The complex system of IL that has developed across the library network can be categorised into three separate but inter-related tiers: user education, an IL competency guide, and embedded IL. This three tiered model is proving to be very effective in the development of information-literacy skills that are transferable beyond the University of Otago, and is, therefore, also producing lifelong learners.

LIFELONG LEARNING, USER EDUCATION, AND INFORMATION LITERACY

In general terms "lifelong learning" refers to the continuation of learning throughout the lifespan of an individual (Candy, Crebert, & O'Leary, 1994). More specifically, however, it emphasises the processes of developing new skills and understanding new concepts beyond the period of formal education traditionally associated with learning (Jenkins, Jones, & Ward, 2001). Lifelong learning is now widely accepted both as a social and economic imperative (Leader, 2003) and features prominently in both popular and academic literature. For example, it is now widely cited as a "graduate attribute" at many tertiary institutions (Down, Martin, & Hager, 1999). The importance of lifelong learning has grown dramatically in recent years as individual needs have adapted to the new demands of the emerging information society and the concept is therefore intrinsically linked to that of information literacy (Candy, 2002). The term 'information society' refers to one in which the creation, processing, and consumption of information have become the most significant socio-economic activities (Johnston and Webber, 2003).

There are no universally accepted definitions for the terms "user education" and "information literacy" (Bawden, 2001). In general, however, user education is a process involving a situation-specific response to a particular information need and is similar to the long-established practices of bibliographic instruction. In contrast, IL is a learning outcome focusing on the lifelong ability to recognise the need for, locate, evaluate, and effectively use information (ALA, 1989). The origins of IL can be found in both information science and bibliographic instruction (Johnston & Webber, 2003) and the concept now features in a very wide cross-section of education-related, academic literature.

Issues relating to user education and IL have been widely debated for many years, and over 5000 related articles have been published over the last three decades (Rader, 2002). Such debates have been associated with a worldwide shift in the philosophy of education from an emphasis on teaching styles, to one focusing more on student-centred learning (Kuh & Gonyea, 2003). During the 1980s this change was evident in the reconceptualisation of "library instructional efforts as information literacy" (Grassian & Kaplowitz, 2001). The magnitude of this transformation represents a "paradigm shift" in educational philosophy (Thompson, 2002), and today IL represents a cornerstone of librarianship (Marcum, 2002). In an information society, all students need to be information literate if they are to stay up-to-date with developments in a particular subject (Breivik, 1998). Nevertheless, IL has not completely superseded practises of bibliographic instruction and user education (Bawden, 2001), and emphasis on, and resource allocation to, the more traditional approaches is likely to remain into the foreseeable future.

In relation to IL, the term "embedding" refers to the process of aligning IL objectives with the learning outcomes of an academic course or program; "the embedding of information skills into a subject integrates it into the content, learning activities and delivery modes of the subject" (Hine, Gollin, Ozols, Hill, & Scoufis, 2002). It is desirable because students are much more likely to retain IL skills and hence develop into lifelong learners if IL is presented as integrated with a subject rather than as a "clip-on" (Bruce, 2000). In recent years the practise of embedding IL into the curriculum has become widely accepted (De Jager & Nassimbeni, 2002) and many university-based librarians are now

working in conjunction with academic staff towards this goal. Such initiatives also represent a valuable opportunity for librarians to collaborate with and improve overall relationships with their faculty-based colleagues (Ivey, 2003). Such improvements are of fundamental significance, not only to the successful development of IL, but also to the "continued viability of academic libraries and librarianship" (Kotter, 1999).

The growth in initiatives aimed at embedding IL has been closely associated with the proliferation of IL standards. Standards are important for the development of IL as they "promote agreeing about the meaning of terms" (Catts, 2002) and also facilitate the application of IL theory. In New Zealand the most widely used version are those prescribed in the Australian and New Zealand Institute for Information Literacy (ANZIIL) Australian and New Zealand Information Literacy Framework 2004 (hereafter referred to as the 'ANZILF') and their use is being actively promoted at the University of Otago and at many other tertiary-education institutions throughout New Zealand (see http://www.anziil.org/resources/ Info%20lit%202nd%20edition.pdf).

THE THREE TIERS: AN OVERVIEW

The University of Otago has a strong commitment to lifelong learning. It is one of the "Six Dimensions of Quality Learning" specified in the University of Otago Teaching and Learning Plan (TLP) 2002 (See http://www.otago.ac.nz/about/pdfs/ teachinglearning plan.pdf). Furthermore, lifelong learning and IL are two of fourteen "Graduate Attributes" identified in the TLP. Both lifelong learning and IL are therefore of fundamental importance to all education programs offered by the University of Otago. This high-profile recognition at senior levels of the university hierarchy therefore presents the library with valuable opportunities to significantly extend the traditional range of services offered to the academic community.

Each of the seven University of Otago Libraries have developed a comprehensive user education program based on tours, tutorials, and (primarily) one-off lectures (see http://www.otago.ac.nz/about/pdfs/ teachinglearningplan.pdf). Inter-branch cooperation and resource sharing relating to these programs varies although most are

designed independently. These programs range from the completely generic to the very specific targeting of individual assignments. These user education programs make up the "base tier" of IL at the University of Otago Library and are likely to continue to be the major component of the library's IL program into the foreseeable future.

At the other end of the spectrum the library also actively promotes the embedding of IL into the academic curriculum. The large number of papers offered across the university and the limited resources available, however, limit the number of new academic programs that can join the embedding scheme to only a few each year. Therefore, the decision was made to initially target specific programs for embedding based on a variety of factors but primarily on the course coordinator's level of interest in participating in the project. The embedding of IL into the curriculum represents the "top tier" of IL at the University of Otago.

Traditional user-education and curriculum-embedding schemes, however, do not provide adequate support for the development of IL throughout the university. Many staff and students require more assistance than the traditional user education programs can offer and adequate resources are simply not yet available to fully embed IL into the curriculum of every subject. A middle or "2nd tier" in the form of an "IL Competency Guide" has therefore also been created to act as a guide to the identification of IL skills for each academic level and also to assist academic staff with the application of the ANZILF. As shown in Figure 1 these strategies combine to form "three tiers of IL" at the University of Otago and each level is comprehensively explained below. Tier 2 is outlined last as it serves primarily to fill the gap between tiers 1 and 3. All three tiers are informed by the ANZILF.

TIER 3	Curriculum Embedded IL	
TIER 2	IL Competency Guide	
TIER 1	**Traditional User Education**	*Subject Specific*
		Generic

Figure 1. The three tiers of information literacy at the University of Otago.

TIER 1: TRADITIONAL USER EDUCATION

The library has provided a wide range of tours and classes for many years. In 2003, 703 classes were delivered to 11,098 students; about half of these classes were based in the central library. These numbers have remained relatively consistent for several years and represent a relatively high commitment to the education of library users when compared to other New Zealand universities (Mosley, 2003). The user education program takes two major forms: generic and subject specific (see http://www.library.otago.ac.nz/services/

tute.html). Unlike tiers 2 and 3, this tier is not explicitly and systematically linked to the ANZILF, but the basic principles are incorporated wherever possible. The importance of adequately recording information sources (ANZILF Learning Outcome 4.1), for example, is an important component of classes that relate to finding academic journal articles.

They are scheduled at each of the seven library branches and include both generalised sessions such as tours and catalogue classes as well as much more focused tutorials based on such aspects as the use of specific databases. These sessions are offered throughout the academic

year although the peak demand is obviously at the beginning of each semester. They are attended by a very wide cross-section of the academic community from Foundation Studies (pre-first-year) to doctorate students and staff. In most instances attendance is voluntary, with many sessions being highly recommended by some academic staff. This approach to user education is flexible in terms of delivery but in some cases problems have resulted from the wide range of different levels and abilities that may be represented in a particular session. Student numbers also vary greatly and bookings are essential for some of the more popular database classes.

Each of the various subjects taught at the University of Otago has a reference librarian allocated from the relevant library. At the beginning of each semester the reference librarian contacts each academic department to promote the subject classes. Such sessions comprise of a wide variety of formats from subject-orientated tours to the use of discipline-specific, academic databases. In some cases lecturers are also looking for more detailed information based on a specific assignment task. These sessions are usually held in scheduled tutorial times and therefore attendance rates are high. They are very common at the beginning of each semester but are held only irregularly throughout the rest of the year. During peak times reference librarians from throughout the library system spend the majority their time preparing and conducting these sessions.

These subject-specific sessions also extend to personalised research consultations with post-graduate students and staff. They occur throughout the year and are usually most popular with new staff and students at the start of their research. Wherever possible such sessions are organized by the relevant subject reference librarian. These consultations are promoted on the worldwide web and within academic departments. The degree of uptake of these subject-specific sessions varies greatly despite the fact that the library's user-education programs are promoted equally to all academic departments. Some subjects expose nearly all their students to formal user education while others have only very limited contact with the library. These variations result from a wide range of factors including historical involvement with the library, attitudes of academic staff members toward IL, and demand from students.

TIER 3: CURRICULUM EMBEDDED INFORMATION LITERACY

Sociology was selected as the first subject in which to embed IL because the program has actively promoted the development of IL in the past and academic staff were very enthusiastic about the ANZILF. Work began mid-2003 on the embedding of IL into first-, second-, and third-year courses of the Sociology program, with the aim of teaching the first paper in Semester One, 2004. The ANZILF was used as a guide for selecting appropriate IL competencies for each course. It was decided to formally align the assessment tasks' objectives in each of the papers with the 19 learning outcomes specified in the six ANZILF standards. This approach was selected because "such assessment can reveal if there are areas of student performance needing improvement, if students have retained and effectively applied knowledge and skills from course to course, and if instructional strategies and learning outcomes are well aligned" (Rockman, 2002).

The initial challenge was to devise an appropriate practical framework. After much deliberation a table was developed with assessment tasks listed vertically and each of the desired learning outcomes listed horizontally. In this way individual assessment tasks are also aligned with both the 19 learning outcomes specified in the ANZILF and the relevant objectives outlined in the University of Otago TLP. Aspects of each assessment task were classified as either "core", "intermediate" or "advanced" in terms of the relevant IL learning outcome. In the future a "research" level will also be added to cater for post-graduate students in Sociology. The second assignment in Sociology 101 (an information-gathering exercise), for example, specifically relates to the ANZILF Learning Outcome 1.1 (the information literate person defines and articulates the information need) at the "core" level. This scheme applies to three Sociology courses at first-, second-, and third-year levels, and the scheme and has been designed so that at the completion of the third-year course each of the learning outcomes will be met at the advanced level at least once. This approach is consistent with techniques outlined in workshops at the 1st ANZIIL Symposium held at QUT in Brisbane in July 2003 (see http://www.anziil.org/resources/Alignment_of_IL_final.doc).

The task involved with the embedding of IL into the Sociology Program proved to be complex and time consuming. A successful NZ$8000 grant application was therefore made to the Committee for Learning and Teaching, and a research assistant was employed to help with the project. Evaluation of the scheme will be based on the use of the CAUL Information Skills Survey (see http://www.anu.edu.au/caul/index.html) and on information provided by focus groups. Two IL embedded Sociology courses (first- and third-year) were delivered on schedule in Semester 1, 2004 and a second-year course is scheduled for Semester 2. An unexpected bonus of the Sociology/IL embedding program has been the forging of much closer working relationships between librarians and academic staff.

TIER 2: THE UNIVERSITY OF OTAGO INFORMATION LITERACY COMPETENCY GUIDE

As outlined above, this tier is necessary because sufficient library resources are simply not available in the short to medium term to embed IL into the curriculum of every academic subject. The University of Otago IL Competency Guide is an interdisciplinary framework that provides a range of competencies appropriate for particular academic levels. "A framework or set of guidelines should provide support and overall structure to the planning process, yet allow flexibility for individual requirements" (Orr, Appleton, & Wallin, 2001). Therefore the IL Competency Guide is designed to provide academic staff, librarians, and students – from all academic disciplines at the University of Otago – with a general indication of appropriate IL competencies for each level of academic study: core, intermediate, advanced, and research. These terms were selected in preference to simply using the year level (1, 2, 3, 4+) because of inconsistencies across different academic programs; in some cases, for example, students in a first-year course may actually be working at the intermediate level and vice versa.

The IL Competency Guide evolved from an exercise conducted by reference staff from the central library in 2002 that involved the identification of generic, library-related skills or competencies desirable for each level of study at the University of Otago. This information was edited by reference librarians from all seven branches, collated, and eventually released in

April 2003 as the University of Otago IL Framework (see http://www.library.otago.ac.nz/ services/tandl2.html). This guide enabled academic staff to easily identify skills appropriate for their students and has proved to be very popular across a diverse range of subjects.

The major limitation with this guide, however, was the lack of formal alignment with the ANZILF. The term "IL Framework" was also substituted with "IL Competency Guide" to avoid confusion the ANZILF. In late 2003 work commenced on the new version, and all reference staff from the seven branches were consulted about aligning the IL Competency Guide with the ANZILF. Consultation over a four-month period occurred in the form of meetings, teleconferences, and email discussions. This project proved to be very complex and the development of the new IL Competency Guide resulted in many lively debates since a degree of subjectivity is involved with deciding to which ANZILF learning outcome a particular IL competency is most appropriately aligned. In some cases this process revealed "gaps", and completely new competencies were therefore devised for the new IL Competency Guide. Eventually, at least one IL competency was allocated to each of the 19 learning outcomes specified in the ANZILF at each of the four levels (core, intermediate, advanced, and research). The ability to construct and implement effective keyword searches using appropriate synonyms, for example, is aligned with ANZILF Learning Outcome 2.2 (the information-literate person can construct and implement effective search strategies) and is listed as a core-level IL competency. After considerable deliberation a preliminary version of the new "standards aligned" IL Competency Guide was eventually made available in April 2004 (see http://www.library.otago.ac.nz/services/ tandl8.html) with the aim of producing a finalised version by the end of the year following consultation with the wider university community. The IL Competency Guide will also be used to assist in the embedding of IL into curricula (tier 3).

CONCLUSION

The transition from traditional user education to a more flexible IL-based approach, presents a major challenge for all academic libraries. At the University of Otago Library the response has

been the development of a three-tiered teaching and learning program: traditional user education-based tours and classes (tier 1), the IL Competency Guide (tier 2) and the embedding of information literacy into academic curricula (tier 3). All three tiers are based, either implicitly (tier 1) or explicitly (tiers 2 and 3), on the ANZILF.

The long-established user education program (tier 1) offered by the library continues to be effective. The large investment of time and resources that has been associated with the embedding of IL (tier 3) into the Sociology program will make similar future developments with other subjects significantly easier. Furthermore, the new University of Otago IL Competency Guide (tier 2) is assisting with the integration of IL into the curriculum at all academic levels across many different subjects. The "three tiers of information literacy" at the University of Otago is proving to be an effective model for the development of transferable IL skills and is therefore also producing lifelong learners.

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NO END IN SIGHT – INFORMATION SKILLS FOR ACADEMICS AND RESEARCHERS

Bruce White, Rae Gendall, and Kogi Naidoo
Massey University
New Zealand

ABSTRACT

This paper follows the genesis, development and delivery of knowledge management seminars aimed at academics and researchers in the university environment who, although they are lifelong learners in their own subject areas, are not necessarily maintaining the currency of their own information-seeking skills.

(Te Kunenga ki Purehuroa – Inception to Infinity: Massey University's commitment to learning as a lifelong journey).

Much of the literature about the acquisition of information skills within universities relates to the teaching of students and to the skills required by graduates (Owusu-Ansah, 2004; Buchanan, et al., 2002; Candy, 2000). It is assumed that university academic staff have, in the course of their own education and subsequent research and teaching activities, acquired and maintained the information skills and the understanding of the knowledge environment needed to operate effectively in a profession that is defined, perhaps more than any other, by the accumulation, examination, creation, and communication of knowledge. There is a reverse logic to the assumption that because they are operating effectively they must therefore have the requisite skills and understanding to do so. The university, almost by definition, is seen to have created and maintained a research environment and culture in which participants share not only information itself but also knowledge about information sources and the skills needed to use these sources. Librarians naturally play a supportive role in this process, but one that is largely confined to acquiring and organizing the information itself and providing informal support and advice about its use. The formal teaching of information skills is regarded as important for students who are still learning how to do research, but such skills once acquired are then considered, like riding a bicycle, to be adequately maintained and developed by ongoing practice.

In recent years, a growing emphasis on academic practice and the need for university teaching to be more strongly linked to identifiable research has highlighted the fact that research performance is very uneven (Goldfinch, 2003; McMillan, 2003; HERO - Higher Education & Research Opportunities in the UK, 2001). In New Zealand, the introduction of performance-based research funding has required university staff to submit portfolios of research outputs that will be evaluated and "graded" according to criteria such as the citation rankings of the journals in which articles are published. What has been known anecdotally about the balance between teaching and research varying across the range of disciplines is now becoming quantifiable, and universities are recognising that the existence of a research culture cannot be taken for granted but requires nurturing and support through such activities as training and mentoring (Massey University Training and Development Unit, 2003; University of Sheffield, 2002; Eliasson, Berggren, & Bondestom, 2000).