From Oz to the Orient: exporting e-literacy education

Introduction

This paper draws on our experience as two academic librarians who were each seconded, at separate times, from our home campus in Melbourne, Australia to manage a campus library of the same university in Malaysia. Swinburne Sarawak is a division of Swinburne University of Technology, and its establishment is part of a long-term strategy by Swinburne to internationalise its operations and provide all Swinburne students with overseas living, working and learning opportunities. We spent a total of four months managing the library and introducing a program of information literacy education. Since our return to Australia our involvement in the Malaysian campus has continued, mainly in an advisory role but also as an extension of the work we did while we were there.

Several issues are addressed in this paper:

- the relationship between information technology literacy and information literacy;
- the contrast between the Melbourne and Sarawak campuses and their libraries;
- achievements in the field of information literacy education at the Melbourne campus of Lilydale;
- the development and implementation of an electronic literacy program for the Malaysian campus;
- the impact of cultural differences on our electronic literacy education program;
- cultural considerations for our international students;
- and the measurement of student achievement in e-literacy.

Connecting the Literacies

Brandt (2001) describes the importance of information technology literacy as a precursor to information literacy and discusses the relationship between the two. His article supports our view that Information Technology Literacy underpins Information Literacy attainment. He also suggests a methodology for identifying task knowledge that can be used to build an information technology literacy program that coincidentally is very similar to an exercise we did when designing our module for use within an existing subject. He suggests that, by observing the behaviour of students, watching to see how they think and act, it is easier to develop ways to influence their mental models.

Our experience shows that the more reliant libraries become on web based resources, the more important it is that students are both information technology literate and information literate. A dependency has been created between the two. Information literacy now seems inseparable from information technology literacy. Perhaps this co-dependency represents a marriage between what has been described as ‘the male
dominated information technology paradigm’ and the ‘feminised library profession’ (Kapitzke, 2003, pp.55-56). Interestingly, Murray and Kinnick (2003) adopt the term ‘contemporary literacy’ to cover all the different types of literacies required. Contemporary literacy encompasses visual, media-related, textual, numerical, technological and network literacies. The term ‘tertiary literacies’ is also in vogue to describe the combination of competencies higher education students need in order to succeed at university.

For the remainder of this paper we refer to the two literacies as e-literacy, a term that reflects the inseparability of information literacy and information technology literacy that currently prevails.

Saunders’ (1999) exploration of how the increasing reliance on computers and digital information has affected library users and staff also reflects our experiences at both the Melbourne and Sarawak campuses. Many of the technical problems have been resolved over the years, and these have been easier to deal with than human issues such as education and training. “Education and training….are continual problems as technology changes and as new generations of users come to the library.” (Saunders 1999). Further support for our view is conveyed in an article by Buchanan, Luck and Jones (2002). They assert that the virtual university environment provides librarians with new opportunities to contribute to the educational process. Increased access to technology has altered the way that students study, while the variety of electronic information sources has widened the potential resource base for all students. The range of educational technologies that have been employed at the Lilydale Campus certainly bears this out.

The literacies and graduate attributes

In 2001 the Council of Australian University Librarians (CAUL) published a landmark document, Information Literacy Standards. The standards were derived from an American document, Information literacy competency standards for higher education. (ACRL, 2000). The seven CAUL standards were expressed in behavioural terms. For example Standard Two reads: “The information literate person accesses needed information effectively and efficiently” (CAUL 2001, p.9). A list of behaviours exhibited by a person who has reached this level elucidates each standard.

At the same time, our university was developing a list of Graduate Attributes: characteristics to be developed in all students who complete a degree course at Swinburne University. Swinburne aims to ensure that its higher education graduates:

- Are capable in their chosen professional areas
- Are entrepreneurial
- Operate effectively and ethically in work and community situations
- Are adaptable and manage change
- Are aware of environments.

Under these five broad headings the traits of a higher education graduate are outlined in detail. Information literacy and IT literacy (e-literacy) are included. It was clear to us that there is a link between the implementation of the CAUL standards and the attainment of the Graduate Attributes and that the library has a key role to play. Our Information Literacy Working Party, in consultation with the information staff across all the Melbourne campuses developed a matrix demonstrating the links between
individual Standards and Attributes and outlining the library’s role in achieving them. Standard Two illustrates the point:

**CAUL Standard Two:**
The information literate person accesses needed information effectively and efficiently.

**Swinburne Library’s role**
The Library will teach students:
- About the range of information access tools in their subject area, in print and electronic format, including library catalogues, indexes and bibliographies, citation and full-text databases
- How to select the most appropriate access tools and use them effectively
- About the role of library staff as sources of expertise in the information gathering process
- How to devise and carry out effective search strategies, including the use of Boolean operators, truncation, thesauri and field searching in electronic databases and search engines
- Internet searching techniques including the use of search engines, directories and specialised subject gateways
- About the variety of information resources in organisations and libraries external to Swinburne

The Library will advise students on the procedures for acquiring information through other libraries, agencies or locations, as well as within Swinburne Library.

**Relevant Swinburne Graduate Attributes:**
- Are adaptable and manage change
- Have multifaceted research and problem solving skills
- Have a general capacity for flexibility and curiosity
- Are capable in their chosen professional areas
- Are informed and knowledgeable in the area
- Have pertinent skills and abilities

(Swinburne University of Technology Information Literacy Working Party 2002)

We are using this matrix to promote library staff and services, and to illustrate the pivotal role of the library in the University’s mission. The matrix provides a theoretical framework for all our Information Literacy programs and further legitimates library staff having control of 20% of the curriculum in a core subject at Lilydale.

Two other theoretical frameworks helped us structure our information literacy course at Lilydale and later in Sarawak. Firstly we adapted Cornell University’s *Seven Steps of the Research Process*. In summary form, the seven steps are:

Step 1: Identify and develop your topic
Step 2: Find background information
Step 3: Use catalogues to find books
Step 4: Use indexes to find periodical articles
Step 5A: Find Internet Sources
Step 5B: Find audio and video resources
Step 6: Evaluate what you find
Step 7: Cite what you find using a standard format
(Cornell University 2003)

We have also been influenced by Eisenberg and Berkowitz’s *Big Six Research Skills*. The Big 6 is a problem-solving model outlining the stages that people go through when they undertake a successful search for information. Sub-stages within each stage are referred to as the ‘Little 12’. A detailed view of the stages is provided in Appendix XXXX. An overview of the basic steps of the Big 6 and Little 12 are:

1. **Task Definition**
   1.1 Define the information problem
   1.2 Identify information needed in order to complete the task (to solve the information problem)

2. **Information Seeking Strategies**
   2.1 Determine the range of possible sources (brainstorm)
   2.2 Evaluate the different possible sources to determine priorities (select the best sources)

3. **Location and Access**
   3.1 Locate sources (intellectually and physically)
   3.2 Find information within sources

4. **Use of Information**
   4.1 Engage (e.g., read, hear, view, touch) the information in a source
   4.2 Extract relevant information from a source

5. **Synthesis**
   5.1 Organize information from multiple sources
   5.2 Present the information

6. **Evaluation**
   6.1 Judge the product (effectiveness)
   6.2 Judge the information problem-solving process (efficiency)
   (Eisenberg & Berkowitz 1994)

We have applied elements of both these models, emphasising the notion of building a search strategy from the general to the specific and stressing the value of using a variety of sources. The increasing propensity of students to rely heavily on Internet sources and their need to integrate, evaluate and cite these sources underlines the importance of teaching them structured, comprehensive research methods and techniques.
We have taken this approach to our introductory information literacy programs at our home campus for six and a half years and in 2002 began a similar program at our campus in Malaysia. We have found it interesting to compare our experiences at the two campuses.

The campuses – Oz and the Orient

The campuses in question are located in Lilydale, an outer suburb of Melbourne, Australia and Kuching, Sarawak, in East Malaysia. It may be helpful to provide some details about these cities.

Melbourne is the capital city of the state of Victoria and has a population of over three and a half million (Victorian yearbook 2002, p. 28) The suburbs of Melbourne extend for more than 50km (30mi) from east to west and 70km (43mi) from north to south, covering an area of 1700 sq km (663 sq mi) (Lonely Planet 2003) One quarter of Melbourne's population was born overseas and includes people from 140 countries. Melbourne mostly enjoys the benefits that diversity can bring, although tensions occasionally arise.

Kuching, capital of the state of Sarawak is situated at the western end of the island of Borneo, close to the Indonesian border, approximately 6000 kilometres away from Lilydale. Kuching city has an area of 430.5 square kilometres but there are substantial developments outside the administrative boundaries. The population, including those living in the outer areas, is around 496,000. (Kuching healthy city annual report 2000). Unlike most other parts of Malaysia, the ethnic Chinese outnumber the Malays. The Malays and other indigenous peoples (26 different groups) are collectively known as Bumiputra which means ‘sons of the soil’. There is also a small Indian population.

The national language is Bahasa Malaysia but most people speak English and usually a third language as well, perhaps one of the Chinese dialects or Tamil. The language of instruction at secondary level varies from school to school and even from subject to subject. Because of their varied cultural backgrounds and experiences at secondary school there is a wide variation in degree of English competence among beginning tertiary students. Government policy on university entrance requirements favours Bumiputra over Chinese students who often cannot find a place in the national universities as a result.

Lilydale Campus in Melbourne, Australia

The outer Melbourne campus at Lilydale was created to be a high technology campus, and is now multi sector – servicing both TAFE (Technical and Further Education) and Higher Education sectors. It opened in 1997 and because of its relative newness and small size it has been used to pilot innovative practices in teaching and learning. The 2003 student load is 1,802 estimated full time students, 1,719 of whom are undergraduates (Swinburne University of Technology Lilydale 2003 p.4). The Higher Education sector offers degree courses in Business, Social Sciences and Information Technology.
The Multi Modal Learning Project and Implications for the Lilydale Campus Library

A Multi Modal Pilot Project commenced the year the campus opened. Multimodal has become the accepted subject delivery strategy at Lilydale (Badger & Roberts 2001): traditional teaching techniques are combined with a range of independent learning methods that rely heavily on information technology. Students are required to become e-literate early in their course. Much of their subject content is delivered online through the Blackboard platform – subject outlines, learning guides, lecture PowerPoint slides, external links, and continuous online assessments. All lectures are videotaped, digitised and put on the computer network so they can be viewed any time for the rest of the semester.

The Multi Modal Learning strategy has ensured that the library plays a prominent role in curriculum delivery. Reliance on web-based curricular and library resources require students to be e-literate.

Lilydale Library

Swinburne library relies heavily on full text web-based databases and these comprise the bulk of library resources. Essential readings are available on Online Reserve, through the library IPAC catalogue in either pdf format or linked to a database. It was thought originally that because of the electronic nature of course and library service delivery that the library would be more of a virtual library than it is. However the students appear to enjoy the on campus experience and the assistance they receive from the library staff and have voted with their feet. Physically, the library is small for the number of students it serves, and most of the space is taken up with computers and seating areas.

The library provides an environment where students can expect to find all possible types of software that may be required for their course work and thus it enjoys a high profile on campus. CD burners, zip drives and scanners are available on many of the computers. Computer laboratories are shut outside of class times and the library with its extensive opening hours also serves as the open access computer laboratory. All computers are connected to the network and students can access this by logging into their network account. This account, as well as providing network access, gives them 10mb of space where they can save their work. They also have a student email that allows them to send attachments of up to 8mb. As a consequence of all these activities, the library is playing a pivotal role in the teaching, learning and research process.

Sarawak Campus, Kuching

The campus was established as a result of the Government's initiative to invite a foreign, technologically focused university to be set up in Sarawak. The Government aims to foster a knowledge-based economy and remove the need for students to travel overseas to gain a foreign degree. In August 2000, Swinburne Sarawak took its first intake for degree and skills enhancement programs with a total student population of 130.
Swinburne Sarawak occupies four floors of the Kompleks Negeri (State Complex) in the State capital, Kuching. The capacity of the campus is approximately 1500 students, but as of 28th April 2003 the number of students is 532, 329 of whom are Chinese. Swinburne is an attractive option for those Chinese students unable to gain places in the national universities, especially now that they can obtain an Australian degree without the expense of going to Australia. There are 198 Bumiputra students and 5 of Indian ethnicity. (SSIT, 2003)

The language of instruction at tertiary level varies among institutions and students may do a degree in the language of their choice. Swinburne Sarawak has opted to teach exclusively in English.

**Implications of the Quality Assurance Project for the library**

Swinburne Sarawak undertook a quality assurance project at the end of 2002 that led to the aligning of five degree courses with bachelor degrees at the Hawthorn campus in Melbourne. Courses offered are: Bachelors of Engineering, Technology, Business, Multimedia and Science. Because the curriculum is sourced from a Melbourne campus of Swinburne it has already been rigorously vetted for quality prior to its accreditation in Australia. Language support is extensive.

It was decided to implement the Quality Assurance recommendations immediately, so the library had to acquire texts and resources urgently. We put procedures in place to ensure that resources were on the shelves for the start of First Semester 2003. We undertook a massive book buying and cataloguing exercise to improve access to print resources but this was only half the battle. Students at the Melbourne campuses have become accustomed to accessing the full-text databases when they need to research their topics. Most Sarawak students were unaware that the databases were available, nor were they encouraged to use the library catalogue although they were very adept at surfing Yahoo. Clearly, we were at the beginning of a steep learning curve in e-literacy education.

**Sarawak Library**

The library in Kuching is even smaller than Lilydale and has been planned to cater for a campus that relies on flexible delivery although this has not yet been fully implemented. Currently there are 26 computers for student use. The campus has undergone some growth in the last few months. The library will get busier as the numbers increase and the new user education program results in a higher usage of electronic resources.

Three of the University’s database providers allow access to offshore students. Students have access to most of the EBSCOhost databases, Infotrac and Proquest. Although these resources are limited when compared to the Melbourne campuses, Sarawak students are still able to access eight to ten thousand full-text unique titles. In the short term there will be difficulties downloading large files such as pdf documents.

**The Campuses Compared**

Each campus operates in a high technology environment although the delivery of Information Technology services is more sophisticated in the Australian campus at
present, thanks to the national infrastructure. Access to a wide bandwidth and Aarnet (Australian Academic and Research Network) has provided Australian Universities with good Internet service provision.

In Kuching we noticed a difference in the effectiveness of IT services but this was not the fault of anyone at the Sarawak campus. Until recently the Malaysian telecommunications infrastructure did not have a wide enough bandwidth to support online delivery of course resources, but a pilot project has just begun with a memorandum of agreement between Swinburne and four other institutions. They will be accessing an 8MB bandwidth wide band wireless connection in the future. So, although the national infrastructure constrained online delivery at the time we were there: the situation is now greatly improved with the introduction of Streamyx, a digital subscriber line offering high speed Internet access and bandwidth up to 2Mb. provided by a Malaysian company, TMnet. The quality of technical support at both campuses is extremely high and both libraries enjoy a good relationship with IT staff.

We discovered that we were able to transfer our technical skills from one campus to another very easily because we came from a campus which was just a few years older, a little larger, innovative and technologically dependent. Each campus is new and small. This has been an advantage at the Lilydale campus because the library was set up with the modern practice of online, virtual delivery of services in mind, innovation is encouraged and there were no beloved but outmoded practices or old architecture to overcome. The Sarawak campus is in a similar situation.

The expectation is that students will access online library resources at both campuses, especially since the Quality Assurance initiative in Sarawak. To give us an indication of the number of students who had access to a computer connected to the Internet, we asked for a show of hands in our tutorial classes. About half in each class put their hands up, whereas nearly all our Melbourne Campus students have off campus Internet access. It appears that Sarawak students will be dependent upon the computer facilities in the library for the near future.

Although online subject delivery was not yet available at Kuching, it was planned that academic staff would make use of ‘Blackboard’ software. Staff training commenced at the end of 2002 and some of them eagerly anticipate opportunities for online subject content and assessment.

Sarawak students are not yet using library services and facilities without mediation by staff and this was identified as something that had to change. Although all subjects are taught in English, this is not the students’ mother tongue. The proactive Language and Communications Unit is addressing this problem, now aided by an e-literacy program we have designed specifically for the purpose of developing information literacy and technology literacy skills simultaneously.

**Information Methods**

The nature of course delivery has affected the provision of library services at Lilydale and the deployment of library staff. All first year students at the Lilydale Campus are required to take the subject Information Methods, which is one of four compulsory core subjects. It is a single semester subject that is offered both on and off campus,
and is best taken in the first semester because it prepares students for the rest of their university careers.

Library reference staff are responsible for two lectures, a compulsory online assignment and twenty per cent of the exam. The library component includes:

- using the library catalogue to find various formats of material, encouraging students to access their own records through the catalogue and to be independent users.
- using the Internet effectively; knowing how search engines work, understanding the difference between searching for a topic on Google versus EBSCO for example, and learning to be discerning about what they find.
- effectively searching electronic databases for journal articles; search techniques, mastering six databases, both indexes and full text and understanding the difference between them.
- Citing using Harvard (author date) and APA styles.

The subject, and our module in particular, has been in a state of evolution since 1997, when the campus opened and we do not expect this to change. We are continually looking for ways to make improvements on pedagogical grounds and the volatile nature of the electronic environment makes frequent editing essential.

At first it was difficult to pitch the program at the appropriate level without ascertaining the entry-level skills of first year students. Seven years ago it was apparent that many students started their course with a very low level of information technology skill while a few others were sophisticated computer users. The subject convenor recognised the need to bring IT skills of new students to a standard compatible with the high tech nature of course delivery and so in 1999 a placement test was introduced. For two years there were two components of the subject – Information Methods A and B. Students were tested prior to the start of semester on their IT skills and those who passed were exempted from Information Methods A. After two years of this practice, it was observed that almost all students were passing the test - they were beginning their courses with adequate IT skills. We were able to blend the modules back into one generic program.

Cultural contrasts in e-Literacy education

At Lilydale, Information Methods has provided us with a convenient vehicle for embedding our unit into a course with a captive audience. There are also compulsory subjects in Malaysia which students take in addition to those prescribed by Swinburne. The National Accreditation Board requires all students in institutions of private higher learning to pass Malaysian Studies and National Language A or B. All Muslim students have to take Islamic Studies and non-Muslim students take Moral Studies. None of these subjects lends itself to the teaching of e-literacy with the same degree of fit that Information Methods does at Lilydale. No comparable subject exists in Kuching, or indeed at any of the other Melbourne-based campuses. We have had to find other avenues.

Our information literacy program at Lilydale has given library staff a high profile with students. Most higher education students have completed Information Methods and they are accustomed to seeing librarians in academic roles. The relatively small
numbers helps students and librarians get to know each other well. A great deal of productive work gets done in our very busy library, despite the informal, occasionally chaotic atmosphere. The hum of young people at work and, it must be admitted, at play is constantly present. The library environment at Swinburne Sarawak was very different when we first encountered it.

It was evident to us, soon after arriving in Kuching, that relationships between students and library staff were not always easy. Staff took a custodial approach and imposed what seemed to be punitive measures against rule breakers. Silence was rigidly enforced. So was a strict dress code. Muslim librarians were particularly upset by students playing solitaire and other computer games, insisting that this behaviour was illegal as well as immoral. Staff suggested the removal of computers from the library so that they would not have to supervise their use. This contrasted sharply with the situation at Lilydale, where library staff are staunch advocates for the students and lobby hard to improve facilities for them.

Relationships with academic staff were also in need of improvement. The absence of the liaison librarian system meant that communication lines between academics and librarians were unclear. Academics felt that library staff members were inflexible, often unhelpful and defensive. This was in contrast to the environment at Lilydale where we enjoy a collegial relationship with academic staff and are recognised for our abilities and contribution.

When we agreed to go to Kuching we were given six ‘terms of reference’ by senior management outlining areas they wanted addressed. One of these was to ‘initiate a cultural change’ in the library. The lack of a customer focus was one of the issues worrying senior managers.

Leading by example seemed the best strategy and our approach was to position ourselves at the service desk, equipped with a welcoming smile and bursting with helpful advice. That did not work. Most of the students were very shy with us and many simply could not summon the courage to converse with a native English speaker. We had to take a lower profile, hovering in the background ready to be drawn in to the discussion if needed.

Uneasy relationships between students, academics and librarians were inhibiting the development of e-literacy education. Students rarely approached library staff for assistance with searching, although one librarian was making valiant efforts to raise awareness of the databases.

Online delivery has become increasingly important at all the Australian campuses and it was essential that Malaysian academic staff and students became conversant with computer-mediated teaching, learning and research strategies so they would be equipped to undertake the Australian courses.

Few academic staff at Swinburne Sarawak had used the databases before and approached them warily. They were unfamiliar with Boolean operators and other techniques for searching databases. Many were worried about taking on responsibility for the Australian courses, knowing that a change in their teaching was expected. Until recently Sarawak Campus had more the flavour of a technical college than a
university and few of the teachers had experience in teaching university courses. Some of them had given their students assignments that required them to do independent research and they were not satisfied with the standard of the students’ attempts. Bibliographies were almost entirely composed of websites students found when surfing Yahoo. Often there were no bibliographies at all and some academic staff were concerned about plagiarism.

We went to Kuching expecting to notice cultural differences between the ethnic Chinese and the Bumiputra and this was largely true in our social relationships. The people we became most friendly with and mixed with away from work, nearly all seemed to be Chinese. The reputation of the Chinese as entrepreneurial, ambitious and energetic led us to expect that they would be more assertive in our classes than the Malays who are said to value harmony and cooperation and who are reluctant to criticize openly. (Mastor, Jin & Cooper, 2000, p.97) However, there was no perceptible difference in the demeanour of members of different ethnic groups in the classes we ran. We did not have people firing questions at us as they do at Lilydale and it was not always easy to gauge the level of understanding. All participants were disconcertingly polite.

E-Literacy Education for Sarawak Students

When we arrived in Kuching we found that not only were students not using the databases, they were not even using the library catalogue. They preferred to locate books by browsing the shelves rather than by doing battle with ANGKASA, a union catalogue that includes the holdings of Pustaka Negeri (State Library), Swinburne and several other libraries. ANGKASA is fairly unsophisticated and it is not easy to tell which library holds a particular item. Once that is established another problem arises. Collection codes were not being used so it was impossible to tell whether an item was a reference book, a periodical or in the main collection. When I raised this issue with a senior cataloguer at Pustaka Negeri she looked at me in alarm, as if I were suggesting something dangerously radical.

During our tenure, network down time occurred quite often and was very dispiriting. This was another reason students were reluctant to use the catalogue or databases. Diligent students were annoyed by the waste of time that resulted from unreliable Internet connections so it was not easy to convince them of the importance and value of online database searching.

User education classes for students commenced in January 2003. We ran these in the computer laboratories so that students could do practical exercises. These were well received but network difficulties gave us an appreciation of the stability of our own network at Lilydale. We made sure that a local reference librarian was present at each of the classes for the double benefit of ‘understudying’ and aiding communication by acting as the local face of the library.

These tutorials were based around current assignments that motivated the students to conduct their own searches. Each class was an adaptation of the model that we use in Information Methods. There was an hour’s opportunity to cover a lot of ground and we made the most of it.
A systematic attempt at information literacy teaching is only in its early stages. The ten-hour course we have designed for communication students in the pre-university course is, we hope, the beginning of a trend towards embedding e-literacy into the curriculum. Most of the students come from schools where English is not the primary language of instruction. As we are not there to deliver the course the lecturer and the local library staff are implementing it. The goal is to improve the student’s English language skills at the same time as teaching e-literacy.

Cultural considerations for international students

Four months in Malaysia gave us useful insights into the problems encountered by Asian students studying in Australia. One common belief is that they do not do well in group work. Some Australian students try to avoid being partnered with an overseas student claiming that international students are uncooperative and do not do their fair share of the work. However in Kuching, we frequently saw groups of students in the library working together in obvious harmony. It may not be working in groups that is the problem but other factors, such as international students’ lack of exposure to independent research opportunities, a tradition of teacher-centred education and especially, language difficulties.

These factors also impact on student acquisition of e-literacy skills. Speakers of English as a second or third language have to overcome the barriers of language before they can use electronic databases effectively. The databases are sticklers for accuracy and poor spellers frequently fail to retrieve any results which puzzles, frustrates and discourages them. One notable difference we observed in Kuching was that Malaysians speaking and writing in English regularly use singular forms where we would use plurals and vice versa. Their use of participles and tenses was also different from ours. A study by DiMartino et al (1995) cited in Baron and Strout-Dapaz (2001) found that international students in the United States rarely used plurals or synonyms when searching CD ROM databases. Our observations suggest that the same applies to international students in Australia and to Malaysian-based students searching English language databases. Knowing how to use a truncation symbol and a thesaurus takes on a new significance in this context. The language problem is compounded if the student’s cultural background inhibits the asking of questions. A librarian in a one-to-one situation with a student may be able to make a breakthrough that is unlikely to happen for a tutor in a class of twenty-five or a lecturer with a group of two hundred students.

At Lilydale we are working with an Access teacher to integrate e-literacy instruction with other tertiary education skills. At both campuses ESL students would benefit from additional information literacy instruction tailored to their specific needs in undertaking independent research. If international students are expected to explore resources beyond texts and course notes they have some big hurdles to overcome. They have to gain some understanding of the niceties of broader, narrower and related terms, field searching and the differences between a refereed journal and a popular magazine before they can begin to grapple with the even greater complexities of actually writing their essay.

Measuring student achievement in e-literacy
When the Lilydale campus opened in 1997 it was immediately apparent that students would need to acquire e-literacy skills very quickly after commencing their courses. They could not submit their first assignment until they had done so and this is still the case. Over the years our e-literacy assignments have done double duty as self-paced learning modules and assessment tasks. We have the students for two weeks out of a 13-week semester and in that time they need to reach a level of competency that will take them through at least their first year of university education. Perfecting (and we are not there yet) the best method for developing these skills in students has been a trial and error process lasting several years. Because of the large numbers of students involved, most of the theory is taught by the lecture method, supported and enhanced by the hands-on assignment. We have found this to be more effective than having students work through an online tutorial. We attempted to do this for two semesters in 1998, but non-compliance was high and students failed the subsequent assessment task in large numbers.

All university libraries run information literacy programs and most attempt to evaluate those programs. This is often done by asking students to fill in a questionnaire at the end of the session. We believed we needed to go a step further and assess the students as well as evaluate the program. As our module at Lilydale is a fully integrated part of the curriculum we felt compelled to apply the same rigorous academic standards to it that applied to the rest of the subject. This included assessing what the learning outcomes were. We needed to give students a grade for their assignments and the final examination, as their scores were included in the overall grade for the subject. We also needed to know if the program was achieving its purpose of developing generic electronic and information literacy skills. Was its place in the curriculum justified?

So we took on the task of designing, administering and grading two e-literacy assignments and a section of the final exam. Each year around seven hundred students undertake Information Methods. Soon we were spending a huge amount of time on information literacy instruction and assessment in addition to all our other duties. Ironically, we were assessing e-literacy skills by laborious manual means. In 2001 we moved to online formative assessment for our assignments but continued with a written exam for the end of semester summative assessment. As well as bringing our workload under control, online assessment has several other advantages (discussed at length in Badger & Roberts, 2001), the most important being the instant feedback students receive.

**Online assessment - solves some problems and creates others**

We trialled several electronic teaching and learning systems. While most of them were suitable for self-paced learning they offered a limited range of assessment options. Questions could be multiple choice, multiple answer, true or false or fill the gap (cloze technique). Some allowed for short answer questions but the electronic assessment of these was very crude. These answers could be assessed manually but we avoided this, not wanting to lose the efficiency of online marking. We were looking for something to liberate us from the tedium of marking hundreds of assignments. But we were worried that electronic testing would lend itself only to low level skills. We could not see how we could use it to assess a student’s ability to analyse, synthesis, evaluate and apply information.
Another difficulty was that there were often an almost infinite number of acceptable results for the searches we set for the students and, because most of the databases are updated every day, the number was always changing. Trying to limit the number of possible correct responses meant the questions were in danger of becoming banal and of little educational value.

Another problem was the lack of uniformity or permanency across the university. Several different systems were in use simultaneously and Information Methods has had to be adapted to a change of platform every year for the last three years. We had Elegant Solutions, TekniCAL, BlackBoard and WebCT in rapid succession. With each migration, the assignment seemed to be getting easier. The constraints of the software were an inhibiting factor in keeping up standards and setting meaningful questions.

Some solutions

A colleague introduced us to a product called Respondus which is easy to use and flexible. It allows an assignment or test to be created without using any HTML. When ready, the test is simply uploaded to either BlackBoard or WebCT after it has been created. If necessary, it can be edited after it is uploaded.

Over the last six years we have undertaken several courses in instructional design, catering for different learning styles and writing effective test items. We have tried to apply this knowledge to raising the academic standards of our program. We have found that very careful construction of test items can alleviate many of the problems. The idea is to frame questions in such a way that the student is forced to do some real intellectual work before answering them. They cannot merely go into the database and choose the first journal article that matches the search criteria. They have to read them carefully to answer the questions accurately. We have gradually developed skills in designing questions that are clear, unambiguous and where all acceptable answers are few in number while maintaining their validity. We have devised multiple choice and multiple answer questions that may look simple at first glance but which oblige the students to demonstrate mastery of a range of technical and intellectual skills before they can be answered successfully. An example is Question 21.

InfoTrac

Search Business ASAP via InfoTrac to find each of the following articles then answer the questions:

1. An article titled 'Another vineyard on the barbie'
2. An article titled 'Beverage leverage' by Richard Turcsik
3. An article titled 'Hand-picked grape growers'
4. An article titled 'Joint venture set to boost SA wine sales'.

Which article is not about the wine industry?
Which article appeared in 'Europe Business Review'?
Which article compares the cost of buying vineyards in South Australia and California?
Which article discusses BRL Hardy's and Stellenbosch Vineyards?
This question looks like a simple matching exercise but to answer it correctly the students had to locate the database, find all the articles using a variety of search strategies, and read them with a fair degree of thoroughness. In terms of Bloom’s Taxonomy of levels of abstraction this question meets most of the criteria to qualify as Class 4.00 (Analysis) or at least Class 3.00 (Application). (Bloom, 1956)

We still have to make regular amendments to our assessment tasks. The databases are all updated constantly, publications included are subject to change and there is great competition among vendors vying for Swinburne’s custom. All these things affect our program. While the assignment is hands-on, the final examination is done under traditional exam conditions and has to be assessed manually. We take the opportunity to add a couple of short answer questions that require student to explain in their own words how to apply some of the concepts of information literacy. We are still working on ways to improve the assessment of higher level cognitive skills without relinquishing the convenience and efficiency of online assessment. However, on the whole, we are happy with our online assignment and the end of the onerous task of manual grading.

Program evaluation

Our module is part of a compulsory subject so most students attain a reasonable degree of e-literacy in their first year at university. The skills we teach are complemented and developed by the work covered in the remainder of the subject. The databases we feature in our training have very high usage levels at Lilydale campus. We still find the occasional computer-phobic among our beginning students but working through the module with our support usually overcomes most of their fears.

Assessing the students provides a simultaneous opportunity to evaluate the program’s effectiveness. By examining response patterns we have identified concepts that were difficult, unclear, ambiguous or inadequately taught by us. Feedback from students, tutors and the subject co-ordinator helps us continually improve the assignment. Most calls for help come from off-campus students who have not attended our lectures.

Assessment of e-literacy attainment in Sarawak

The lack of an appropriate vehicle such as Information Methods within the degree courses in Sarawak means that the communications subject in the pre-university course is currently the only avenue for directly assessing student achievement in e-literacy. This semester the teacher grading student projects will make a judgement about the students’ acquisition of e-literacy skills. However, it would be possible to adapt the assignments and testing procedures operating at Lilydale for Kuching students. Eventually we hope this can be done by local library staff.

We are optimistic that the intensive training in e-literacy is having a noticeable effect. Improving students’ e-literacy skills is only one of the obstacles that needs to be overcome in the use of the databases: technical, licensing and access issues are still not fully resolved. We are working with the recently appointed permanent Information Resources Manager on a range of issues including user education and e-literacy education.
Conclusion

In Sarawak library science generally and e-literacy in particular do not yet compare with Australian standards. There is no professional librarianship education in East Malaysia and no library technician courses anywhere in the country. But there is strong support from the Sarawak state government for the development of library services. The two branches of Pustaka Negeri (State Library) at Kuching and Miri are state of the art showpieces. Collections are small but growing and Swinburne students and staff have access to them.

At Swinburne Sarawak a combination of technological and cultural factors have suppressed the development of a culture of independent research and the recognition of the importance of e-literacy education. Some of the technology problems have already been ameliorated following the recent introduction of a wider bandwidth. Inculcating a change of approach to assignment research and writing has also begun but is obviously a longer-term project.

During our terms as manager we made three new appointments to the library and now, five months later, it is clear that all three have made a great success of their new positions and are having a very positive effect on the development of a customer focused culture. Opening hours have just been considerably extended with evening opening offered for the first time. The permanent Information Resources Manager is leading a dynamic team with a pro-active and ‘can-do’ approach. We liaise constantly with Sarawak staff and the Manager will shortly be coming to Melbourne for two weeks intensive training. The library at Kuching Campus should eventually be able to offer support to academic staff and students of a similar nature to that provided at the Melbourne campuses but without losing its distinctive character. Already we are receiving very favourable reports from academic staff about greatly improved services and access to resources. A culture of independent research is developing. Clearly the cultural change that senior management was looking for is well under way.

Meanwhile, we have now had several thousand students go through our introductory e-literacy program at Lilydale. This is not the only information literacy program operating, nor the only subject with library involvement in the curriculum. But it has achieved its purpose of equipping beginning students with e-literacy skills sufficient to thrive in our high-technology environment. It has also ensured that library staff have a prominent place in teaching, learning and research at Swinburne at Lilydale. Our experiences with embedded e-literacy education are helping us make a contribution to the national discussion on e-literacy issues.

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