

# Exporting e-Literacy Education

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## Abstract

Swinburne University of Technology has six campuses in Melbourne, Australia, and one in Malaysia. The authors of this paper have been responsible for the design, delivery and evaluation of an integrated information literacy and information technology literacy program at the Lilydale Campus in Melbourne for six years. The program forms a large part of Information Methods, a compulsory subject for all first year students, and accounts for 20% of the marks attainable.

In 2002 and 2003 each of the authors served as Information Resources Manager at Swinburne's campus in Malaysia. This campus in Kuching, Sarawak on the island of Borneo is delivering courses identical in content to those undertaken by students in Australia. During their terms as Manager, Julie and Susan provided information literacy skills training for academic staff and students to assist them to meet the same standards of teaching, learning and research as their Australian counterparts.

This paper discusses the development of the program over six years at Lilydale and its adaptation for use in an educational environment where English is not the first language of most of the participants and where cultural differences in learning styles have to be considered.

Issues raised include:

- the inseparability of information literacy from information technology literacy;
- the problems of, and some solutions to, assessing student achievement in e-literacy; the 'high tech' nature of the Lilydale campus compared to the less developed facilities in Kuching;
- differing cultural expectations of the roles of teachers, students and librarians; and
- implications for our on-campus international students.

**Keywords:** information literacy, electronic literacy, cultural differences, integrated curriculum, higher education

## 1. 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.

## 2. 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).

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.

### **3. 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. According to this list, 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

### **Relevant Swinburne Graduate Attributes:**

Swinburne University graduates:

- 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'. 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 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 many 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.

#### **4. The campuses – Lilydale and Kuching**

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). One quarter of Melbourne's population was born overseas and the city includes people from 140 countries.

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. 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, meaning '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 different cultural backgrounds and experiences at secondary school there is a wide variation in degree of English competence among beginning tertiary students. Only about 15% of Swinburne Sarawak students speak English at home. Around 50% need remediation in reading English and around 70% in writing English during their first year. (Heskin, Sharma & Kueh (2001).

#### **5. Lilydale Campus in Melbourne, Australia**

The outer Melbourne campus at Lilydale, opened in 1997, was created to be a high technology campus 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 was 1,802 equivalent full time students (Swinburne University of Technology Lilydale 2003 p.4). The Higher Education sector offers degree courses in Business, Social Sciences and Information Technology.

##### **5.1 The Multi Modal Learning Project and Implications for the Lilydale Campus Library**

Multi Modal delivery has become the accepted strategy for course delivery at Lilydale: 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 virtual learning environment (VLE).

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 obliges students to be e-literate.

## **5.2 Lilydale Library**

Swinburne library relies heavily on full text web-based databases and these comprise the bulk of library resources. 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. Computer laboratories are shut outside of class times and the library with its extensive opening hours also serves as the open access computer laboratory. As a consequence of all these activities, the library is playing a pivotal role in the teaching, learning and research process.

## **6. Sarawak Campus, Kuching**

In Sarawak the language of instruction at tertiary level varies among institutions and students may undertake a degree in the language of their choice. Swinburne has opted to teach exclusively in English. The campus was established as a result of the Government's initiative to invite a foreign, technologically-focused university to establish operations 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.

Located in the State capital, Kuching the campus has the capacity for approximately 1500 students, but currently the number is approaching the mid five-hundreds, of whom three fifths are Chinese. Government policy on university entrance requirements favours Bumiputra over Chinese students who often cannot find a place in the national universities as a result. Swinburne is an attractive option for these students especially now that they can obtain an Australian degree without the expense of going to Australia.

### **6.1 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. 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. During our tenure 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 and demonstrated well-developed IT skills. Anecdotal evidence indicated that approximately one third had access to the Internet off-campus. By observing study behaviour in the library and discussing assignments with academic staff, we concluded that students' concepts of information literacy were largely confined to fact finding from the Internet and from books they located by browsing. Clearly, we were at the beginning of a steep learning curve in e-literacy education.

## **6.2 Sarawak Library**

The library in Kuching is very small and has been designed to cater for a campus that relies on flexible delivery. The campus has grown in the last few months and the library will get busier as student 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.

## **7. 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 which 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.

Sarawak students were 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.

## **8. Information Methods at Lilydale Campus**

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 many students started their course with a very low level of information technology skill while a few others were sophisticated computer users. Over the years it became apparent that the entry level skills of the students had continually improved.

## **9. 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 but none of these subjects lends itself to the teaching of e-literacy with the same degree of fit that Information Methods does at Lilydale. 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 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. 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.

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. 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 could find no evidence that any information literacy model had underpinned any of the students' research.

When we arrived in Kuching we found that not only were students not using the databases, they were not even using the library catalogue, preferring to locate books by browsing the shelves. We embarked on a program to change students' approach to research and to initiate a cultural shift away from dependency on library staff and towards being independent users with a genuine understanding of research

methodology. The concept of information literacy was new to most students who had low expectations about what the library and its staff could offer.

User education classes for students were run in 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 and how important this was to student learning. 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 and critically evaluate the information they retrieved. 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.

## **11. 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 rather than enquiry-based learning, and, especially, language difficulties.

Smith (2001, p.434) found that Malaysian Chinese students scored highly on the Globetrotting measure (a tendency to make 'implausible links between ideas and quick to draw conclusion') on the Approaches to Studying Inventory. The Globetrotters in Smith's study had difficulty distinguishing relevant from irrelevant material. They also scored highly on Syllabus Boundness, a 'restricted form of learning where students adhere rigidly to the syllabus and specific tasks' (Smith, 2001, p.433).

These factors also impact on student acquisition of e-literacy skills. Such students would benefit from gaining an understanding of information literacy models such as Cornell's seven steps with its emphasis on using a variety of sources which must be carefully evaluated.

Additionally, 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 puzzle, frustrate and discourage 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. One of the problems identified by Zoe & DiMartino (2000) is Chinese speakers lack of familiarity with function words such as AND and OR which are fundamental to the Boolean searching required in most databases. These problems are 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.

In times of rapid technological change such as has been experienced in librarianship, continuing professional development (CPD) of staff is vital. There are no library schools in East Malaysia to provide leadership in this area and information literacy education has suffered as a result. The lack of adequate resources and a shortage of trained instructors exacerbate the situation. In Kuching most professional development opportunities are provided by the state library, Pustaka Negeri. Most CPD activities in recent years have centred around IT issues such as library automation and network management. (Majid, 2004 p.60). Information literacy has had little attention in Malaysia at a time when it was a major focus of many professional development activities for librarians in Australia, particularly in educational institutions.

At Lilydale we are working with an Access teacher to integrate e-literacy instruction with other tertiary education skills. At both campuses English as a Second Language (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.

## **12. Conclusion**

At Swinburne Sarawak a combination of technological and cultural factors were suppressing the development of a culture of independent research and the recognition of the importance of e-literacy education. Some of the technological 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.

The library at the Sarawak Campus will eventually be able to offer support to academic staff and students of a similar nature to that provided at the Melbourne campuses without losing its distinctive character. A new manager has been appointed and is playing a proactive role in the promotion of electronic literacy. 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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