The role of the library in an integrated computer and information literacy program at Swinburne University of Technology

Abstract

This paper discusses the role of the library and the library staff in the information and computer literacy program at the Lilydale campus of Swinburne University of Technology. It outlines the background to our involvement in the program in the context of the educational environment at Lilydale where there is a strong emphasis on flexible delivery and alternative approaches to teaching and learning.

The organisation, design and development of the curriculum is described and an evaluation of our student assessment procedures is made. Some of the questions which were asked on the assignment and exam undertaken by the students are compared for effectiveness.

The program is evaluated and possible future directions are considered. The impact on library staff and work patterns is discussed.

Introduction

This paper discusses the high-profile role that library staff play in the provision of information and computer literacy education in an academic library - the Lilydale Campus of Swinburne University of Technology.

Library staff are responsible for the design, delivery and assessment of twenty percent of a compulsory first year subject. We design and develop curriculum, compose the relevant section of the learning guide, deliver lectures, set and assess assignments and examination questions. Our module comprises one of five in a subject called Information Methods and, although we liaise with the course co-ordinator, we have control over the content of our component. We believe we have achieved a high degree of integration into the mainstream curriculum and that students and staff readily accept library staff as part of the teaching and learning process.

Before looking at our information literacy program in more detail some background information helps to set the scene.

Distinguishing features of Swinburne's Lilydale Campus

Our campus has some features that distinguish it from other educational institutions and to some extent from other campuses of Swinburne. These are:

1. A multi-modal and flexible approach to course delivery
2. Heavy reliance on electronic delivery of research materials
3. A strong sense of community among students and staff
4. Close ties with the local area

The first two of these points in particular have major impact on the library - the resources we collect, the skills we need and how we do our job.

Background

Lilydale campus opened in 1997 to accommodate students and staff from the much larger Mooroolbark Campus a few kilometres away. It had been planned to move students from one campus to the other a year at a time but, for a number of reasons, a decision was made to
close Mooroolbark and move the whole operation to Lilydale. So 1997 began with 1200 students instead of the expected 400. There was only one building and because it was envisaged that students would work off-campus to a large extent, only a very small library was built. It contained no discussion rooms, no silent study areas, no carrels, no reference office nor office for the Library Manager. Most of the floor space was taken up by computers, and four large tables with chairs very close together like a refectory in a boarding school. Over the three years we have been at Lilydale the physical situation has improved a little but, as students numbers have grown, we are very crowded and the library is often extremely noisy.

This situation exists in what is a prize-winning building and seems to be the result of a mistaken idea of how people use virtual libraries. The students ARE on campus and they want to use computer facilities between lectures and tutorials. They can access all the resources from the computer laboratories and most of them at home but many students prefer to work in the library where help from the staff is at hand.

**Course delivery in an electronic environment**

Lilydale Campus is designed to be a virtual learning community where teaching and course delivery is flexible and where multi-modal technologies are central to the educational process.

Quite a large number of students do not attend lectures either because they cannot, owing to work or family responsibilities, or because they know there are alternatives.

All lectures are videotaped and can be viewed via 'Video-on-Demand' from the PCs in the library. After a couple of weeks they are transferred to a conventional video and held at Counter Reserve for the rest of semester.

Most lecturers use PowerPoint slides in their presentations and these are accessible through G drive which is a shared drive for students and staff.

Also on G drive are learning guides, assignments, various notes and other course-related material.

Some lecturers prefer to attach course materials to the home page on the web and some stay with the Counter Reserve approach.

Consequently, students need to adapt to finding resources in a variety of places and it can be rather confusing at first. Many of the students enrolled at Lilydale did not choose this campus because they particularly wanted to study in a high-technology environment but because Lilydale was the only feasible option for them for geographical reasons. Some of these students are overwhelmed by the steep learning curve facing them when they begin their course, and dismayed to discover that until they develop sufficient computer skills they cannot begin to study their subject of choice effectively.

Our students have access to the resources held at the four other Swinburne campuses but as we have only a small collection of print materials at Lilydale, we are heavily reliant on electronic resources.

Computer literacy skills are essential to survive in an environment where students are expected to work through computer based learning packages, to email assignments to lecturers, and to research essays using references sources that are largely in electronic format. The library also communicates to students by electronic means, for example holds and overdue notices are sent by email.
Program organisation

At the beginning of the year incoming students sit a placement test to assess their level of computer literacy. Those with low levels of computer literacy skills have to do both Module A and Module B of the Information Methods subject. This means they are studying this subject for the whole year - two semesters of twelve weeks each. In Module A they learn basic skills and software applications such as Excel, Access and PowerPoint. Their major assignment, set by the subject co-ordinator, obliges them to demonstrate high levels of skills in these areas as well as in using library resources.

Students judged to have good levels of computer skills are exempted from most of the Module A curriculum and can complete the course in one semester instead of two. However they still have to do the library assignments for Module A and Module B. The Module B component builds on Module A while developing more academic and sophisticated information literacy skills.

The students need to develop survival skills very quickly. In a twelve-week semester, particularly one where a high proportion of the work involves using computers they have to hit the ground running. To help make this possible a series of workshops is held in the labs and the library during Orientation Week. We set up the logins and passwords the students need to access the computer network and introduce them to the library and learning environment at Swinburne. Orientation Week is becoming increasingly important for academic rather than social reasons.

Information Methods curriculum

To see how the library component of the course fits into the overall scheme it is helpful to look at what is covered in the subject as a whole. Topics include:

1. Information, communications and computer literacy
2. Computer operating systems and applications
3. Information technology and the library
4. Computer assisted and managed learning
5. Networking, electronic mail and browsers
6. Data communication
7. Information presentation: word processing; constructing web pages; presentation software; spreadsheets
8. Database organisation
9. Multi-media and graphics

Unit 3 - Information Technology and the Library

Library staff are responsible for writing the curriculum and the learning guide for this section of the course as well as preparing and presenting demonstrations of the electronic sources which students are required to master. Students spend two weeks on this unit which includes information finding skills and higher level, more abstract, information literacy education. We follow the same pattern of delivery as the rest of the course. All materials except the prescribed textbook ('Teaching information literacy skills' by Patricia Iannuzzi et al.) are available electronically to students so they do not need to miss out on any information if they miss our lectures. To complete the required work for the library component of Information Methods they have to move between several different sources on the web, the library catalogue and sources on G drive.
Course design

Library staff deliver lectures and demonstrations in the normal Information Methods lecture time in Weeks 2 and 3. Students are also expected to work through a self-paced on-line information skills tutorial that was prepared originally in late 1997 but is subject to updating whenever necessary.

The library component of Module A aims to give students a skill level sufficient to get them through their first couple of essays. We set them an assignment which is mainly based on using the Dynix catalogue. These students do Module B in second semester. Module B covers the other three units of the on-line tutorial. Even though the students exempted from Module A have a reasonable level of computer literacy they find the library work totally new to them. Few of them have encountered Boolean operators before or considered the problem of searching the contents of journals.

Because of the large numbers involved we use a lecture theatre which does not allow the session to be hands-on for the students. We design the assignment in such a way that they are forced to use the computers to complete it, for example they are asked to attach original print-outs of search results to the assignment. Students are from all disciplines, Social Science, Applied Science and Business so the examples that we use in our demonstrations are drawn from all subject areas. We try to show that the skills developed in one area can be transferred to other situations and are not confined to the specific search being carried out at the time.

The objectives of our lectures are to assist students gain skills in:

- using the library catalogue;
- determining which resources are appropriate for different purposes;
- selecting the most suitable electronic database for a particular information need;
- formulating an effective search strategy;
- searching five specified electronic databases;
- searching the World Wide Web for course related material

When we were revising the course for 1999 we wanted to make use of the on-line information literacy tutorial which library staff from three campuses had spent a good deal of time constructing. We set out to design a unit, which directed the students to the tutorial at various points. We also had web-based guides to each of the databases we were demonstrating. This meant students were required to juggle several sources of information and it was becoming quite complex. Our reference librarian, Susan Roberts and myself did a three-day workshop in instructional design and developing self paced learning materials which helped us to organise the material in the best way possible, write clear, unambiguous instructions and use the active rather than the passive voice. We also learnt about catering for different learning styles and preferences, something, which is easy to overlook when web-based delivery is the norm. In the first year of the course, 1997, the university provided an instructional designer to work with us which was helpful, but we found it very beneficial to develop some of these skills ourselves.

The units of the online tutorial are:
- Library catalogue;
- Constructing search strategies,
- Searching the Internet; and
- Searching for periodical articles in print and electronic form.

In the lecture we demonstrate how to use the tutorial, the library catalogue and several of the most widely used electronic databases: two Internet databases EBSCOhost and InfoTrac;
three CD-ROM databases, PsycLIT, ABIX and The Age; and AUSTROM which is accessible on both the Internet and the CD ROM network.

We also reinforce some of the most important material from the on-line tutorial by showing a number of PowerPoint presentations. As students are used to their lecturers using PowerPoint on a regular basis, this helps them to focus and concentrate. The presentations are stored on G drive and are accessible to students at any time.

**Student Assessment**

All students do the Module A assignment on using the library catalogue in the first couple of weeks of semester. Those exempted from the rest of Module A then go on to do the more demanding Module B assignment.

The Module B assignment is composed of five sections with three questions in each:

Section 1 is on the library catalogue (more advanced questions than in Module A)

Section 2 is on constructing a search strategy and covers things such as Boolean operators, using a thesaurus, an index, using wildcards and truncation, and analysing an essay question.

Section 3 requires students to use the CD ROM databases, ABIX, PsycLIT and The Age newspaper.

Section 4 involves searching the Internet databases Ebsco, InfoTrac and Austrom

Section 5 covers searching the World Wide Web and CoolCat. Coolcat provides an avenue to further resources to supplement our small print collection so we make sure that students know how to use it effectively.

As well as the assignment we also set an information literacy component in the final exam which accounts for 20 marks. This is completed under normal exam conditions where students do not have access to computers so the type of assessment has to be different. We test such things as which database to select for various subject areas, how to use logical operators, truncation symbols and wildcards, and how to devise a search strategy. Questions vary in their format: some are multiple choice, some are true and false and some involve writing a short explanatory paragraph.

Constructing the assignment and examination questions has been a very exacting task. It is not easy to formulate a question which tests what you want it to, is clear and unambiguous, and which, in the case of the exam questions, can be done without access to a computer. Often the questions that we expect the students to do well on are not as easy as we thought they would be. In the assignment it is difficult to prevent students from copying answers from each other if there is only one right answer. But if we design questions that require the students to produce unique answers we have to check them all on the system which creates a lot of work for us.

Our question on ABIX in first semester this year was difficult for many students:

**Use ABIX to find an article written by Kristina Sullivan.**

**Write down the title of the article which has Microsoft Corporation as one of its subject headings and the date of the issue of PCWeek Australia that it was published in.**

**Use the catalogue to find out which Swinburne campuses have copies of this issue.**
Even though we had explained at length that ABIX is only an index and that they had to check the catalogue to see whether the article was held at Swinburne, many students could not apply this information and continued searching in ABIX for local holdings. Some students become so accustomed to having journal articles delivered to the desktop that they have trouble accepting that a database can be only an index. Or they regard them as being of no value.

Despite receiving feedback from us on the ABIX question, students were still having difficulty with this concept when they did the exam a couple of months later. The following question had a failure rate of over 90%. One student insisted to us after the exam that two of the choices were identical:

**To find out whether a particular journal article was held at Swinburne you would search the library catalogue by:**

(a) Selecting PERIODICALS - TITLES and typing the title of the journal  
(b) Selecting PERIODICALS - KEYWORDS and typing the author of the article  
(c) Selecting PERIODICALS - KEYWORDS and typing the title of the article  
(d) Selecting PERIODICALS - TITLES and typing the title of the article

Another question which caused problems in the assignment was on using the truncation symbol to increase the number of records retrieved when searching an electronic database. Students truncated every word in the search statement instead of just the keywords and some students truncated the words right back to the first few letters and consequently retrieved thousands of records. We had not anticipated responses of this nature and we learnt an important lesson about constructing questions.

The exam question on truncation was much more successful:

**In approximately 50 words explain and demonstrate how you would use a truncation symbol to maximise the number of hits when searching for information on computer crime.**

Generally, these open-ended questions were better discriminators between good and poor students. The questions on Boolean operators were well answered in the assignment and the exam. The assignment question was:

**Use three diagrams and three examples to illustrate how Boolean operators are used in searching an electronic database.**

The exam question was:

**Explain the effect of each of the three Boolean operators in a search statement. Give an example of each.**

And finally, one exam question which virtually everyone answered correctly was:

**To locate a book or journal in another Victorian university or college library you would search:**

(a) Hot Dog  
(b) Cool Cat  
(c) Web Wombat  
(d) Gopher
What is the reason for the poor performance of so many students on concepts which we believed had been fully explained and demonstrated? Two or three possible explanations spring to mind. One is that while our regular library users develop high skill levels through constant reinforcement, even the non-library users have to sit the exam and bring down the average marks. In addition, some of the students with low entry level skills find it difficult to make the necessary distinctions between the vast array of electronic databases all with their different software and access passwords. On the other hand, some students who enter the course with good computer skills are sophisticated Internet users and get by without using the library-based databases. They are therefore unable to answer the questions on the exam.

The reluctance of many students to use index-only databases means that they get little practice using ABIX and even less searching for print copies of journals. Because obtaining a print copy of an article often involves a two or three day delay while the article is brought from another campus, many students are not interested in pursuing this form of hard copy.

The poor response to the ABIX question suggests that print journals are only valued by students if they are held on the local campus. This is supported by the fact that usage of locally held journals remains very high but requests for inter-campus periodicals has declined markedly over the last year or so. Now that we have been at Lilydale for nearly three years, most of our students have never studied at the old Mooroobark campus. They have all been 'brought up on' electronic delivery. We have seen jumps in the usage of EBSCO and IntoTrac of around 750% each year. On the whole, the questions on the exam and the assignment that were answered best were those that related to electronic searching.

Because the subject is compulsory, many students were taking it who may not have chosen to do so, and they did not do well on other sections of the paper either. Finally, we do not get the opportunity to revise the work with the students close to the exam period. We have relied on them using the databases throughout the semester to reinforce their skills. Although many students do become very competent searchers others try to avoid electronic sources of information. This is still possible in one or two courses where the academic staff have tended to avoid them too!

We have tried to address some of these issues in our teaching in second semester and after the exam we will see how successful we have been. The average mark obtained on the assignment was much higher than on the exam. This suggests a high degree of 'collaboration' took place when students worked on the assignment. Improving our student assessment procedures is our biggest challenge.

Impact of the program on the library

We believe we have made a significant impact on curriculum development at Lilydale but what impact has our involvement had on us?

A great deal of time is spent in the development, delivery and assessment of these assignments and exams as well as in writing up the learning guide and preparing the lectures. The subject co-ordinator is very supportive and is willing to provide funding to allow us to work extra hours when necessary. So far we have only been forced to do this when correcting the exam papers as these have to be done very quickly. I believe that if we are going to be considered part of the academic staff we should try to absorb these extra duties as much as possible. If we do it well it should mean that students are capable of doing their own research without mediation by library staff. We now have many first year students with levels of information literacy skills that would have been exceptional in a post-graduate student a few years ago.
Our involvement in the mainstream curriculum has raised the profile of the library staff in a way that traditional user education sessions never did. Increasingly students regard the library staff as being on the same footing as academic staff in the teaching and learning process. Most new students arrive at university without any pre-conceived ideas about the library and accept the instructional role of library staff quite readily.

Working in a virtual library with extended hours of access often means that library staff are approached by students needing help with computer-based packages on subjects such as accounting or multi-media. We do not want to encroach on the teacher's turf but frequently students will find they cannot proceed any further until their problem has been addressed. The library staff are still working three or four hours after the academic staff have gone home and on weekends. The student can be held up for several days if library staff are not able to help them. In these circumstances is it O.K. for library staff to (for example) explain accounting concepts to students?

A related issue is the students' dependence on library staff for technical support. To what extent should a librarian be expected to fix technological problems that arise with the computers? Where do the boundaries lie between what we do and what I.T. does? At times it is easy to feel that you are presiding over a computer laboratory rather than working as a reference librarian but once again the library staff are frequently the only staff left on campus when the problem occurs.

My answer to both these issues has been to forget about having a philosophy on what I should or should not do but to do as much as I can to help the student before I tell them they will have to wait until they can see their tutor or a technician. I do not advise them about curriculum related matters unless I am sure of my facts but with computer-related questions I feel more at liberty to try various solutions. I try to take advantage of any training that comes my way to increase skills in this area but I have stopped worrying about demarcation of duties. Over the years I have broadened my definition of what constitutes a library information service and basically will do whatever is needed to facilitate the student to advance in their work.

'THAT couldn't possibly happen!"

Some academic staff have developed computer-based programs which they believe to be fully self contained and incapable of running into difficulty. They do not imagine that library staff will ever be asked to solve problems or be involved at all. It can be difficult to convince them that problems are arising. Sometimes it is simply a case of the teacher not having registered the student to use the program and there is no way we can get around that. Whenever possible we ask the academic staff member to train us in the use of the program or at least in some rudimentary trouble shooting.

Integration of library literacy into other subjects

This paper has focused on our involvement with a first year general subject but we also hold specialist classes for many of our other subjects such as tourism, tax accounting and psychology in tutorial times or as sign-on voluntary sessions. These are usually hands-on sessions and are often for students in higher years.

Many lecturers include library research skills in their courses with mixed success. Those that confer with the library usually come up with something very useful but those that devise their own research project can run into troubles. One lecturer distributed an exercise that required the students to compare traditional print sources and electronic sources of information. However, print sources for her subject were very scarce in our library. We don't have print indexes for example. Problems can also arise because lecturers often do not want to upgrade
learning guides each year and the library component of their course may not reflect the current situation in the library.

As well as this we often do a 15-20 minute demonstration in a lecture to help students with a particular assignment or to show a new database in their subject area. Usually we are asked to do this but occasionally we initiate the session if we think it is called for.

**Program evaluation and future directions**

Assessing the students' work gives us an opportunity to identify weaknesses in our program. It is rather a shock to find high failure rates on a question which we believed we had covered adequately. Over the three years we have been delivering the program it has changed quite a bit, from being very academic and abstract the first year, to very practical the second year, and a balance between the two in the third.

The program will always be subject to revision and improvement. I would like to make it less complex and reduce the need for students to juggle so many sources at once. At present this is largely out of our hands as we are constrained by the technology. We also come up against the problem of constant changes, for instance we having been living in expectation of the arrival of our web-based catalogue for over two years. It will be up and running from the beginning of next semester which means much of our program, but most especially the online tutorial will have to be rewritten. Because the three information staff are all on academic year tenure we leave in early December not knowing how much of what we have prepared will still be useable in March.

In 2000 we will move to electronic assessment of the assignment. To date we have put the assignment on G drive so that the students can download it themselves and hand in a print copy of the completed assignment. Next year they will submit the assignment electronically which may reduce the incidence of students copying from each other. However, the limitations of the technology will increase the need for very careful structuring of the questions.

**How did we do it?**

I have worked at other institutions where it has been difficult to persuade academic staff to allot time to information literacy programs. This is not the case at Swinburne at Lilydale. We can always be sure of a positive response if we suggest a user education session to staff. This leads back to one of the four points I made at the beginning - the strong support for the library from most academics. It is also a recognition that in a high technology environment the students and staff both need the intervention of library staff to function effectively. It is glaringly obvious that an incoming student, even if they are computer literate, will need considerable assistance in making the best use of the resources at Lilydale.

Most of our academic staff have positive attitudes towards information technology and want to use it to the best advantage in their courses. They are well aware that their students often need considerable assistance in learning how to use it effectively. It is apparent that only an information specialist such as a librarian can be in a position to provide tuition on abstract concepts and practical skills across a wide range of subject areas which involve a vast array of ever-changing technologies.

The level of integration into the curriculum that we have achieved represents a shift in the status of the library from a support unit to a central position in the academic life of the university. The role of the librarian is undergoing constant development and a greater depth and breadth of skills than ever before is required. I do not believe library positions are threatened by advances in information technology as long as we maintain our skills and our
readiness to adapt to changing circumstances. We should also be making sure we play a formative part in these developments so that we can shape our own working lives in ways of our choosing.

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