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Using Online Courseware for Information Literacy Skills Development in a Multinational Program

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Information literacy skills are becoming a world-wide educational issue. Chalmers and Fuller (1996) suggest that we should not assume students commence university with the ability to develop sustained learning strategies that are consistent with the type of learning we wish them to acquire. This often results in students' inability to make the best use of the learning opportunities with which they are presented. One skill of particular importance is information literacy.

The advancement of telecommunications technology has provided increased opportunities to service a broader cohort of students without sacrificing quality, and providing greater technical specialization otherwise only afforded to local and on-campus students. Indeed "exporting courses can raise enrollments to enable a school to teach more specialized courses than the economics in the local environment will allow" (Barnes, 2004). Additionally, administration and delivery of content, learning objects, assessments, and tutor materials are made simpler and more consistent using new technologies. From a School and university perspective this fortifies the quality and accessibility of our programs. It allows for crossing of cultural and physical boundaries. Yet, this global nature of education presents potential issues in both cultural, language and differing skill levels in relation to information literacy. Rader (2002) in a white paper prepared for UNESCO details the emerging global priority to create an information literate society for all countries in the world, in order to support the increasing digital information environment in which we live. This paper describes how one university in Australia is using new technologies to promote information literacy and how this lifelong learning skill is embedded in its degree courses.

EDUCATIONAL CONTEXT

Edith Cowan University (ECU) is located in the city of Perth in Western Australia. At ECU, the School of Computer and Information Science (SCIS) provides undergraduate and postgraduate courses in the areas of Computer Science, Software Engineering and Library Technology. There are approximately 1,400 undergraduate students taking a range of degree programmes. Courses are offered at two metropolitan and one regional campus in Western Australia as well as via five international partners located in Malaysia, Singapore, Sri Lanka and Kenya. In some cases, the international partners deliver the full degree programmes while, in others, a diploma programme based on the common first year of the School's computing and IT degrees is offered. In addition, some of the undergraduate computing and IT programmes and all Library Technology programmes are offered via distance education with many students located in rural and regional areas of Australia. On-campus students in Australia also come from a wide range of backgrounds and educational contexts. For example, about 33% of SCIS students are International students coming from 45 home countries while 20 percent of Australian students come from non-English speaking backgrounds. More than 60% of undergraduate students are classed as mature age entrants with many joining the University via other educational institutions such as Technical and Further Education or private colleges delivering Diploma level courses.

Such a diverse range of locations and modes of delivery create particular challenges in ensuring uniformity of standards and content across units of study while the diversity of the student body fuels the need to develop information literacy skills across the broad range of undergraduates. In order to address the standardization issue, SCIS makes use of web based delivery of learning materials to both students and staff via a series of interlinked servers (proprietary named eCourse). Information literacy issues are addressed by including in the common first year the unit CSG1132 Communicating in an IT Environment.

INFORMATION LITERACY SKILLS

The Need for Information Literacy Skills

Selber (2004) asserts that whilst literacy has traditionally been the domain for English departments, computer literacy is the domain of the science department. Whilst this is not surprising there is some merit in the consideration that computer literacy is often inclusive of information literacy and whilst the technology provides the infrastructure for access to this, the use of the information should be back in the English department. Despite this, most university faculty and departments attempt to deal with these issues themselves. In SCIS, we take on the responsibility to develop outcomes for our students that include computer and information literacy.

Overseas students make up 30% of the student body in the School. This coupled with the off-shore institutions in Sri Lanka, Singapore, Kenya and Malaysia, means that the requirements to ensure that our students are information literate is of primary importance.

In general, human beings are not good at managing large volumes of information and the greater accessibility to information and its increasing volume is compounding the problem. From the community and university perspectives, information literacy is a skill that goes hand in hand with lifelong learning (Bundy, 1998, 2002; DEETYA, 1998). This results in tertiary institutions trying to balance educational objectives with society expectations and industry bodies. These stakeholders want graduates with the characteristics of lifelong learners and who are adaptable in a changing work environment. From the university perspective, all graduates are expected to possess certain attributes which include information literacy skills (Drew, 1996). ECU defines this as the graduate attributes of 'Use of Technology / Information Literacy'. A student who possesses this attribute "has confidence, knowledge and skills in the selection and application of technology appropriate to their field of scholarship" (ECU, 2002).

Information literacy has become an important factor in tertiary education because of the changes to information access, technological advancements, and therefore access to complementary materials which we as educators expect the student to research and use. In other words the students need to be able to "locate, evaluate, manage and use information in a range of contexts ie be information literate" (Bundy, 1998). However, it should be acknowledged that skills of this sort are unavoi-

ably generic yet defined specifically in different disciplines (Lupton, 2004). Assessment of these skills is therefore also problematical.

Whilst secondary level and high schools in Australia are also beginning to address this issue, as yet the usual cohort of students attracted to computer science courses still lack skills in this area. For this reason SCIS now provides students with a compulsory subject called “Communicating in an IT Environment” to address these deficiencies, as well as embedding the development of these skills further throughout its courses.

Addressing the Information Literacy Needs

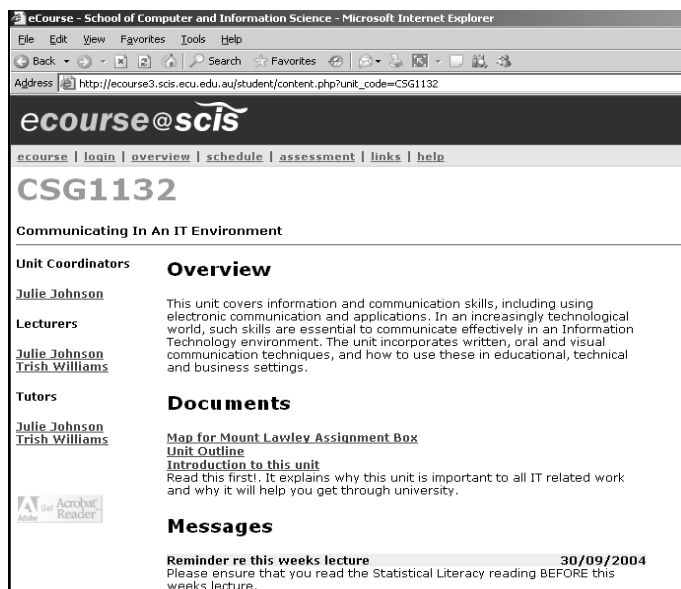
Communicating in an IT Environment (CSG1132) is teaching generic skills within the information technology and computer science context (see Figure 1). As Lupton (2004) points out, such a unit promotes consistency in the development of skills within the specific discipline area and ensures that “information literacy is experienced in formal education through engaging with disciplinary content” (p.26). The assessment of these skills has been designed to be context specific, structured and formative. Whilst educators may disagree that structuring is a skill that you expect the student to display, the cohort for this unit are first year undergraduates, and we see that providing the structure for them leads by example in teaching the skills they need to develop.

A range of assessment types are used in CSG1132 to support student learning. As the assessments in this unit form a major part of the student learning process they are structured as follows:

Assessment 1 focuses on the planning and investigation of a computer related topic. It explicitly leads the student through the formal stages of development of ideas using concept mapping, hypothesis formation, focus question development and research strategies. The next step is for students to undertake the research from a range of sources (books, academic journals and electronic materials), and academically assess each relevant item found. Finally, the refinement of a thesis statement is undertaken and a plan devised for the discussion of the thesis statement. This is a formative assessment and therefore each stage of the process described gives the student the opportunity for feedback on their progress.

Assessment 2 is a more formal summative assessment where the student is required to write an industry styled report essay following the plan from assessment 1. The format for the assessment is consistent with the guidelines for best practice assessment listed in the *16 indicators of effective assessment in higher education* (CSHE, 2002).

Figure 1. CSG1132 Unit Overview



SUPPORTING GLOBAL INFORMATION LITERACY

The Technology - eCourse

In order to support students in the shifting environment of education, where the demands for more independence of time and location for learning are evident (Christopher, Thomas, & Tallent-Runnels, 2004), and utilising the advances in technology, the eCourse learning environment was created. This environment is more than a simple content management system, it promotes independent student-centred learning, facilitates engagement and promotes communication. eCourse is available to students 24 hours a day, 7 days a week. It enables quick and easy access to a large range of learning materials, including lecture notes and assignments, links to external references and unit related discussion forums. Students are able to receive feedback for electronically submitted assignments, contact staff or other students via forums and personal messages, and are encouraged to participate in online group consultation which allows for reflective discussion by all students. The eCourse learning environment allows on-campus and online students to work together in a single learning environment, providing a medium by which students can build online communities. This assists in building a sense of collegiality and identity whereby students can develop solutions to problems as a team.

Catering for Multinational Delivery of Information Literacy Skills

CSG1132 must cater for students with widely differing educational experiences and expectations in a range of cultural settings and in locations which provide varying access to information and communications infrastructure. Materials provided for each module of study via the eCourse server attempt to accommodate for this diversity of experience and environment by catering for differing learning styles and by giving access to a number of resources to support each topic (see Figure 2). Typical resources for a single module of study would include lecture slides, additional readings, set readings from the text, quizzes, workshop activities and/or interactive learning resources and links to relevant online sources or tools.

The issue of varying quality of access and infrastructure available to students depends on whether they are located onshore or overseas, whether they are city or country students or studying on-campus or via distance education. It is an issue that has had to be addressed both in terms of the standard and quality of the teaching and learning and also in terms of equity for the various students. The eCourse materials provide all students with access to a standard set of resources. What is more difficult to deal with are varying quality and availability of research resources in the local environment. Some students are studying in Australian capital cities with access to large academic and research libraries and high speed Internet connections. Others are located in small country towns or on rural properties in Australia where access to libraries of any significant size is often several hours travel away. Students at overseas campuses often are without ready access to academic libraries or research collections. Internet access can, in some locations, be disrupted by unreliable telecommunications and/or power supplies.

Two major strategies are used to deal with the issue of access to research resources. Licensing requirements preclude access to some resources by remote students and students enrolled at partner institutions. To overcome this, the ECU Library provides a special subset of its online resources which can be accessed by remote and offshore students (see Figure 3). The Library also provides an online reference service which allows students to submit reference requests directly to Faculty librarians. ECU library staff maintain relationships and reciprocal borrowing agreements with Australian educational and public libraries nationwide. In the case of SCIS this relationship is further strengthened by placement of Library Technology students in libraries for practical experience.

Further, SCIS academic staff make regular visits to all offshore partners and work with local teaching staff to identify and make use of local research and library facilities, together with demonstrating techniques for optimum use of these resources in the teaching context. Coupled with

Figure 2. Example of CSG1132 Resources

The screenshot shows a web browser window with the address bar displaying 'http://ecourse3.scis.edu.au/student/schedule.php?unit_code=CSG1132'. The page content includes:

- Section 4: Using the library for research**
 - Characteristics of library resources; using the library catalogue; and classification schemes
 - Lecture:** Using the library for research [download_opt 2618 Kb.]
 - Textbook Reading:** Read: Lane Chapter 15 Using Library Catalogues Chapter 16 Retrieving information sources
 - Workshop Activities:** Steps to effective research [download_pdf 112 Kb.]
 - Reading 1:** Research, using the library [download_pdf 249 Kb.]
 - Quiz:** Library Crossword [download_htm 29 Kb.]
 - Extra Quiz** [download_pdf 7 Kb.]
 - Textbook Readings:** Read: Lane Chapter 10 Search strategy for research queries Chapter 17 Using indexing and abstracting journals
 - Read:** Spense
- Section 5: Using the Internet and other online sources; evaluating information**
- Assessment 1: Task 4 - Conducting your investigation: Journals and Magazines**

Figure 3. Open Access Library Resources

The screenshot shows the 'inDOOR' website interface. It features a navigation menu with 'inDOOR Home', 'Titles Menu', 'Subject Menu', and 'Library Home'. Below the menu, there is a section titled 'Online Databases For Open Access (non-modem)'. A table lists various databases with checkboxes for 'Fulltext', 'Index', 'Abstracts', and 'Web-based'.

Database	Fulltext	Index	Abstracts	Web-based
AARP AgeLine	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ADSearch	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AskERIC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AustArt Index	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AustLII: Australasian Legal Information Institute	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Australian Institute of Criminology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Cancer.gov	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Caredata Web	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Child Abuse, Child Welfare & Adoption	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
DOE Information Bridge	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
ECU Library Catalogue	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
EdRESEARCH ONLINE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

this is a programme of academic staff development for offshore teaching staff. These professional development opportunities cover use of the research resources available, as well as more general discussion of pedagogical issues and ECU teaching and assessment standards (ECU, 2004). The visits are intended to establish and support open communication between the Perth based unit coordinator and all offshore teaching staff. This is further supported by the provision of teaching notes, making guides and exemplars via an area of eCourse accessible to teaching staff only.

CONCLUSION

In response to the increasing demand for information literacy skills globally, SCIS is delivering an integrated information literacy skills programme, in a multinational context. This is achieved using a sophisticated online learning environment which supports students with different backgrounds and learning styles. In addition, it promotes and

facilitates student-to-student and student-to-staff communication. This is supplemented by strategic use of ECU library resources and targeted staff development, especially for offshore teaching colleagues. It is also important to ensure that remote and offshore students make the best use of all the resources available to them. Students require good information literacy skills to minimize the problems of limited resources and limitation in local infrastructure.

The Communicating in an IT Environment unit of study specifically teaches students lifelong learning skills in information literacy. It also ensures that all SCIS undergraduate students possess the necessary skills to successfully complete an undergraduate program which emphasizes self-directed, independent learning, regardless of their physical location or mode of study. The promotion of lifelong learning skills in information literacy are important attributes expected of our university graduates. For the School of Computer and Information Science with a diverse cohort of national and international, and on and off-campus students, we have found that this issue is most effectively addressed at the first year undergraduate level, using technology and the web to support this learning.

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