Re-casting the net

A new lead role for the web in learner-centred information literacy education

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Abstract: Recent reforms in higher education, and the current focus on information technology offer librarians new opportunities to raise the profile of information literacy as a critical skill for life long learning. University libraries are responding by investing significant energy in information literacy education. However, there is considerable debate about the effectiveness of these efforts. This paper will discuss a range of web-based and other strategies that are designed to improve information literacy outcomes by fostering a learner-centred approach. A case study of web-based initiatives that have been implemented at Griffith University will be described to illustrate progress towards building flexible, student-centred learning environments for information literacy education. These initiatives include examples of programs for both undergraduates and research students. Implications for the broader context are drawn from the Griffith University experience.

Introduction

The rise of the Information Age has delivered many technological advances in all spheres of modern life and libraries have been in the vanguard of these changes. The World Wide Web is an example of a new technology that has dramatically shaken conventional representations of knowledge – from closely controlled 'authoritative' sources to more open 'democratic' and contentious forms. The web has transformed the traditional library role as 'repository of knowledge' and librarians have enthusiastically rushed to exploit its new capabilities as an instructional medium. However, like many new technologies that were predicted to revolutionalise learning, the web is only the latest in a long line of computer based instructional mediums that has yet to justify the unqualified claims for its success. As suggested by Alexander[i]

> The greatest potential of the web … lies in the fact that we have a chance to learn from the lessons of the previous faded technologies and an opportunity to

develop new learning experiences for students which have not been possible before.

This paper argues that in 're-casting the net' as a technological tool for information literacy education, librarians must be mindful of the learning context and how media such as the World Wide Web can be used to respond appropriately to student learning needs. The paper begins with an overview of the powerful forces that are driving changes in the higher education learning environment. This is followed by a discussion of what student-centred learning means and how this applies to information literacy education. A case study of web-based initiatives at Griffith University will be described to illustrate progress towards building flexible, student-centred learning environments for information literacy education. Implications for the broader context are drawn from the Griffith University experience.

Changing Educational Paradigms

Universities worldwide are in the midst of a period of unprecedented change. Powerful forces of globalisation, rapid economic change and the information explosion, are just some of the trends driving a paradigm shift in higher education.

Dramatic changes in *who* is learning as well as fundamental shifts in *what*, *when* and *how* they learn are challenging the current system of teaching and learning in higher education[ii]. In particular, there is an increased demand for higher education in most developed countries. Not only are far greater numbers of students participating, there is also increased diversity as more adult learners return to study while international students add cultural variety to student populations.

Driven by the information explosion and the need to keep abreast of change, expectations about what students should learn are shifting. Rather than mastering a body of knowledge that forms the basis for a lifetime career, students now need to prepare for a life long process of change and renewal as old jobs disappear and new ones emerge. Graduates need life long learning skills such as critical thinking, effective communication and information literacy to meet the needs of a transforming knowledge-based economy.

This necessity for continuous learning has placed pressure on institutions to improve flexibility and convenience in attendance, time and place of study. Facilitated by newer information technologies, students increasingly are undertaking their university study at home or in the workplace, often in locations at a great distance from the home institution. No longer is higher education confined to the classroom in full-time study mode. Without the need to attend lectures and other campus-based activities, the concept of 'university as place' is under challenge. To further sharpen the scenario, dwindling resources combined with greater demands for accountability has created a highly competitive market place for higher education.[iii]

These forces are having a profound effect not only on the way universities are managed but also on the way the learning environment is constructed. In response to these changes, university libraries are being prompted to re-examine their role and many are adopting an educational vision to complement their traditional role of managing and delivering information. New understandings about how students learn and how libraries might contribute to quality learning outcomes are the focus of this paper. In particular, the potential of the World Wide Web to create student-centred learning environments for information literacy education will be explored.

Student-Centred Learning and Information Literacy

The traditional higher education learning environment is based on old assumptions about teaching and learning which are "cracking under the strain of meeting new learning demands"[iv]. In the past decade the teaching-learning process has been vigorously examined and more sophisticated conceptions of learning outcomes are emerging. For example, Biggs [v] describes a complex of teacher-related and student-related factors interacting to form a 'system' that determines learning outcomes. In a holistic way, learning is conceived as a process in which "knowledge is constructed by the learner on the foundations of existing knowledge". From an understanding of students' existing conceptions, teachers create 'bridges' that will help learners to make connections with new knowledge in a variety of ways and to "anchor [that] new knowledge in a meaningful framework"[vi]. In designing learning strategies teachers must now recognize that students will use multiple intelligences[vii] and this is reflected in their diverse learning styles. These conceptions of the teaching-learning process highlight the individualized nature of learning and underpin the move to

student-centred learning environments in higher education. In a learner-centred approach, students are encouraged to develop higher order skills such as analysis, synthesis and critical thinking through deep quality learning experiences. According to Bonk and Cummings[viii] student-centred learning is based on principles which:

> highlight the importance of helping learners meaningfully construct and represent their knowledge, link new information to old, achieve complex learning goals, build thinking and reasoning strategies, and monitor their own critical and creative thoughts.

For student-centred learning to succeed, a number of general assumptions and issues regarding the teacher, the learner and the environment must be addressed. The learning goals, skills and resources required for student-centred environments are very different from those required in the traditional teacher-centred classroom[ix]. Teachers need to adopt different roles, design different learning activities and create relevant accountability measures. The classroom environment must be enhanced to assist both the teacher and the learner. In this framework, the interactive and distributive characteristics of the Internet and telecommunication technologies have the potential to facilitate learning experiences that promote deep learning. Perhaps most significantly, student skills and responsibilities are different. Students must be supported and empowered to develop the skills and metacognitive abilities to participate in this new learning environment; that is, learning how to learn and use these skills and abilities for independent life long learning.

Information literacy has been identified as a core skill for student-centred learning and recognized as a key skill for life long learning. Contemporary approaches to information literacy have evolved from precursors such as library instruction, bibliographic instruction and reader education. These earlier approaches were focused on engendering an appreciation of the 'bibliographic apparatus' used by libraries to organize information. In the changing educational paradigm it has become increasingly apparent that students do not want to 'learn the library'. As Kieft[x] contends:

> Librarians are not in the business of teaching students how to use the library. Rather, they are in the business of teaching students how to think through their research problems and papers, how to perform a variety of intellectual tasks.

In learner-centred environments, information becomes a resource that students interact with and use in solving problems and creating new understandings. In this context, information literacy is woven into the content, structure and sequence of the educational program and becomes "both the object and the medium through which learning takes place"[xi]. While it is important to appreciate the skills and knowledge students need to acquire to be information literate, information literacy is essentially about understanding the "conceptions or experiences that students have of learning through engaging with and using information"[xii]. Bruce[xiii] has described this 'way of learning' as the relational model of information literacy.

Web-based Information Literacy at Griffith University

Like many universities worldwide, Griffith University is responding to the changing higher education paradigm by looking for ways to improve students' learning experiences. In an ambitious venture, Griffith has embarked on an innovative program of online educational course development with a far-reaching aim of achieving excellence in student-centred learning. Another response has been to focus on the qualities graduates should possess. Griffith graduates are expected to develop not only expertise in a multi-disciplinary field of study but also skills in oral and written communication; problem solving; analysis and critical evaluation; and information literacy. Emphasis is also placed on the ability to work effectively as a member of a team, undertake employment or further study nationally and internationally; to develop the capacity for independent life long learning; leadership and decision making; willingness to assume responsibility and demonstrated high ethical standards[xiv]. These shifts towards online course delivery and a growing recognition amongst academic staff of the importance of life long learning, have sharpened the focus on information literacy.

Information literacy education has long been a priority at Griffith University. Through a series of initiatives including the development of a theoretical framework for information literacy education [xv], library staff have achieved some success in

integrating information literacy in the core curriculum. An intensive extra-curricular program of voluntary workshops, tutorials and demonstrations has complemented these curriculum-based initiatives. However, despite the concentrated information literacy effort, library staff were aware that a lot of students failed to make the connections from what they had learned in workshops to other contexts. Many students continued to struggle with their information problems even after attending workshops. To address these concerns, and respond to the changing learning environment, new strategies and a fresh approach were needed. What follows is a comparison of two new approaches to information literacy education that have been developed at Griffith University.

The Library Research Tutorial

The *Library Research Tutorial* is a generic web-based information literacy program for undergraduate students. It was developed collaboratively by library staff, academic staff, and educational designers and was conceived as a flexible student-centred learning experience that would take advantage of the new instructional capabilities of the World Wide Web. For example, while the underlying structure of the program represents a logical progression through the library research process, hyper-linking is strategically integrated to allow students choices in the path they follow through the material. Simulations, quizzes and interactive practice sessions are incorporated to engage the student in active learning. Assessment activities include a variety of multiple-choice and drag-and-drop questions and pre-formulated feedback is provided immediately. The *Library Research Tutorial* is integrated into first year undergraduate programs and currently reaches between 60% and 70% of the first year undergraduate population. It is compulsory in many courses and usually counts towards assessment.

The Project on Information Skills Strategies for Research Higher Degree Students

Information Skills Strategies for Research Higher Degree Students is another example of how the Library is attempting to exploit the instructional capabilities of the World Wide Web. Prompted by Government concerns over the research training experience of research higher degree students[xvi] Library staff at Griffith University set out to design a series of student-centred strategies to foster information literacy education. Funded by the University's Quality Enhancement Scheme, the project involves collaboration between librarians, academics, learning advisers, and postgraduate students in the development of a suite of web delivered learning tools. The tools are

designed to facilitate a flexible and responsive environment in which postgraduate students are encouraged to develop their information skills. The tools include a self-assessment questionnaire (derived from the CAUL Information Literacy Standards[xvii]), an information activity log and a learning plan. In consultation with research program supervisors, librarians are working with students to self-assess their levels of information literacy and devise individual learning plans. Librarians periodically consult with students and their supervisors to monitor progress and provide feedback.

In the next phase of the project, the web-based learning tools will be interactively linked to one another and to the available learning opportunities. It is envisaged that the learning tools will be located within a virtual learning environment for information literacy. Using electronic communication channels and online forums postgraduate students will be encouraged to participate in a networked learning community. A tangible outcome of their online interactions will be the creation of a shared information literacy knowledge base.

Promise and Pitfalls

The web-based initiatives at Griffith University illustrate the potential and the challenge of the medium for creating student-centred environments for information literacy education. The *Library Research Tutorial* uses a variety of web elements to give students more choice and control over how and when they use the program. The interface is attractive and presents an engaging, self-paced learning experience that appeals to undergraduate students. However the *Tutorial's* pre-designed instructional activities by themselves, do not ensure deep student engagement in the learning experience. As a program designed to be integrated in first year undergraduate courses, it was envisaged that the *Tutorial* would be linked into the fabric and content of the subjects in which it was embedded. While the *Tutorial* essentially 'takes care of the basics', lecturers, in partnership with librarians, still need to focus on creating a learning environment that will facilitate students to transfer what they have learned through the *Tutorial* to other contexts. However, in many cases the program remains isolated from the core activities of the courses in which it is embedded. In this event, the *Tutorial* becomes a surface learning experience that is grounded in the technology and focused on the mechanics of information retrieval systems. There are not enough

conceptual links to enable students to develop their personal understandings of information literacy or connect with a wider range of information environments.

In contrast, the tools developed for the *Information Skills Strategies for Research Higher Degree Students* attempt to start from the perspective of the individual. Students first assess their personal levels of information literacy and are then encouraged to construct individual learning plans, and to reflect on their skills and learning goals. Research supervisors and librarians then work in partnership with students to create 'bridges' between students' personal understandings of information literacy and the broader context.

The virtual learning environment that is envisaged in the next phase of the project will take advantage of the asynchronous nature of the web to foster collaborative learning and a peer mentoring instructional format. According to Bonk and Cummings[xviii] the asynchronous character of communication on the web creates a form of interaction between students and their teachers that is qualitatively different from the traditional classroom discourse. As a result of the asynchronous time delay, students have more time to reflect on their communications, and discussion is likely to be better thought out and argued. Through a variety of forms of 'electronic writing' including online debates, shared reflections, and discussion lists, students' thinking and learning can be enhanced. Furthermore, by monitoring reflection activities, teachers and librarians are in a better position to understand students' prior knowledge and are more able to respond appropriately to their learning needs.

While the case study examples illustrate how web-based information literacy education is qualitatively different from traditional models, the question of how best to assess the achievement of information literacy in this environment arises. When conceived as a way of learning content, it may be difficult to untangle the benefits of information literacy from subject learning in order for it to be assessed. In response to this dilemma Bruce and Candy[xix] have drawn on the work of Biggs and his concept of 'constructive alignment'. Biggs argues that by embedding learning objectives in assessment tasks, students can be encouraged to learn in new and different ways. A challenge for librarians is to collaborate more closely with academic staff to define information

literacy objectives and to design learning and assessment activities that embed those objectives.

Conclusion

The World Wide Web characteristics of connectedness and accessibility to information have transformed the way libraries perform their traditional role as information providers. However, when re-casting the net in an educational role, librarians must be clear about the difference between accessing information and having a learning experience. Librarians need to develop and articulate a vision for information literacy education that will inform and guide their practice. Questions about what students should be learning, and how best they learn, must be settled before too much attention is paid to the features of educational technologies such as the World Wide Web. Multimedia, the web and other educational technologies should only be used when they can provide opportunities for students to learn in deep and meaningful ways that are otherwise not possible[xx]. As the case study examples demonstrate, the World Wide Web can undoubtedly enrich information literacy education. Nevertheless, information literacy is essentially about the enhancement of human capacities – "to focus on the technology is to value means over ends, information over knowledge, tools over product"[xxi].

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