
Charles Darwin University

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Using an interdisciplinary partnership to develop nursing students' information literacy skills: an evaluation

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Introduction and Background

An increasing challenge for universities with distance education programs is how to provide effective student support, as teaching and learning approaches utilise technology at an increasingly sophisticated level (Andrews & Klease 1998). Changing student demographics in Australia include growing numbers of students who choose to enrol in external mode. As the learning paradigm shifts to a more student-centred, active learning model (Fink 2003) with greater use of technology, students need to manage the technical demands of course delivery through use of information literacy (IL) skills. As the use of online or online reliant content increases in nursing programs, providing extra student support is vital. Learning may be delayed while students gain competence and confidence in using information technology (Creedy et al. 2007; Wallace et al. 1999).

Developing effective skills in locating and retrieving information using electronic sources is integral to cultivating the skills of lifelong learning (Shorten, Wallace & Crookes 2001). Barnard et al. (2005) assert that information literacy is a necessity for university graduates, and that while such literacy has been considered part of information technology skills, it now has a broader context. Effective information literacy skills enable students to access, retrieve and evaluate reliable, reputable information that can then be applied to practice (Schulte 2008). Saranto and Hovenga (2004) identify that innovations in hospital

information systems and increasing use of electronic records and patient data collection have made information literacy skills highly relevant for health care professionals.

Recency of information that is evidence-based is also an essential factor in a dynamic field such as health. The ability to access information assists graduates to progress readily in their career as health professionals (Dorner, Taylor & Hodson-Carlton 2001). The Australian Nursing & Midwifery Council [ANMC] (2006) competencies refer to the need for registered nurses to be able to incorporate research findings into their practice. This presupposes nurses will have the appropriate information literacy skills that enable them to do this, that is, that such skills will be developed during their undergraduate education.

The literature suggests, however, that undergraduate nursing students are not confident in accessing and utilising electronic databases, and are more likely to utilise the Internet rather than specific health or health-related databases to locate information (Kirkwood 2007). In an Australian survey Creedy et al. (2007) noted the reluctance among female nursing students to use information technology. Earlier studies by Verhey (1999) found low confidence levels among nursing students in relation to seeking information for assignments, with the most common barrier a lack of knowledge about using available resources. In a study of British nurses' use of computers, Russell and Alpay (2000) found that less than 5% had received any formal training in use of the Internet, with maintenance of medical records the primary use. Dee and Stanley's (2005) UK study surveyed registered nurses and nursing students. While overall use of databases was higher among students than registered staff, the majority used the Internet, with Google and Yahoo as their primary sources. Pravikoff, Tanner and Pierce (2005) found that American nurses lacked an appreciation of research and the skills needed to locate quality evidence. These studies suggest that difficulties with information literacy are not confined to Australia, and that a need exists to help nursing students develop their skills beyond naive searches that do little to facilitate extension of their search and retrieval skills.

A number of such difficulties were evident among first year Bachelor of Nursing students enrolled at Charles Darwin University (CDU). The nurse academic responsible for the core unit that introduced health and health behaviours to first year nursing students noted an increasing reliance on non-academic sources in their written work. Similar to national trends, student demographics in the Bachelor of Nursing program at the University show the majority to be mature-age rather than school leavers (Charles Darwin University 2010). Mature age nursing students may lack the exposure to computers now commonplace for students during their primary and secondary education years (Morgan et al. 2007). Pravikoff,

Pierce and Tanner (2005) consider that particularly for nursing students, the focus should lie in providing time and training in the use of electronic resources, including their evaluation.

Academic literacy workshops had been part of an initial strategy to provide support for internal students. To complement this, an information searching and retrieval workshop was provided in the second semester week by the health liaison librarian. Similar to findings by Cook et al. (2009) students experienced difficulty retaining and applying the skills addressed in this session. Practical 'hands on' activities were limited by time and class size. Although follow up instruction on a one to one basis was offered to students, few accessed this option. Moreover, similar to the academic literacy workshops, such strategies did not address the needs of external students who comprised the group majority.

Ninety percent of students in the CDU Bachelor of Nursing are enrolled in either external or mixed mode, with 80% located outside the Northern Territory (NT). Of those residing in the NT, 39% are external students (Charles Darwin University 2010). Learning by distance requires commitment and self discipline (Hendry & Farley 2006). However, this does not negate the need to find ways of providing external students with support strategies that build confidence and competence in information literacy (IL). Where large external student enrolment numbers exist, an increasing trend is to offer programs that are online assisted or reliant (Charles Darwin University 2011). Familiarity and comfort with information technology becomes an essential skill for learning. For those students with very basic computer and IL skills, this may seem quite overwhelming, particularly in the first semester of study.

Within the CDU Bachelor of Nursing program, supporting the large numbers of first year external students proved challenging. Although one-on-one library skills tuition via telephone was available to these students, this proved a time-consuming process with considerable limitations. Despite the availability of extensive online library resources, many students lacked the skills to access and utilise such resources effectively. In addition to difficulties in search and retrieval skills and regardless of mode of enrolment, a number of students were unable to differentiate between refereed and non-refereed sources. An over-reliance on non-academic sources from the Internet and use of outdated texts was evident.

Barnard et al. (2005) consider that the development of information literacy skills is the key to critical thinking in nursing, but state that few innovative strategies to assist the process have been published. Schulte and Shervill-Navarro (2009) identify that information literacy is essential if future nurses are to ground their practice in evidence. To achieve this, the role of the librarian may be pivotal in providing support. Students need to develop and

sustain the essential IL skills that will assist them to complete their undergraduate programs, while instilling the skills for lifelong learning (Barnard, Nash & O'Brien 2005; Craig & Corral 2007). Librarians are uniquely equipped to assist students and academic staff to develop or build on their information searching and retrieval skills (Dee & Stanley 2005; Morgan et al 2007). The opportunity exists to develop collaborative partnerships of benefit to all parties. Barnard et al. (2005) consider the development of partnerships between faculty and library staff is more likely to result in improvements in information literacy skills among students. The following teaching and learning evaluation explores this process.

Implementing a collaborative embedding process

If not addressed early, initial problems with information and academic literacies carry over into future units of study. Both are required to provide essential learning scaffolding. An evaluation focusing on embedding both aspects was developed. In the first five weeks of the semester a series of academic literacy tutorials were provided face to face to internal classes, and to external students via Wimba classes. This Wimba virtual classroom environment provided classroom contact for external students as if face to face. Classes were facilitated by the university's academic learning support facilitator, in conjunction with the nurse academic responsible for co-ordinating the unit.

The unit coordinator identified that a different strategy was needed to encourage students to overcome their reluctance to use online library facilities. She approached the Library Liaison Team Coordinator to discuss the feasibility of developing an online library database tutorial (Health Online Tutorial) that could provide structured guidance for students in information searching and retrieval. The broad aim was to produce a discipline specific online tool that replicated what had been taught in class in previous years, but allowed students to work at their own learning pace, and to refer to the learning tool throughout the semester. It would also provide the same level of assistance and guidance for external students, an aspect which had been difficult to address previously.

The Health Online Tutorial was developed subsequently by a team of three Liaison Librarians, with multimedia support from the university Teaching and Learning Quality Group, and in consultation with the Unit Coordinator. The partnership to create the Tutorial was built up over time by working together and sharing responsibility to enhance student learning by using the team's collective expertise (Bruce 2001; Doskatsch 2003). A variety of communication modes were utilised including face to face meetings initially to brainstorm

the project, and maintained by email and phone discussions. From these discussions, a concept map was developed and discussed face to face. The concept map meeting was a defining one because it set in place clearly the shape and future direction of the Tutorial.

Following a search for and review of what was available in other universities, the aims of the project were further refined, as the librarians recognised the need to adjust the way in which they could support the information literacy needs of internal and external students at unit level. The level of interactivity was considered to be a key aspect of the online tutorial, and one that made it distinctive from that offered at other universities. It was designed to engage and thus encourage students to develop the skills of location and retrieval of quality information for assignments, and to guide them in critiquing and evaluating the information located. The final concept was a tutorial designed for students studying health-related courses that assisted them to develop good searching strategies to locate information for assignments. Six modules were developed that addressed the following (1) locating relevant resources; (2) search strategies; (3) evaluation; (4) referencing conventions and avoiding plagiarism; (6) best practice examples, and finally, (6) a “test your own skills” module to promote revision and practice.

Module one provides guidance on the different types of resources that are useful at tertiary level, and how to locate them, for example, books, dictionaries, journals, databases and the Internet. Topics include finding articles that reflect scholarship; evidence based professional practices, online dictionaries and Google Scholar. Each resource type is identified and practice activities based on these are provided.

Module two explains search strategies and includes a concept map illustrating this. It focuses on brainstorming keywords and the use of Boolean terms to connect concepts together. It seeks to imbue students with the confidence to determine the key aspects of an essay topic and to develop the skills needed to access the university library electronic databases. Such skills assist students to find relevant, scholarly information.

Module three assists students to evaluate material they have located, using criteria such as level of authority, validity, currency, purpose and bias. The fourth module focuses on the importance of acknowledgement of sources and referencing. It is structured to provide examples of in-text citation and full (end-text) referencing details. It provides strategies to avoid plagiarism, along with planning an essay, keeping detailed notes and differences that occur in referencing styles.

Module five uses scenario examples of how other students have approached their research, and provides specific research questions using CINAHL, PubMed and Google

Scholar. Module 6 provides a 'test your skills' quiz and ties the different modules together in a logical conclusion. Students are encouraged, however, to address the modules in the sequence that best suits their individual learning needs.

From the development process, it had been identified that a key difficulty for students lay in utilising library online resources effectively. To address this, an essential feature of the Tutorial was the use of a split screen in the Databases section. This enabled students to read instructions and undertake example searches at the same time. The databases considered to have most relevance for the discipline were demonstrated. These included CINAHL, PubMed, Wiley Interscience and searching across more than one database simultaneously through EBSCOhost.

Brendle–Moczuk (2006) asserts that without specific application, learning fails to be meaningful. A key aim of the project was for students to develop confidence in foundation information literacy skills. It was considered essential to provide assessments that encouraged students to practise and consolidate these skills. As part of the ongoing collaborative discussion process, an initial assessment item was developed that focused on application. Using the Health Online Tutorial as their starting point, students were asked to locate and reference five sources obtained through their literature searching that related to their second assessment, a short essay. The references were to consist of two books, two refereed journals and a reputable website. Electronic links were provided to the university referencing guidelines within the Library website.

Support mechanisms

Technological support for the Health Online Tutorial was provided by two of the project team Liaison Librarians who assisted with any navigation problems and general enquiries. Their contact details were listed on the unit Learnline site, since Learnline is the major communication point for students, especially external students. Students on campus were able to access support through scheduled 'drop in' library sessions with the health librarian, while external students could access generic library skills tutorials through Wimba. Librarians are particularly qualified to assist effectively in this area, since information searching and retrieval is considered core business (Thull & Hansen 2009). The Unit Coordinator addressed enquiries about the written assessment linked to the Health Online Tutorial. Thull and Hansen (2009) assert that engagement between faculty and library staff is a positive arrangement all round; that faculty gain by having more competent researchers;

students acquire lifelong skills in research; and Liaison Librarians achieve increased contact with their student body. This increased contact also enables the Liaison Librarians to gain better insights into the particular IL needs of students. Librarians can contribute significantly to the learning outcomes of students by engaging with academics who are “receptive to engaging with them as partners in learning and information literacy development” (Bundy 2004, p.9).

Evaluating the project

Evaluation is an essential part of a quality improvement framework. A short survey was administered via Learnline that aimed to ascertain students’ views on the ease of use and navigation around the Health Online Tutorial. Other questions included their mode of study, whether the Tutorial increased their knowledge of online resources and the confidence level they now had when using these resources. Students were also asked what they particularly liked or disliked about the Tutorial and whether or not they would recommend its use for other students.

The survey attracted a 19% response rate (n=174). Students had been surveyed previously in relation to the academic literacies embedding project and for Student Evaluation of Learning and Teaching (SELT), and this was a likely contributor to the low return rate. Of those who responded, the majority indicated they had a greater knowledge of the library resources available after completing the tutorial, with 83% either agreeing or agreeing strongly that they felt more confident using the library resources post tutorial. Comments included:

‘It was written in plain English so it was not intimidating for somebody who was already bewildered.’

‘It was really effective to read what to do and then have the chance to practise, it reinforced the skill.’

‘I found it quite long, but necessary.’

Evaluation of the Tutorial based on the survey results identified areas for further development and refinement of the resource, including potential for utilisation more widely across faculties and disciplines. The assistance of a new member of the Liaison Librarian team with web design skills proved invaluable in the refinement process. Improvements were made to the layout to better assist students to navigate the Tutorial. For example, inconsistencies in page layout and colour scheme that distracted were addressed, and the

sidebar was repositioned so that the first webpage viewed showed key orientation material to the Tutorial. The activity links were changed to open in pop-up windows so that students could not click out of the Tutorial inadvertently. Font and image colour changes also improved the overall visual aspect of the Tutorial with a more user friendly feel.

The low return rate limits the degree to which an improvement in perceived student learning improvement can be attributed to the Health Online Tutorial. However, the Unit Coordinator and a co-marker came independently to the conclusion that students had relied noticeably less on inappropriate references such as Wikipedia. Sources from health specific databases were more evident as opposed to broad based searches via Google. Furthermore, in comparison with the previous year, student grades were better overall. It is possible that the combination of targeted support in academic and information literacies using an interdisciplinary approach contributed at least in part to more positive outcomes.

Where to from here?

In 2009 the university developed a vision statement for information literacy based on the definition from the Australia New Zealand Information Literacy (ANZIL) framework (Bundy 2004, p.9) and best practice characteristics for developing information in Australian Universities (Council of Australian University Librarians 2004). A key point reiterated an emphasis on lifelong learning, and on the use of these skills beyond the tertiary environment. This statement provides recognition of the need for such skills but cannot in itself provide them. The exponential growth in information available to students has created challenges for students and faculty alike. Information literacy skills need to be continuously developed and practised, with a foundation beginning at undergraduate level.

The changing student demographic of predominantly external study mode requires innovative, improved ways and means that better support students in their learning (Charles Darwin University 2011). The Health Online Tutorial is designed to achieve this, and it is anticipated that the refined Tutorial will assist first year nursing students to develop increased confidence and competence in information searching and retrieval. A key aim of the project was to assist students to become independent information searchers. While this requires reinforcement in subsequent units of study, it is imperative to provide the necessary scaffolding for students early in their study programs.

Creedy et al. (2007) note that online learning approaches provide high levels of flexibility for students, however, online learners should be prepared to be active and self

directed. In the CDU Bachelor of Nursing program, students' level of preparedness for online based or online reliant learning approaches varied widely. Additional support is needed for students as technology becomes an integral part of the teaching and learning process. The ANMC (2006) competencies make it clear that nursing practice should be based in research that is evidence based, and in an increasingly technological era, new graduates need to be able to use current and relevant research to support best practice (Australian Nursing & Midwifery Council 2006). Schulte and Navarro (2009) assert that there is a need for nursing faculty to reconsider the structure of curricula and the ways in which IL skills could permeate the program. For example, nursing informatics could include general computer skills such as database creation, information searching and retrieval skills, and practical application such as charting vital signs, updating patient records, and use of computerised medication administration (McCannon & O'Neal 2003).

Collaboration calls for a shared, creative process with a coming together of complementary skills, mutual goals and vision for what can be. In this project, the Liaison Librarians possessed the appropriate skills needed by faculty and students alike, and took responsibility for designing and developing the Health Online Tutorial. The Unit Coordinator identified the need for the project, and contributed her knowledge, understanding and insights of curriculum content, and of students' entry behaviours and learning needs. These professional and complementary skills illustrate the potential of interdisciplinary partnerships.

This collaborative partnership between the faculty and library staff has produced benefits beyond the original concept. Projects such as this represent a particularly important change in the relationship between faculty members and the librarians at CDU. The librarian is no longer seen in a supporting role, but becomes a core member of the academic team. This example of a close working relationship illustrates the potential for interdisciplinary partnerships, and the benefits of expanding the information literacy training possibilities for all students (Kutner & Danks 2007).

This teaching and learning initiative has resulted in an enhanced positive relationship between the faculty and library staff, with increased mutual respect. The outcome for students has been the development of a learning tool providing them with structured support that builds skills and confidence.

Conclusion

The authors recognise that it is not possible within this particular teaching evaluation framework to substantiate the degree of improvement in IL, and that the project would benefit from the rigour of a research project to determine the true effectiveness. An evaluative survey of the 'new look' Tutorial that combines questions related to academic and information literacies is planned in the hope that the response rate will be higher. It is intended to evaluate each module since such data will assist in designing future support for students. The revised Health Online Tutorial has now been launched for 2010. It has been made available to all health and health related disciplines across the university, with a Law Online Information Literacy Tutorial under development. On the basis of the positive outcomes from this interdisciplinary partnership, future collaborative initiatives are planned.

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Dear Editor, The following table of corrections is provided in response to reviewer feedback.

Page 1 Paragraph 1 line 2 Evidence required	Reference added Andrews & Klease 1998, Morgan et al., 2007
Page 1 Paragraph 1 end of paragraph Evidence required	Reference added Creedy 2007

Page 2 Paragraph 3 Clarification sought	Clarification added with ' At CDU'
Page 2 Paragraph 4 Beginning of sentence	90% replaced with Ninety percent (beginning of sentence)
Page 3 Paragraph 1 Evidence required	Reference added Creedy 2007
Page 3 Paragraph 2	The information in this paragraph is provided by the academic who taught the unit and who is first author. We believe that the point will be sufficiently clear once the de-identifiers regarding the university are removed from the text.
Page 4 Explanation of Wimba	We have extended the explanation to say: Wimba is an online virtual classroom environment where lecturer and student can engage <i>as if face to face</i>
Page 4 Clarification re online database tutorial and the Health Online tutorial	These are one and the same and this point has now been clarified
Page 7 Paragraph 3	Typo corrected (additional 'improvement' removed)
Page 7 Comment re 'weak evidence' bottom of page	The authors recognise that no strong claim can be made. For this reason we have very purposefully made the comment regarding the limited degree to which improvement can be definitively attributed to the Health Online tutorial. We claim only that "it is possible that ----" . "at least in part.....". The paper is an evaluation and not a research paper where one would anticipate an examination of dependant and independent variables. Therefore we consider it reasonable to retain this comment.
Page 8 para 2	Statistics obtained from CDUTeaching and Learning Quality Group 2010 and 2011