Information literacy skill development and life long learning: exploring nursing students' and academics' understandings

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KEY WORDS

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ABSTRACT

Objectives
The aim of this study was to map information literacy (IL) skill development in the Bachelor of Nursing (BN) content; identify educational practices in courses to asses students' information literacy (IL) skills; explore BN students' understandings of their IL skill development; and explore students' and academics' understandings of the link between IL skills and life long learning.

Design
The study used a qualitative exploratory triangulated design using document analysis, questionnaire and focus groups to evaluate BN students' and academics' understandings of IL; IL links to life long learning; and subsequent implications for high quality evidence based practice. Thematic analysis was used to review the individual and combined sources of data.

Setting
The setting for the study was one School of Nursing and Midwifery in a South Australian University.

Subjects
Participants included 394 Bachelor of Nursing students who responded to an anonymous questionnaire and 7 academics who participated in a focus group.

Main outcomes
Changes are required to increase BN students' and academics' understandings of IL and its links to life long learning, including staff development and collaboration between academics, librarians and study advisors on the design and implementation of a consistent and progressive curriculum approach to teaching IL skills.

Results
The themes resulting from the data were: students' and academics' understanding of the term information literacy and the links to lifelong learning; the role of the library; the role of the curriculum; and the roles of lecturers and student peers.

Conclusions
Study outcomes indicated there is a need for staff development and a progressive curriculum approach to ensure students understand IL and its links to life long learning. Such approaches require collaboration between librarians, study skills advisors and academics.

INTRODUCTION

Information literacy (IL) is a central component of professional nursing practice. Nurses must know how to access information and apply knowledge to ensure best practice and life long learning. Central to initiating and sustaining this achievement is IL (Bundy 2004). Such skills are best gained in undergraduate nursing programs and continually refined by the registered nurse. Wallace et al (2000) confirm that ongoing safe, effective and flexible nursing care relies on undergraduate nursing programs including opportunities to develop and use these skills.

A key initiative of universities is to produce professionals who reflect, among other qualities, life long learning skills. Nursing academics at the study university have a long history of working closely with student services and library staff on the integration of IL principles and practices into the curriculum (Nayda et al 2007). These efforts aim to meet the IL skill development needs of all nursing students including external students and those marginalised from the mainstream, such as students who have English as another language. However neither the Bachelor of Nursing (BN) students' nor academics' understandings of IL and its links to life long learning have been explored in order to ensure the success of such initiatives. Nor has the content or consistency of the teaching and assessing of these skills been fully identified. This study sought a group of nursing students' and academics' understandings of IL and how IL related to life long learning and therefore to student success. To achieve this, the study included: mapping IL skill development content and consistency in the BN; identifying educational practices in courses to assess students' IL skill development; exploring academics' understandings of the links between IL and life long learning; exploring students' understandings of their IL skill development and skill level; and exploring students' understandings of the links between IL and life long learning.

LITERATURE REVIEW

Life long learning and IL skill development are linked and while a clear definition of life long learning is somewhat elusive it remains a key quality for health professionals as it promotes evidence based practice. Various definitions of IL have developed over time and are based on the premise of the ability to allocate, evaluate and use information effectively (Fox et al 1996). The continuity of this action is life long learning and the ongoing pursuit of personal development and excellence in professional practice. Such skills are essential for competent evidence based nursing practice and underpin the BN curriculum used in this project.

The focus of the available literature on IL includes: the impact of increasing and rapid changing technologies (McNeil et al 2002), nurses' skills and attitudes toward IL, how nurses cultivate and attain IL skills (Cheek and Doskatsch 1998), the relationship between self directed learning and IL skills (Lunyk-Child et al 2001), the implementation and evaluation of strategies and curricula content to assist with the development of IL skills (Wallace et al 2000), the impact of IL skills on life long learning and professional practice (McNeil et al 2000), students' perceptions of their own and their lecturers' IL skills (Payton 2003), the application of IL skills in graduate practice (Powell and Case-Smith 2003), the development of online supplements to support students' IL skills, and the link between IL skills and evidence based practice (Shorten et al 2001).

The literature also identifies a number of factors influencing students' IL skill development including: a lack of access to computers; inadequate knowledge of computer literacy (Jacobs et al 2002); an inaccurate assumption that all students have computer equipment and internet access; absence of coordinated approaches to teaching these skills resulting from the assumption students already have them (Wallace et al 1999); the absence of collaboration between educators, librarians and administrators (Barnard et al 2005; Whitmire 2001); increased class sizes resulting in content specific focus at the cost of 'general' knowledge; students' attitudes and backgrounds (O'Shea 2003); and lack of time to gain and maintain IL skills (Gopee 2002).

McNeill et al (2003) state that effective decision making in health care delivery relies on timely and accurate information. Nurses specifically deal with an increasing complexity of information and decision making (Barnard et al 2005). Therefore a major goal of nursing programs must include competencies for students to understand the need for increasing nursing knowledge and the role of the life long learner (Patterson et al 2002). Assisting nursing students to achieve the associated IL skills requires an understanding that such development is not extraneous to the curriculum but is woven into its specific content, structure and sequence (George et al 2001). IL cannot be the outcome of any one course but is the cumulative experience of a range of courses, activities and assessments (Bundy 2004). Barnard et al (2005) consider that an integrated curriculum approach results in advanced IL skills, increased access to and use of evidence to support decision making and a foundation for lifelong learning.

The literature asserts the importance of IL skills for nurses and raises a number of issues related to the actual development and use of these skills. Knowing how nursing students understand IL and rate their skills is essential to their development and addressing the factors influencing this development underpins their success. The BN curriculum in this project was based on the knowledge that nursing students must learn and effectively use IL skills and understand the links with life long learning and competent professional practice (Nayda et al 2007). However how well these BN students and academics actually understood these skills and their purpose and what impacts on this knowledge has not been investigated. This is the purpose of this project.

METHODOLOGY AND DESIGN

Ethics approval was received from the university's Human Research Ethics Committee. The research took the form of an exploratory mixed method approach, using both qualitative and quantitative data. Such combinations are growing in popularity and allow for comprehensive inquiry through various perspectives (Hansen 2006). A combination of document analysis, questionnaire and focus groups comprised the data collection. This paper reports on the qualitative aspects of the findings. A total of 394 internal and external BN students who responded to an anonymous questionnaire participated. In addition, seven nursing academics teaching in the BN program participated in a focus group.

Firstly, an analysis of the content and assessment strategies in selected course information books from the BN was completed. The links between the information and the concept of life long learning was also sought in this process. Then, first, second and third year internal and external BN students were informed of the project by email. One week later the internal students were provided with a hard copy of the information sheet and the anonymous questionnaire in a common lecture session. They were requested to put all questionnaires (completed and blank) in a box as they exited the lecture theatre. External students received their information sheet and questionnaire by post at the same time, including a prepaid return envelope.

Academics with various roles and experience of teaching in the BN program were then invited by email to participate in a focus group. The seven academics who responded were given a project information sheet and consent form. The audio taped focus group discussion was guided by a semi-structured interview protocol, informed by the data from the document analysis and the questionnaire. The tape content was then transcribed for analysis.

Data were recorded and analysed by: entering the findings from the analysis of the course documents onto spreadsheets and comparing content across the courses; entering responses to questionnaires onto a computerised table and identifying common themes from across this data; transcribing audio taped interviews with academics into password protected computer files; and using a thematic approach to categorize responses (Hansen 2006). Data from each stage were examined thematically and cross referenced with the other forms of data and findings. No computerised research analysis program was employed as the team aimed to fully engage with the data through manual analysis (Hansen 2006).

FINDINGS

The themes identified from the data were: students' and academics' understandings of the term IL and the links to lifelong learning; the role of the library; the role of the curriculum; and the roles of lecturers and student peers.

Table 1: Example of data contribution to theme identification

Theme: Understandings of IL and links to life long learning	'… concerned about students' assignment writing" (academic)
	"reading and comprehension and also includes writing" (student)
Theme: Role of the library, curriculum, lecturers and peers (students only)	"Library staff are too busy … I found library access difficult". "Library staff try to assist"
	"Discussions with lecturers". "Discussion with my peers".

The findings indicated that the students did not have a sound understanding of the meaning of IL. The academics who participated in the focus group also displayed a lesser level of understanding of this concept than might be expected from those teaching in a tertiary setting. Similarly the links between IL, lifelong learning and student success were not well recognised. The students related developing IL skills to gaining information from librarians, academics and their peers, rather than using online and other search strategies. In the early stages of the BN, the students were more likely to rely on their peers for assistance and in later stages of the program, on academics and library staff. The students reported that the IL curriculum in the BN, particularly in the form of assessment items, was useful in developing their skills in accessing and using literature. Although the analysis of the course information content showed that individual courses have addressed the concept and development of IL literacy, particularly within the first year of the program, the students were not provided with opportunities within later curriculum stages to validate this knowledge. Overall the data shows that a well articulated, consistent and progressive process to ensuring students developed and used IL skills effectively did not exist with the BN curriculum.

DISCUSSION

Understanding the term IL and links to life long learning

The literature strongly advocates the link between IL, life long learning and best standards of practice (Payton 2003; Powell and Case-Smith 2003; McNeil et al 2002; Shorten et al 2001; Lunyk-Child et al 2001; Wallace et al 2000). However the responses from the students in this study show they did not have a comprehensive understanding of the term information literacy or of the associated skills. This was despite the fact they had completed a course with a significant focus on the development and application of IL skills (using this terminology) and the demonstration of these skills as an assessment item at the beginning of the BN. Given this assumed knowledge the project team did not clarify the meaning of the term with the students prior to the data collection and the students' inadequate understanding was an unexpected finding. One student's comment provides insight into other students' understanding of IL as: *"… reading and comprehension… it also includes writing"*. Information can be mistaken for other meanings such as literacy itself and this misconception may extend beyond the students (Nayda et al 2007).

The participating academics also described various understandings of the term information literacy. They related the term to general literacy and therefore to skills associated with writing good quality assignments (Nayda et al 2007). Hence the academics' rating of students' skills focussed on the general written quality of assignments rather than their access to and use of information. The meaning of 'information literacy' was not clarified with the academic participants prior to the focus group commencing as again it was expected they would be familiar with the term. The researcher consistently redirected the focus group talk to 'information literacy', however, the academics' responses to questions continued to relate to general literacy.

This highlights the probability that while the action of finding and using online information is used at various levels this is not necessarily known as 'information literacy'. Misunderstandings of the term may be more widespread than expected and 'literacy' may be the focus and the practices described and assessed (Nayda et al 2007). Such actions are likely to increase confusion for students and negatively impact on the development of IL skills and subsequently the quality of practice.

Role of the library

The successful development of students' IL skills lies is in recognising that not all students enter tertiary studies with knowledge of computers and how they assist in searching for information. An assumption that students already have these skills is likely to result in an uncoordinated and reactionary approach which can significantly disadvantage students (Wallace et al 1999). Students' IL success depends on collaboration between relevant university staff such as academics, library staff and student services, and the provision of and access to adequate facilities (Barnard et al 2005; Whitmire 2001). While all students may experience difficulties, in this study the concerns about accessing the library or library staff came largely from external and first year students. External students can register with the Flexible Information Service of the Library but may still experience barriers to their IL development due to their physical distance from the university and their student peers. This is consistent with other findings in the study where external students reported feeling isolated from each other and the university. One student described the impact of isolation from the university:

I have a two year old, a nine month old, a husband that works full time, no access to a computer and a public library that varies from day to day. The only time I can access a computer and the internet is when I travel to my mums, two hours away.

Student participants in this study had access to group and one to one sessions in the library to assist them to develop and use information searching skills,

however these did not appear to meet their needs. The students were more likely to arrive at the library at another time and expect librarians to be available. Alternatively they used information from journal articles supplied by other students. The perceived effectiveness of strategies such as group and one to one sessions is dependent on the students' understanding of the importance of information but as a graduate working in a professional context. For example, the student participants knew of the need to access and use journal articles to complete and pass assignments, but did not necessarily link this skill to their ongoing development as professionals, or to the quality and legal boundaries of their practice. Students also knew of 'Infogate' (the online information literacy tutorial) and saw this as useful, however surprisingly did not necessarily access the resource. Some students preferred to rely on direct assistance from librarians, but also commented that library staff were often too busy at the time they wanted assistance. Where first year students seemed more reluctant to seek assistance from academics and library staff and would rely on peers and other means of finding data, more senior students were likely to communicate with these staff to gain some type of assistance. Whitmire (2001) found that engagement with librarians and lecturers resulted in students having greater satisfaction with their IL skills.

A number of student participants displayed a limited understanding of the role of the library in IL skill development. For example, in some cases there is an expectation that library staff will assist them to find relevant articles to complete a current assignment rather than the student learning long term skills to complete all assignments and ultimately practice safely. One student's comment of *"…I figured it for myself…"* echoed the statement of others. The focus was on solving the current assignment problem and hence the situation re-emerged at the writing of the next assignment. Subsequently there is a need to broaden students' knowledge of the value of IL as a life long learning skill and as part of professional expectations.

Role of the curriculum

Students identified a number of factors as best assisting them with their information searching skill development. They considered a significant percentage of their success was attributed to the IL content and assessment in course materials. Indeed, the data from stage 1 of the project shows that students are involved in a range of information literacy tasks across the BN program. However it is evident from this data that a progressive and orchestrated process that ensures students develop IL skills does not exist. Further, strategies tend to be reactive rather than proactive when students' IL skills do not reach expectations. This is likely to be in part due to the increasing complexities of the academic environment and the widening scope of curricula which must increasingly contain educational as well as professional content. In addition, curricula must meet the needs of students from diverse cultural backgrounds as well as increasing internationalism (Meldrum and Tootle 2004). Teaching IL requires an understanding that such development is not extraneous to the curriculum but is planned and woven into its content, structure and sequence. It may be discipline specific (George et al 2001) but it requires an accumulative experience through a range of courses (Bundy 2004). Shorten et al (2001) confirm that such integrated approaches result in students having a positive outlook on their achievements.

Role of lecturers and peers

Students identified that a large contribution to their IL skill development came from the university lecturers and also their student peers. This supports that students preferred episodic assistance from more easily accessible sources to finish the assignment at hand, rather than through more formal information seeking strategies that will contribute to life long learning skills and best practice. The influence of peers in assisting students to develop and maintain IL skills cannot be ignored and supports the concept that all students must be well educated about IL so appropriate information is shared. Similarly, a consistent understanding of the term 'information literacy' and a consistent effective approach to

teaching and learning these skills is essential. The literature reports little about the impact of peer learning on IL skill development but the value of lecturer involvement is clearly positive and essential (O'Shea 2003).

IMPLICATIONS FOR PRACTICE

In the health professions, in this case nursing, information literacy skills are the foundation for students' success and an essential component of successful and safe evidence based practice. However misunderstanding of the term 'information literacy' and neglecting to link IL skills with life long learning can have a significant impact on the perceived value of these for the profession, the quality of its professionals, and their ongoing practice.

Program content

IL skill development is a constituent of any level of study, not only at undergraduate level. Nursing is just one of the professional groups which should ensure their workforce is well equipped to access, decipher and use the latest available information. Understandably, undergraduate study is best placed to commence teaching an understanding of the concepts, values and the skills involved in IL. Taking the specific need of all students into account, one strategy could be to develop and apply a transparent and staged model of IL skill development across undergraduate programs. Such a model should begin from an understanding of the link between IL and life long learning and include a sequential building of skills that ensures a graduate whose practice is continually evidence based. That is, the model must be transparent and include increasing complexity of layers across the program resulting in a high level of IL skill at graduation.

Collaborative strategies

Strategies that build students' IL skills must include collaboration between librarians, study advisors and academic staff (Nayda et al 2007; Whitmire 2001). The results from this study have been shared with library staff with a view to developing more successful models to assist students to grasp the importance of a long term understanding and use of

IL. Successful strategies will consider: the best use of resources; the availability of staff and computers; the difficulty in accessing and understanding online environments; employing strategies that increase students' independence and self directed learning; and meeting the needs of various student backgrounds including mature age students, school leavers, on shore international students and distance education students.

Preparation for clinical practice

While universities can address shortfalls in preparing nursing students with a high level understanding of IL skills, health organisations also have a responsibility in further facilitating these skills throughout the graduate year and beyond. Liaison between university teachers and graduate nurse program facilitators can result in strategies aimed at continuity and consolidation of IL skill development and implementation for the beginning practitioner. The outcome of such initiatives will include a highly informed workforce, well prepared clinical preceptors for future students and professional advancement.

CONCLUSION

It is a significant concern when student nurses have not grasped the value of IL, its links with education success, and its role in maintaining professional knowledge. In addition these skills assist compliance with legal requirements in nursing practice. While a number of factors influence the development of these skills the impact of curriculum philosophy and design cannot be underestimated in motivating and guiding students' thinking. Similarly educators' knowledge and teaching processes play an important role in assisting nurses to develop these responsibilities and skills. Changes are essential to improve the IL skills and understanding of these students and academics through: staff development; collaboration between academics, librarians and study advisors; and the design and implementation of a consistent and progressive curriculum approach to teaching and assessing these skills. Such activities need to be cognisant of increasing demands on academics' time and other resources.

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