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Carol L. Watwood

Western Kentucky University, carol.watwood@wku.edu

Bryan Carson

Western Kentucky University, bryan.carson@wku.edu

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**Library Research Skills and the Nursing Curriculum: Engaging Students
in the Post-Brandon-Hill Era**

Carol L. Watwood
Bryan Carson

ABSTRACT. Health science librarians experience challenges when partnering with people from other professional backgrounds such as nursing and with people of different ages. In partnering with people of other backgrounds, it is helpful to recognize the changing nature of research skills and the fact that many 21st century college students lack a print-based concept of research. Helping students to succeed in understanding and participating in the research process is more important than ever due to changes in the nursing profession, the sheer mass of scholarly information, and the challenges of searching for information on the world wide web.

KEYWORDS. Nursing students, library skills, student engagement, research

Carol L. Watwood is Health Sciences Librarian at Western Kentucky University Libraries, Bowling Green, KY (E-mail: carol.watwood@wku.edu).

Bryan Carson is Coordinator of Reference & Instructional Services, Department of Library Public Services, at Western Kentucky University Libraries, Bowling Green, KY (E-mail: bryan.carson@wku.edu).

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INTRODUCTION

Change in the nursing profession, in nursing education, and in health science libraries, is occurring at many levels. In this context, there are many opportunities to partner with others to identify these changes and associated needs. Twenty-first century research, we are told, is multicultural, multi-format (print, online, DVD, and other media), and multidisciplinary. When partnering with people from diverse professional backgrounds, many challenges to effective communication may arise. For example, people in particular disciplines may have different definitions for terms such as "research." The dictionary, for example, provides several definitions: (1) careful or diligent search; (2) studious inquiry or examination (implying original and critical thinking); and (3) the collecting of information about a particular subject [1]. Research means different things to different people; it may or may not involve the physical library, the virtual library, the world wide web, or other resources in the increasingly blurred boundary between library and not-library. In the health-related professions, such as medicine and nursing, research suggests "scientific study, investigation, or experimentation to establish facts and analyze their significance" (2).

CHANGING FORMAT

Print-Based Research Skills

The Brandon-Hill list, which is no longer updated, but which is still available on the world wide web at <http://www.mssm.edu/library/brandon-hill/>, was a library collection development tool for print-based materials in the fields of medicine, nursing, and allied health. Both book and journal titles from this list were considered to be the "gold standard" for several decades; this list was print-based and did not include online, audiovisual, or other formats. Many medical librarians, practicing RN's, and nursing faculty members began their careers in the 1970's and 1980's, and their concept of "library research skills" was formed in the heyday of the Brandon-Hill list. To this generation, the term "library research skills," like the Brandon-Hill list, was print-based; it suggested that a student knew how to use the card catalog, the Index Medicus, and the print CINAHL to locate print books and journals which the library had selected with the help of the Brandon-Hill list. The migration of MEDLINE from the dial-up ELHILL system to the world wide web in the late 1990's made this database much more accessible to students and it has almost completely supplanted the print Index Medicus; many libraries have even removed the print Index Medicus from their reference rooms.

World Wide Web

A student born in 1988 was about 5 years old when the world wide web came into widespread use (which was around 1993). In relation to the

concept of "research sources," he or she may not be as familiar with various types of "research sources," which to a health professional or librarian educated in the Brandon-Hill era might include peer-reviewed journals, PubMed, CINAHL, and informational websites such as MEDLINEplus. The perceived authority and completeness of these resources is part of their appeal to many people, but another marked characteristic of these resources is their similarity to print indices, journals, and reference books that students in the Brandon-Hill era were taught to use in their research.

A 2006 Pew/Internet survey found that 10 million American adults research health information topics on the world wide web per day, of which most searches began with a search engine such as Google or Yahoo. When looking at those in the age ranges of 18-29, 74% of people began their search using the aforementioned search engines, which means that they were less likely to commence their search using an authoritative health information website such as MedlinePlus.gov. Three-quarters of people searching for health information online say that they "do not consistently check the source and date" of the information obtained (3). Due to the widespread use of Google (as a research tool), it is therefore of utmost importance to instruct students to critically evaluate these materials.

NURSING: 21ST CENTURY TRENDS

Nursing Shortage

The nursing profession has undergone rapid change, and research skills are crucial for nurses in the 21st century. Nationwide, there is a critical shortage for both nurses and nurse faculty which has led to an urgent need to train more nurses, who will then teach the next generation of nurses. According to the American Association of Colleges of Nursing, more than 32,000 qualified applicants were turned away from U.S. nursing programs in 2006 due to a shortage of nurse educators (4). The majority of advertised nurse faculty positions require a PhD, which is held by only a small percentage of U.S. nurses, many of whom are nearing retirement. With this in mind, we must empower and encourage more nurses to pursue graduate studies in order to increase the nursing faculty population.

Nursing Education

Another trend driving the increased emphasis on nursing research is the lengthier educational preparation expected of new graduates; also, nursing education is increasingly integrated with other higher educational programs. Previously, most nurses were trained in hospital-based diploma programs; as recently as 1980, 55% of employed RN's had a hospital diploma as their highest educational credential. By 2004, 34.2% (the largest group) had earned a Bachelor's of Science in Nursing (BSN), and 13% held a Master's of Science in Nursing (MSN) or doctorate (5).

Emphasis on Research Skills

At the institutional level, research has also taken on a renewed importance. In 2004, Western Kentucky University (WKU) announced its new Quality Enhancement Plan, entitled "Engaging Students for Success in a Global Society." As part of this plan, faculty members are asked to provide "academic challenges that stimulate critical thinking, analysis and application of concepts, and communication skills, to assign papers or projects that integrate ideas or information from multiple sources or disciplines," and to ask students to work on "independent research or creative projects under the direction of a faculty member" (6). This institution-wide initiative, although intended as a much broader vision, appears to have increased student and faculty members' interest and participation in research. A general increase in usage of the library's online resources and requests for library research instruction suggests that students and faculty view the library as an important part of the research process.

Members of the nursing faculty at our institution have strongly supported the teaching of research skills and the use of the peer-reviewed journals and other professional literature. Within the larger nursing community, new professional standards also emphasize the value of research. The latest edition of the American Nurses Association's Scope and Standards of Practice (2004) stresses the importance of research skills for all RN's. According to these updated standards, an RN "uses the best available evidence, including research findings, to guide practice decisions" and "actively participates in research activities at various levels" (7).

Evidence-Based Practice

The concept of "evidence-based practice," defined as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" has led to an increased interest in teaching research skills (8). This way of thinking about health care, which originated at McMaster University in Hamilton, Ontario, Canada in the 1980's and 1990's, has been adapted to encompass nursing practice. A hallmark of evidence-based practice is thorough, thoughtfully constructed literature searches, including resources such as CINAHL and MEDLINE that are traditionally associated with medical libraries. Since the advent of evidence-based practice, one notices in the nursing (and medical) literature an increased attention to sound research methodology, well-constructed abstracts, keywords to aid in online searching, and detailed explanation of research methods. However, a survey published by Pravikoff, Tanner, and Pierce in 2005 found that: ". . . most RN's believe that they're not adequately prepared to appraise research and interpret its usefulness for clinical decision-making. This, coupled with how little value the nurses said was placed on research in practice, reveals serious limitations to implementing evidence-based practice." Most "rarely or never sought a librarian's assistance (83%), didn't use the hospital library (if one existed) (82%), and had never received instruction in the use of electronic resources (77%)." Seventy-six percent never searched CINAHL and 58% never searched MEDLINE (9).

The demands of academic practice, the increasingly complex nature of

clinical practice, the updating of educational and professional requirements, and the concept of evidence-based nursing are all good reasons why a nursing student might do a "studious inquiry or examination" of a nursing-related issue. Nursing organizations, our university administration, the nursing faculty, and the librarians all believe that teaching students to conduct research and use library resources, is a good idea. Why then, does it seem so difficult?

INFORMATION EXPLOSION

The largest problem, often called the "information explosion," is the enormous increase in the sheer volume (and diversity) of information. CINAHL has expanded from 270 journals indexed in 1979 to 1700 in 2005. In 1979, WKU subscribed to 23 print nursing journals; CINAHL was the finding tool used to access these publications using author's names or CINAHL subject headings. In 2006, WKU had access to approximately four times this number of nursing journals. However, the hapless nursing student encounters these journals in a baffling array of formats: print, microfiche, titles obtained through aggregators (EBSCOhost, ProQuest, some with embargo periods of varying lengths), several with passwords, some from publishers' websites, some open access on the world wide web, and using a mind-numbing hodgepodge of online retrieval methods, all of which are apt to confuse the student more than turning the pages of the print CINAHL.

MULTIDISCIPLINARY RESEARCH TOOLS

In addition to the huge volume of new information, another challenge is the increasingly multidisciplinary nature of materials used and cited in nursing research, which requires that a larger number of finding tools be taught, especially at the graduate level. Many of the top journals used by nurses are now the same as those traditionally read by physicians; nursing students now use materials from the disciplines of public health, psychology, education, and other fields more often than they did, say, 30 years ago. This cross-fertilization among disciplines has flourished with the world wide web; a student might feel more reluctant to use a print-based collection from another discipline, which might be housed in another building where social norms, location, or library policy might discourage use by students in other disciplines.

21ST CENTURY NURSING STUDENTS

Nursing students coming to us in the 21st century are more likely to be "non-traditional" than past nursing students. Non-traditional in this context means that as a group, they are older; their average age at graduation rose from 23.9 in 1985 to 30.9 between 1995 and 2000 (10). Some hold full-time or part-time jobs; in the rural area served by WKU, many commute to classes on WKU's Bowling Green, Glasgow, Elizabethtown, or Owensboro campuses or attend class via the world wide web or satellite TV. Past students more often lived at or near the hospital or campus where classes were held, and read and studied in the campus library, where librarians were more readily available to help; many students today seldom frequent the physical library. Post-RN students today may have completed their earlier studies at institutions other than WKU, and may

not understand how to use the online public access catalog (OPAC), check out a book, or connect to our library resources through a remote connection.

MAKING CONNECTIONS

If nursing practice, research materials, and students are changing so greatly, what are the best mechanisms for librarians to utilize in order to communicate to students in an effective manner? Several comprehensive guidelines have been prepared; one such guideline (created by the Association for College and Research Libraries) entitled Information Literacy Competency Standards for Higher Education, suggests that students learn to:

- recognize and define an information need
- find, select, and use library resources to meet that need
- evaluate what is found
- incorporate their findings into practice and research as lifelong learners
- share to improve care and advance their field (11).

Current thinking also suggests a "curriculum-integrated" approach, rather than the one-shot library tour that is often used (although the latter is better than nothing; students at least learn to locate the library and the librarian!). The following characteristics are found in this approach:

- Skills are taught in incremental components, building students' confidence. This incremental approach also supports the two-tiered nature of the BSN at WKU; the first 2 years are "preclinical," when students need to learn general library skills; the third and fourth years are when the clinical courses are taken, and are appropriate times to teach CINAHL, MEDLINE, and other discipline-specific research tools.
- Skills are transferable to other parts of students' academic and professional lives.
- Assignments are structured so that students experience success.
- Rewards are given directly and linked to success in assessment tasks.
- The information presented is relevant to requisite knowledge and skills (12). "Keys to success" in library instruction have also been identified. They include:

- careful planning
- adequate teaching staff support during sessions
- library resources (e.g., databases, journal holdings) complement class assignments (13). Role modeling of the desired behavior by teaching faculty and respected fellow students also contributes greatly to the success of research instruction. A popular and effective nursing faculty member who comes to the library with his or her class, participates actively, and expresses enthusiasm for research adds greatly to the effectiveness of a library presentation.

CONCLUSION

At WKU, we experimented for several semesters with a clinical rotation

in which students came to the library as part of a required third-year course. For several hours, students would use the library to locate peer-reviewed journals to research a health promotion topic. Several skills were emphasized:

1. steps in the research process
2. the identification of peer-reviewed vs. scholarly vs. popular materials
3. using the library website—the OPAC, A-Z journal finder, databases, subject research guide
4. choosing search terms and constructing a search strategy
5. searching by keyword vs. thesaurus terms and the pluses/minuses of each method
6. retrieving print and online full text.

The sessions were evaluated by observing students, by soliciting comments from the instructor, and by 1-minute writings after the session.

The students were generally positive about the experience, but several problem areas were identified:

1. The 3 hour sessions were felt to be too long, which resulted in many students leaving early during the practice segment at the end of the session.
 2. Students came with varying levels of experience. Some were bored by too much repetition; others were overwhelmed.
 3. Various problems were experienced with scheduling, malfunctioning equipment, and heating/air conditioning. The physical layout of the classroom was not ideal where some students were unable to see the computer screen.
 4. Inadequate staffing during some sessions left students frustrated.
- Based on these findings, the following ideas for improvement were developed:

1. The librarian, who had little classroom teaching experience, enrolled in workshops to improve presentation skills.
2. "Need to know" was separated from "nice to know" and only the first category was included in later sessions.
3. Several tasks were identified that seemed particularly troublesome to students: constructing search strategies, linking to full text, and identifying popular vs. scholarly materials. A particular problem was the use of search strategies that work in Google but not CINAHL.
4. Sessions were timed more carefully so that students had time to practice. Working out the right combination of lecture and practice is tricky!
5. Web-based resources might be used to supplement library research instruction sessions. For example, the WKU Libraries Nursing Research Guide linked to the library website can be expanded. Interactive online tutorials, or online tutorials targeted to specific information needs or resource types, can be developed.
6. No assumptions should be made about what students do or do not know; we must ask them!

In summary, when we as librarians work with nursing students and faculty, we must realize that nursing, librarianship, and health sciences research are all changing rapidly. It is therefore essential to develop our

communication skills in order to collaborate with nursing faculty and students, and to realize that there are different perspectives on what constitutes research, the research process, and research materials. We can be far more effective if we have the support of our teaching faculty, our institutional administrations, and professional associations in the disciplines we serve. The more we learn from others and continually re-evaluate our work according to their differing perspectives, and about the nursing curriculum, the more effective we can be in serving 21st century health professionals.

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