Multilevel library instruction for emerging nursing roles*

By Barbara W. Francis, M.S.L.S., AHIP
Educational Services Librarian

Clarissa C. Fisher, M.S.L.S., AHIP
Head of Access Services

Health Science Center Library
University of Florida
Gainesville, Florida 32610-0206

As new nursing roles emerge that involve greater decision making than in the past, added responsibility for outcomes and cost control, and increased emphasis on primary care, the information-seeking skills needed by nurses change. A search of library and nursing literature indicates that there is little comprehensive library instruction covering all levels of nursing programs: undergraduate, returning registered nurses, and graduate students. The University of Florida is one of the few places that has such a multilevel, course-integrated curriculum in place for all entrants into the nursing program. Objectives have been developed for each stage of learning. The courses include instruction in the use of the online public access catalog, printed resources, and electronic databases. A library classroom equipped with the latest technology enables student interaction with electronic databases. This paper discusses the program and several methods used to evaluate it.

INTRODUCTION

Most library instruction programs for nursing students are geared toward only one level of the education spectrum—either undergraduates or graduates. This article describes an unusual, multilevel University of Florida (UF) program for incoming undergraduate nursing students, registered nurses (RNs) returning for a baccalaureate degree, and graduate students working on a master's or doctoral degree. The program also is designed to foster some of the new skills nurses at all levels need in the age of health care reform.

EMERGING NURSING ROLES AND INFORMATION LITERACY

The National League for Nursing, the American Nurses Association, and other nursing organizations recently developed Nursing's Agenda for Health Care Reform. That agenda emphasizes primary, preventive, and community care; quality care; and cost control. In the agenda, nursing is depicted as a true beneficiary of the changes in health care [1].

In the reform scenario as described in the nursing agenda, De Tornay predicts that "the health care system will be more driven by information, using electronic synthesis of complete patient histories and the relevant literature to support providers' diagnostic decisions, prognostic estimates, and treatment recommendations... Most decisions will be based on outcome and a thorough knowledge of treatment effectiveness in similar circumstances" [2].

Breivik states that information literacy is "the ability to effectively access and evaluate information for a given need. It includes an integrated set of skills (research strategy and evaluation) and knowledge of tools and resources" [3]. Breivik says information literate people "know how to find, evaluate, and use information effectively to solve a particular problem or make a decision, whether the information they select comes from a computer, a book, a government agency, a film or any of a number of other possible resources... This concept must now be expanded to include the ability to know when and how to use the newer technologies" [4]. At the present time, nurses

are not information literate, according to Blythe. They visit libraries infrequently and rarely subscribe to research journals. Nurses on duty rarely consult printed sources unless they are at their workstation. Blythe concludes that nurses need information literacy skills, but they also need the proper work environment to use these skills [5].

Weaver comments that information “is everywhere and those who know how to obtain, evaluate and apply it will be empowered to be the problem solvers of the future. Never before has it been so important to teach nursing students how to manipulate information to continue to learn throughout their professional careers” [6]. She emphasizes that information literacy has two aspects. “It is not only the ability to gather information, it is also the ability to evaluate this information and apply it to problem solving” [7].

These information literacy skills and the environment to use them are needed on every level of nursing, whether the individual is a licensed practical nurse (LPN), an RN, a clinical nurse specialist (CNS), or an advanced practice nurse (APN). Every nursing professional will move toward increased decision making and responsibility for outcome as he or she becomes a member of the total health care team. Long-term care nurses will need to know how and where to obtain information on the care of subacute patients. Nurse specialists will need decision-making skills, management skills, problem-solving skills, research skills, and teaching skills so they can care for patients autonomously [8–10].

In an attempt to help nursing students acquire the information skills needed to be problem solvers, the librarian’s role has changed from one of teaching students how to retrieve information solely via print indexes to teaching them skills in database searching and evaluation of search results, providing exposure to additional information resources, and explaining how to obtain material from diverse locations. New teaching methods are being incorporated into curricula to provide an active learning environment with classroom interaction between students and between students and instructors. Course-integrated instruction, with collaboration among nursing faculty and librarians, is providing information at the “teachable moment” when the student has an assignment and needs the information-seeking skills that librarians can provide.

LITERATURE REVIEW

Several library instruction programs for nursing students have been discussed in the literature. Classes for undergraduates are described by Fick, Tyler, and Fox [11–13]. Others such as Travis, Bryson, Romano, and Heller, describe or make recommendations for informatics courses that have a bibliographic data-base-searching component as part of the nursing or informatics curriculum [14–18]. Grobe outlines the informatics competencies that nursing students should have at both the undergraduate and graduate levels [19]. Stephens discusses a library instruction program aimed at practicing nurses in a hospital setting [20]. None of these articles describes a comprehensive library instruction program, covering all relevant topics including computer skills, for students at every level of entry into a nursing program.

THE UF PROGRAM

The UF Health Science Center Library’s instructional program for nursing students is multilevel in the sense that it reaches students at each entry point into the nursing program: traditional incoming students (juniors), RNs returning for a baccalaureate degree, and graduate nursing students. The program is offered at the main campus in Gainesville and at the affiliated program 120 miles away in Orlando. In the 1992/93 school year, UF had a total of 37,527 students, while the College of Nursing had 386 undergraduate and 413 graduate students. In that year, twenty-three class sessions representing 30.5 contact hours were offered to 287 nursing students. These classes, which constituted 18.5% of the overall teaching program of the Health Science Center Library, were designed by the authors and taught by them. Other reference librarians assisted in teaching the sessions for the incoming regular students.

The instruction program for nursing students is course-integrated in that it meets the first three of the following four criteria set forth by Allegri [21]:

- faculty outside the library are involved in the design, execution, and evaluation of the program;
- the instruction is directly related to the students’ course work or assignments;
- students are required to participate; and
- the students’ work is graded or credit is received for participation.

PHYSICAL SETTING

Classroom

The Health Science Center Library classroom is twenty-five by thirty-five feet, with three rows of computer stations for accessing databases through a local area network. Twenty students can be accommodated at the ten workstations for “hands on” exercises. Each computer is capable of accessing CD-ROMs, the UF Online Public Access Catalog (OPAC), other libraries’ resources, and the Internet. A liquid crystal display (LCD) color projection panel, IBM computer, high-powered overhead projector, and projection screen are used for teaching. An additional overhead projector is used for regular transparencies, and a com-
combination chalkboard/whiteboard is available for drawing diagrams or planning search strategies.

Remote sites

For classes conducted at a remote site, a laptop computer, a color LCD panel, and a high-powered overhead projector are used. Before traveling, the equipment is set up as it will be configured at the remote location. When packing, the plugs and sockets are marked with colored tape to provide guidance for reassembling the equipment. An extra projector bulb, a long telephone cord, and a three-pronged, heavy-duty extension cord are brought along as well and may save the presentation from disaster. Upon arrival at the site, the presenters check the telephone system to see which lines may be used for long distance, and how outside lines are accessed. These precautions help assure a smooth flow of instruction.

UNDERGRADUATE STUDENTS

Program objectives for library and index usage reflect the information-seeking skills needed by undergraduate nursing students in a clinical program. By the end of the program, undergraduate nursing students are expected to be able to

- search the OPAC by author, title, and subject, noting the book’s call number and location;
- search the OPAC to determine the volume holdings of a specific journal;
- use the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Medical Subject Headings (MeSH) controlled vocabularies to identify the most specific subject; and
- locate an article on a specific subject in CINAHL and Index Medicus.

Incoming nursing students

Two classes were developed to help incoming undergraduates acquire basic library skills. Each class was integrated with a nursing class assignment.

The origin of these classes can be traced back to 1990, when all 150 incoming nursing students were given a two-hour lecture in a large auditorium. There was little interaction between the students and the librarian during the class. There was also little communication between the nursing faculty and the librarian, as the class was arranged by a secretary in the College of Nursing. After talking to the coordinator of the undergraduate nursing program, the librarians decided to divide the class into smaller groups of sixteen students while retaining two to three hours of continuous class time. The result was information overload for the students, as evidenced by their many questions at the reference desk regarding material covered in the class. Further consultation led to development of two separate courses to be taught at different times in the semester.

The first session consists of a twenty-minute active learning experience using CINAHL descriptors, hands-on experiences using the OPAC, and a library tour. The use of subject headings is introduced with a lecture and demonstration followed by a discussion of MeSH terms and how they can be enhanced with CINAHL headings. Single issues of the CINAHL white bibliographic pages and the yellow subject headings pages are handed out to the students.

The class is divided so four students work together in a group to find all the subject headings to use for a specific topic, and then to find a good citation on that topic. These topics then become the subjects of a paper due the third week of class. The students are allowed ten minutes to find the subject headings and a citation; an additional ten minutes are allocated for the four groups to report back to the whole class. Each group reports what subject heading the citation was found under, and which narrower terms, related terms, and previous terms, if any, were available. Then the group provides the title of the article and the journal name and uses the OPAC to determine if the library owns the journal. At this time, they also learn to search the OPAC by author, title, and MeSH term. A library tour concludes the session.

The second session introduces students to the basics of database searching. Seven objectives were established for the computerized database session. By the end of the program, undergraduate nurses will be able to

- state two advantages of database searching over use of print indexes;
- define a keyword search and know when to use it;
- define a controlled vocabulary search and know when to use it;
- conceptualize a search strategy for a subject of interest;
- demonstrate the use of Boolean logic to compose a search strategy;
- state two ways of limiting search results; and
- print the retrieval.

The second session for each group of sixteen consists of hands-on work in the computer classroom searching the CINAHL database. The class stresses the advantages of databases over printed indexes in terms of effectiveness and efficiency. The students are given an assignment to find a research article on a clinical topic. Students observe as the librarian demonstrates an author search, a keyword search, a search combining concepts, and a search using descriptors. As the librarian looks at the resulting citations on the projection screen, she verbally evaluates which ones are relevant; that is, the ones in which at least one of the search terms is in the major descriptor field. The teacher explains several methods of narrowing the
search, such as limiting results to major descriptors, limiting the search to "research" as a document type, or restricting the search to certain years. An example of a relevant citation is provided, with all the search terms highlighted.

Each group then is assigned a search topic. The group must divide the topic into concepts, use the online thesaurus to choose subject headings for each concept, combine headings if necessary, mark one or two records to print, and then print the citation, abstract, descriptors and search strategy. If the controlled vocabulary is not used, then the printout of the search strategy will show this, and the student will be encouraged to try searching again using the thesaurus.

Returning RNs

Many nurses who have received an A.D.N. are returning to college to obtain a B.S.N. to expand their career opportunities. The B.S.N. program for returning nurses helps fill any gaps in a student's nursing education by providing additional experiences. At UF, most B.S.N. students eventually go on to earn an M.S.N. degree. Returning RNs are unique students for the following reasons:

- the average age is thirty-three to thirty-four years;
- most have family obligations;
- most are working full-time and are part-time students;
- most are graduates of associate degree programs, although some are from diploma programs.

The types of learning experiences needed by these students are in some ways more basic and in other ways more complex than those required by entering junior students. Because few returning RNs have been exposed to automated libraries or online bibliographic networks, they need hands-on experience to learn these skills. Their immediate need for and use of clinical information will be greater than that of undergraduates because of their clinical experience, necessitating more complex search strategies. For these older students, adult learning methods, such as active learning and cooperative learning, are used as much as possible.

A two-hour library instruction session is held during the regularly scheduled class period to accommodate the RNs' outside work and family commitments. Upon arrival in the classroom, students are encouraged to feel at ease through the sharing of their past experiences with libraries, indexes, and computers. This discussion helps identify the gaps in their library skills. They then are introduced to the printed version of CINAHL and its controlled vocabulary. The instructor provides an active learning experience using paper editions of CINAHL, similar to the exercise used with the incoming students. The students then receive assistance in interpreting all the information in a citation.

Students also are instructed in the use of additional indexes, including Index Medicus, International Nursing Index, Hospital Literature Index, Psychological Abstracts, and Current Contents. Students gain extensive hands-on experience with the OPAC, which is used not only to determine if the library carries the journals named in the citations located in the previous exercise, but also to locate books by author, title, or subject. Emphasis is placed on the technique of broadening or narrowing subject headings. The instructor demonstrates the use of MeSH to broaden or narrow subjects for the OPAC. National Library of Medicine call numbers are introduced, as most students have had experience with only the Dewey Decimal or Library of Congress classification systems.

To break the two-hour block of classroom time, a tour of the library is provided after forty-five minutes, followed by a one-hour introduction to the CINAHL database. This introduction is the same basic session taught to the incoming students.

GRADUATE STUDENTS

Graduate nursing students need research-oriented library skills. These students need to be able to find, locate, and obtain primary information and research tools.

On campus

Graduate students are taught in two sessions. At the first session, the instructor conducts a quick survey, which usually indicates that students are from diverse backgrounds and are unfamiliar with the online catalog and bibliographic databases available at the library. In addition to meeting the basic objectives for library and index usage for undergraduates, graduate nursing students are expected, by the end of the program, to be able to

- locate primary source material in the OPAC,
- locate a review article in Index Medicus,
- find in Science Citation Index (SCI) any authors who have cited a given article,
- locate an abstract in Dissertation Abstracts International,
- locate instruments to be used in research, and
- explain why Hospital Literature Index (HLI) contains articles not in Index Medicus.

The session includes a review of the printed CINAHL index, MeSH and CINAHL controlled vocabularies, and the online catalog. The OPAC portion covers basic usage as well as techniques for locating primary material, such as congresses, proceedings, sem-
inars, dissertations, and symposia. The CINAHL and OPAC segments are active learning exercises using the printed indexes and the online catalog. The students are introduced to additional printed indexes such as Index Medicus, HLL, Dissertation Abstracts, and SCI. SCI is emphasized as a tool for opening research forward, that is, finding an article and seeing who has cited it in a more recent article. Students also are given a class assignment to locate a review article in the printed Index Medicus and a research article in CINAHL.

To help them locate instruments or tools for research, students are introduced to Mental Measurement Yearbook, Tests in Print, and Test Critiques. The Health and Psychological Instruments database and Sigma Theta Tau International’s electronic library and online journal also are discussed.

Additional objectives concerning computerized access to databases were developed, to assure that students expand their basic search skills, learn to conduct elaborate searches, and know how to locate primary sources, review materials, and instruments to be used in research. By the end of the program, graduate nurses are expected to be able to

- locate a research article in CINAHL online and a review article in MEDLINE,
- list four ways of limiting a search,
- “explode” a subject heading,
- explain two methods of accessing databases, and
- print or download sorted search results.

The second session for graduate students includes an introduction to CINAHL on CD-ROM with special emphasis on the advantages of using the computerized version. All students perform the same search as the commands and features of the system are introduced. Next, search strategy is discussed. Additional fields used for limiting searches, such as document type for research articles and subset for peer-reviewed journals, are introduced. Each student then develops a search strategy for an assigned research topic. Each strategy is discussed in class, beginning with the easiest search. Students then have the opportunity to run their own searches. Questions are encouraged to help resolve any problems in searching.

Off campus

Additional objectives for off-campus graduate students in Orlando were developed to assure that they learn methods for remote access to the Health Science Center Library’s resources. By the end of the program off-campus graduate students are expected to be able to

- interact with the Health Science Center Library’s databases long distance,
- access Health Science Center Library holdings via the local University of Central Florida OPAC, and
- determine if the Health Science Center Library owns the material before ordering the material or driving to the library.

Off-campus graduate students are mainly working nurses taking evening courses. To serve their needs, the library class is taught during their regular evening class time. Due to the large class size and the two-hour time limitation, active learning techniques have not been implemented. The lecture format is used to cover printed sources. Then the class learns to use computer technology.

Use of the OPAC is demonstrated using a local phone number to access it. Long-distance telephone access to the databases then allows a live demonstration of a CINAHL search. Students observe how they can access these systems themselves with a computer and a modem. If the telephone connection cannot be made, a backup demonstration of the OPAC and CINAHL searches is available that is not dependent on telecommunications. This demonstration was developed by logging a search session, then editing it in a word processor so that search terms could be highlighted.

EVALUATION

There are several reasons to evaluate a program. An evaluation may help obtain more resources for an instruction program, keep the program alive, show faculty members that their students are learning, or assist librarians in making an individual class session more meaningful. It is important to know the purpose of an evaluation before setting up an evaluation plan. Librarians long have been criticized for not conducting evaluations, or for adding them at the last minute, rather than building them into a class as it is developed. Perhaps librarians are not sure which type of evaluation to do, or lack the requisite time and resources, or have other, more pressing responsibilities. Barclay has said, “Criticism of instruction librarians for their general failure to conduct meaningful evaluation, while valid, has failed to recognize the limited resources most teaching librarians have for conducting evaluation. In response to such criticism, instruction librarians need to conduct the best, most meaningful evaluations they can with the resources they have” [22].

Over the years, several different evaluation methods have been used in the teaching program at UF’s Health Science Center Library. All have been geared toward determining what students had learned or improving future class sessions. A one-page questionnaire has been used to judge student perceptions of the instruction. The nursing classes now are using
a newly revised evaluation form, which employs a Likert scale to rate the session as a whole, the organization of material, visual presentation, and handouts. The subject matter covered in the session is rated from “very clear” to “needs clarification”. This is a generic form developed by the library’s curriculum committee and can be adapted for any class.

One problem with this type of evaluation is that it takes place immediately following the instruction, before students have had a chance to try out what they learned. Their opinions may change after practical experience. It would be useful to have the students evaluate the class again at the end of the semester to see if their perceptions have changed.

A pretest and post-test designed by the authors were used for several years to determine what the graduate students had learned. These tests subsequently were judged too time-consuming, as they took twenty to thirty minutes of class time. The tests were dropped when hands-on instruction in use of the CINAHL database became possible. These tests might be used again if the nursing faculty will allow students to fill out the pretest before coming to class and fill out the post-test afterward, and then return them to the librarian.

A third type of evaluation is used for the one-hour introduction to the CINAHL database. This true-false posttest takes only five minutes of class time. The purpose is to indicate which material is well understood and which material needs to be emphasized in the future to enhance understanding. It would be most useful if the test were given before the class to establish prior knowledge, and then again as a posttest to determine if students learned.

Another form of evaluation is anecdotal, but this is the least reliable method. At the Health Science Center Library, observations made by reference librarians indicate that nursing students ask fewer basic questions. They do approach the reference desk before they have taken that class session, usually to ask the location of reference materials or how to use the CINAHL database.

No ideal, efficient evaluation method has been discovered, as class time is limited and evaluations take time away from teaching. The evaluation of library instruction requires further study.

CONCLUSION

Librarians are aware that they must keep up with changes in bibliographic instruction techniques, information resources, and new teaching technology. In addition, they must be cognizant of the ongoing changes in the field for which they are providing instruction. When a change as profound as health care reform directly affects a profession such as nursing, librarians would do well to research the impact of those changes on the information-seeking skills of those professionals, and be prepared to incorporate the needed changes into their instruction. The UF teaching program will continue to change as users’ needs change and as new informational resources become available.

REFERENCES

4. Ibid.
7. Ibid., 30.


Received December 1994; accepted April 1995.