

An Introduction to Independent Learning Skills for Incoming Medical Students*

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ABSTRACT

A partnership was initiated between educators of the College of Medicine and the McGoogan Library at the University of Nebraska Medical Center to establish a new educational component for incoming medical students. The objective was to encourage the development of the students' independent information seeking skills. A three-day seminar was introduced in which the process of seeking information was emphasized rather than the final product. Cooperative development of the seminar resulted in a fresh approach to educating medical students at the College of Medicine and the emergence of an ongoing instructional link between the library faculty and educators in the College of Medicine.

IN 1986, the University of Nebraska Medical Center's College of Medicine (UNMC) conducted a reassessment of the curriculum provided for incoming medical students. Under the auspices of the Curriculum Committee and the Dean of the College of Medicine, a task force was established to investigate how independent and self-directed learning skills could be encouraged. The consensus was that developing an introductory seminar for incoming medical students was a logical beginning. It was agreed that the process of finding information would be the key element of this seminar.

The seminar represents a fresh approach to augmenting information seeking skills within the medical school curriculum. Similar programs

which introduce the students to medical information retrieval have been offered in the second year or later [1, 2, 3], whereas this seminar was presented prior to the first day of medical school.

PLANNING

It was determined that the library would play an instrumental role in planning and implementing the seminar. Librarians were an integral part of the campus-wide planning committee that prepared goals and objectives for the program and developed the program content and format.

A library task force was formed to plan for teaching independent learning skills to students through available information resources. The task force first established a goal and objectives which correlated with those of the campus-wide planning committee. The goal for the library group was to prepare participants to retrieve relevant, authoritative information independently through the optimal use of information resources, which would lead to skills required for a lifetime commitment to learning. To meet this goal, the following objectives were also decided upon:

- Identify the information components of clinical problems;
- Describe, evaluate, and select the resources pertinent to bioscience information needs;
- Retrieve information independently from a variety of electronic and printed sources.

The general format was a three-day session for the 1986 incoming medical students, scheduled prior to the general orientation. During this period,

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students were presented with clinical research topics that simulate situations they might encounter during the first clinical experiences in their second year. The complexity of the topics and the limited amount of time for research would encourage a team approach to problem solving. At this point in the planning, the librarians were concerned that the topics would be too clinical for the new students.

Many key elements had to be developed for the seminar, including the agenda, case histories, instructional materials and methods, and role of faculty facilitators. In planning the agenda for the three-day seminar, the committee was influenced by several factors:

- Need to allow the students sufficient freedom for independent problem solving and research, while still providing enough faculty support, encouragement, and guidance to ensure a positive and successful learning experience;
- Necessity for dividing 126 incoming medical students into subsets that were small enough to be managed by available faculty facilitators, and yet large enough to form an effective research team;
- Determination of the optimum number of case histories to provide an effective learning situation.

SEMINAR STRUCTURE

The students were divided into ten research groups of twelve to thirteen members. Each group had three facilitators: a basic scientist, a clinician, and a librarian. The committee decided to develop five case histories, which allowed two groups to have the same potential research topics and some competitive interest. In addition to the independent small groups, a large group format was used during the three-day experience. The initial large group meeting permitted pre-testing, a basic introduction to the principles of problem-solving and independent learning, and an explanation of the seminar.

In order to provide an environment that encouraged independent learning, the rest of the seminar was relatively unstructured. The planning committee provided individual group meeting rooms, allowing the groups to establish their own schedule of meetings. The teams of facilitators provided guidance and interpretation of the retrieved information. The library facilitators were also available for individual consultations.

To motivate students throughout the seminar, the groups were required to present their research

results at a final large group meeting. The final presentation was not evaluated and was used only as an incentive. The information-seeking process, not product, was the focus. On the morning of the third day, the two groups assigned to the same case were combined for the first time to consolidate their information and to prepare for the afternoon presentation. The large group wrap-up session included the five joint presentations, a summary of the seminar goals by the chairman of the Curriculum Committee, and the completion of a series of evaluations by the students.

The case histories, which were the focus of the learning activities and the students' research efforts, were designed to develop the students' problem-solving and independent learning skills. They were required to analyze the histories, to identify the problems, and to determine their information needs based on those problem areas.

Cases were developed by the College of Medicine faculty, who submitted scenarios representing clinical situations to the planning committee. Several of the selected cases covered topics which would be discussed during the first few weeks of the human gross anatomy class (Appendix 1). Each case was researched by a librarian to verify that sufficient quantities of information were available and readily accessible in a variety of library resources. The format of the bibliographies reflected the basic search strategy to be followed by the students.

Faculty and Teaching

It was determined that a self-paced workbook would best suit the students' overall need for a concentrated guide to the biomedical literature. The workbook, *Your Information Search*, was styled after the slide/tape presentation entitled "The Information Search" [4], developed by the University of Texas Health Science Center at San Antonio. Each workbook section provided a description of an information tool, a summary of its uses, and a map to its location in the library. This was followed by a sample application of the tool to a similar clinical problem and space where the students could cite information pertinent to their clinical cases.

To allow the students to begin their information search at the most basic level, the workbook first presented biomedical dictionaries and handbooks. Chapters on MeSH and *Index Medicus*, the card catalog, and the serials holdings list followed. To enhance the library learning process, laboratories were designed for those who wanted additional

instruction about the use of MeSH, *Index Medicus* and online searching via PaperChase. Hands-on use of the resources was a major component. The students attending the MeSH and *Index Medicus* laboratory completed structured exercises. The PaperChase laboratory was designed to allow them to search online for their group topic.

The faculty facilitators were essential for the success of the total learning experience by helping the students focus their research and offering feedback. Medical school and ten library faculty members volunteered to serve as facilitators. Orientation sessions for all facilitators were held to review the project goals and objectives, to present the agenda, and to discuss the facilitator's role.

Seminar Implementation

At the opening general session, students completed pre-tests to assess their familiarity with basic library resources and to indicate their attitudes toward libraries and information seeking skills. They were welcomed by the Dean of the College of Medicine; then the Chair of the Medical Curriculum Committee explained the objectives and the format of the three-day learning experience. An introduction to the information search process was presented by the library's Head of Reference, who showed the slide/tape "The Information Search." A copy of the library workbook was distributed to each student. The five cases were then presented as mini-dramas, and the students were given their small group and case assignments.

The first small group meetings of students and facilitators were held immediately following the general session. During these meetings, the students identified problems in their case and divided into subgroups to research the resulting topics.

The students used the workbook, *Your Information Search*, as a guide to using the library resources at UNMC. They were encouraged to consult faculty and staff members as subject experts and to contact at least one community agency for additional information. During the research process, small group meetings were held as frequently as deemed necessary by the students to keep the research focused and to formulate tentative conclusions.

At the closing large group session, research results for each of the five cases were presented by representatives of the groups. The pre-test was administered a second time as a post-test to measure the progress made during the intensive research experience. Students also evaluated both the library workbook and the entire seminar.

RESULTS

The goal formulated by the library task force for "Introduction to Medicine in the 21st Century" was to prepare participants to retrieve relevant, comprehensive, authoritative information independently through optimal use of information resources that would develop the skills required for a lifetime commitment to learning. Data collected through the various evaluation tools at the end of the session showed that a majority of the students were able to identify information components of a clinical problem; to describe, evaluate, and select the resources pertinent to bioscience information needs; and to retrieve information independently from a variety of electronic and printed sources.

On the library skills evaluation, students were asked which two sources they would use to begin research on an unfamiliar topic, such as flameroids. The pre- and post-tests reflected changes in their approach (Fig 1). In the beginning, students selected the dictionary (40.4%) and the card catalog (20.6%) most frequently, followed by *Index Medicus* (16.2%), MeSH (12.3%), and textbooks (5.7%). After the concentrated learning experience, the dictionary was chosen by 36.9%, followed by textbooks (20.9%) and MeSH (19.4%). It was evident that the students applied the basic search strategy presented at the opening session and in the workbook.

Their mastery of the information search process was reflected by substantial changes in the students' perception of their proficiency in library skills (Figure 2). At the opening session, 10.6% of the students felt that they had better than adequate skills; 60.9% ranked themselves higher than adequate on the final evaluation.

Following the three-day seminar, the facilitators met to discuss their reactions. The consensus was that this was a valuable learning experience and should be continued in the future. It was suggested that this type of learning module be initiated in other medical center classes and disciplines. Many of the clinical faculty and librarians were surprised by the volume and sophistication of materials students retrieved on their cases. This may be a reflection of the rigorous selection process in the medical school and the pre-professional training completed by many of the new medical students. The final wrap-up session concluded with suggestions on how the module might be improved. These suggestions were incorporated into the 1987 seminar for beginning medical students and in the "problem-solving days" for the freshman and sophomore medical students.

Where would you begin your literature search on the topic of "Flameroids"?

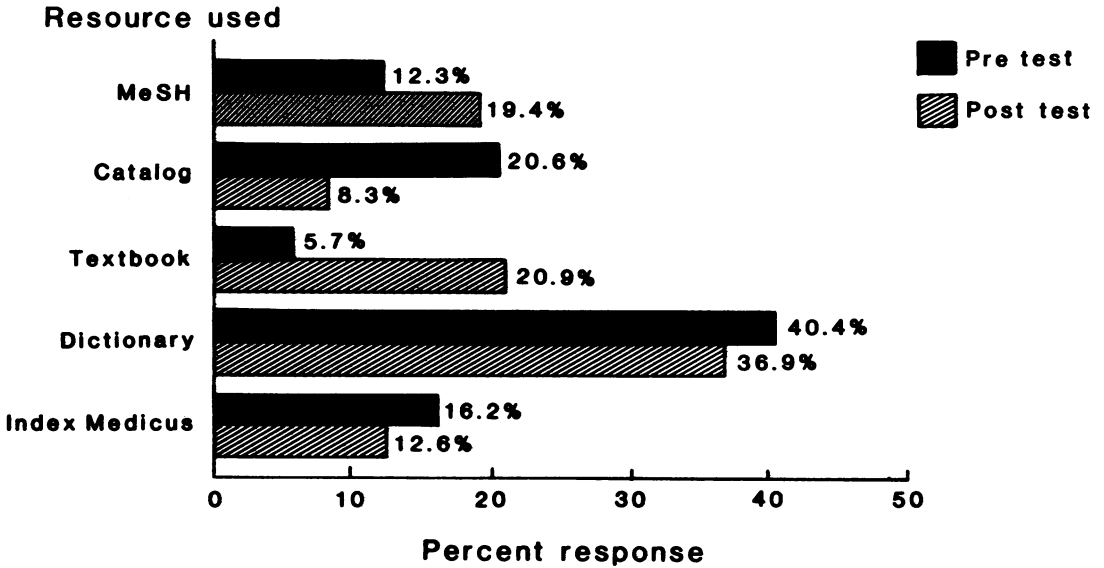


FIG 1.—Changes in approach.

On "problem-solving day," the class is divided into research teams, which are given a clinical problem in the morning and expected to present their findings at a large group meeting in the afternoon. The students are required to use the library resources and to work as independent teams.

CONCLUSIONS

Despite the initial concern of some faculty, the incoming medical students proved to be quite capable of identifying the information components of a clinical problem, selecting pertinent resources, and retrieving relevant information.

Hopefully, this type of introduction to medical

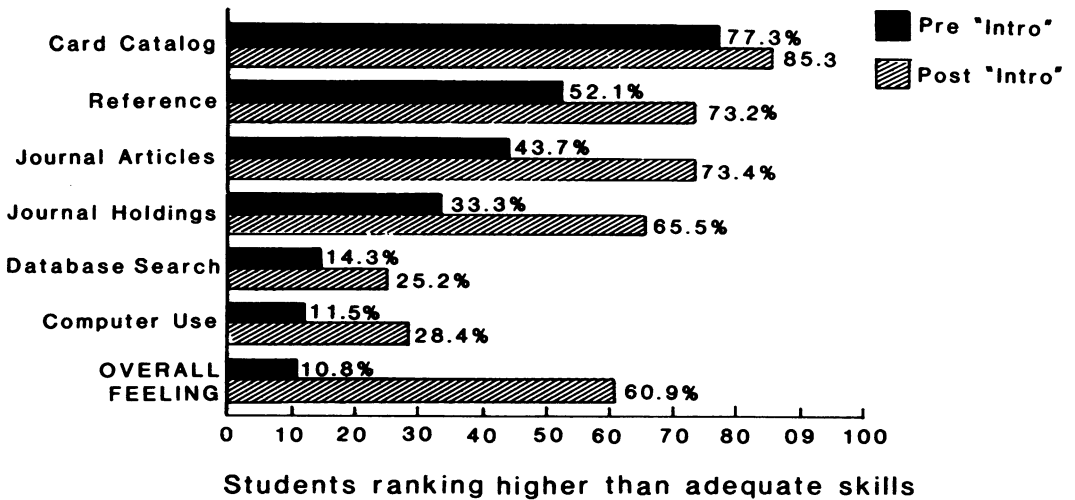


FIG 2.—Student's perceptions of their library skills.

school will enable future physicians not only to acquire independent learning skills, but also to recognize the value of consulting an information specialist for assistance in satisfying their information needs.

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APPENDIX 1:

SAMPLE CASE HISTORY

Jimmie Greenbach, a week-old 11-lb. infant, has been sent in for evaluation of a "paralyzed" left arm. He was a difficult forceps delivery, especially because of the size of his shoulders. For the first few hours after the delivery, he appeared to be rather "floppy" with periods of irritability and drowsiness, but returned to normal after his first feed.

Apart from considerable moulding of the head, residual forceps marks on his face and head, and the paralyzed arm, the baby now appears normal. The left arm lies immobile at his side with the elbow straight and the forearm pronated.

The mother, Melissa Greenbach, is a 200-lb., 32-year-old housewife. Her two previous pregnancies resulted in the births of a healthy 9-lb. girl and a 10-lb. boy. She had few problems during the pregnancy, but was "very large."

The father, Ronald Greenbach, is an apparently healthy 130-lb. out-of-work carpenter.