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INNOVATION ABSTRACTS

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Research in the Electronic Library

One of the most difficult concepts for students to grasp as they conduct library research is "controlled vocabulary." As do more and more libraries, our library has an on-line public access catalog (PAC) for books and an on-line general periodical index (GPI); both require rigidly controlled language as well as accurate spelling. For example, there may be hundreds of articles in the GPI about Generation X, but they are found only under the subject *Post-Baby Boom Generation*. Articles about television violence are located under the subject *Violence in Television*. There are no articles under the subject *Crack Babies*. Instead the library user must search one of the following subject headings: *Children of Drug Addicts, Drug Abuse in Pregnancy, Crack (Drug)—Influence*.

What makes this situation even worse is the fact that the GPI has virtually no cross references. It is a commercially produced index over which we have no control. The PAC, on the other hand, is produced by our staff and the staff of our county library. Since our librarians are able to respond to the vagaries of natural language by adding cross references, the catalog is user-friendly.

To use the GPI it is important to teach students to think "synonymously." If a student is writing about pigs, a search in the GPI may indicate there are no books or articles on the subject. Perhaps material is listed under *Hogs* or *Swine*. It is even more difficult when the topic is not concrete. Unfortunately, the *Library of Congress Subject Heading Thesaurus* does not reflect natural language either. For example, a student looking for articles about teenagers moving out of their homes and living on their own may have trouble finding information. There are no articles under the subject *Leaving Home* or *Moving Out*. *Independence* produces articles about political issues. *Independent Living* covers the topic of people with disabilities living on their own. In the end, no satisfactory subject heading is located, and the student leaves the library frustrated by the inability to locate material.

For beginning students, it may be helpful to encourage the selection of topics which lend themselves to searching with controlled vocabulary. Generally, the educational objectives associated with library research concern teaching students to locate materials which support a thesis topic. Allowing students to select topics that make research a frustrating and unrewarding experience not only defeats the original objectives but also teaches students that the library is an unfriendly place. On the other hand, carefully selected topics which lend themselves to subject searches with controlled vocabulary are likely to produce a wealth of materials and also give students confidence in their research abilities.

Keyword searching, another component of the one-word databases, is an invaluable but very sophisticated tool which should be used only as a last resort. As the library acquires electronic databases, more and more library users will rely on keyword searches to locate material. Although all electronic databases use rigidly controlled vocabulary to assign subject headings for each item indexed, most users do not have the patience to search subject thesauri for exact terms. Often they lack ready access to thesauri. Thus, searching by keyword is rapidly becoming the norm.

In the PAC and the GPI, the keyword function severely limits the amount of information a library user receives. First, the keyword function of our database does not have full-text capability. Therefore, a user searching by keyword will be able to develop and print a bibliography of pertinent articles, but must return to the regular periodical index to search each article by title to determine whether the article is available as full text in the database. Second, a keyword search is likely to produce a lot of excess material. In English, the same word often has multiple meanings the computer cannot distinguish. A keyword search for *Saturn* will bring up both the planet and the automobile without distinguishing between the two. A keyword search for *REM* found, among other topics, articles about a rock group, psychological discussions of rapid eye movement, and a number of reviews of the work of modern architect Rem Koolhaus. *Panthers* produced a bibliography of 104 articles ranging in subjects from political movements like the Black and Gray Panthers to the panther as an endangered species, a football team called the Carolina Panthers, and a Navy fighter plane. Using *AIDS* as a keyword not only overwhelmed the searchers with several hundred articles about the disease, but also included a list of every article where the word "aids" appeared in the title in any context. Keyword searching is like shooting into a crowded room. You will probably strike your target, but

you also will bring down several innocent bystanders.

Yet keyword works when controlled vocabulary fails. The previously mentioned search through the keyword function for *Crack Babies* not only provided a good bibliography of material where the term appeared in the title of the articles, it also taught the searcher that the appropriate subject headings used in the GPI were *Drug Abuse in Pregnancy* or *Crack (Drug)—Influence.* Our language changes more rapidly than any computer's subject thesaurus. By using keyword searching, a library user can transform natural language into the controlled vocabulary needed to comprehensively search a database for information.

In the CD-ROM databases that are gradually replacing the paper indexes in most libraries, keyword searching must be combined with a knowledge of Boolean logic. In our natural language, using the connector *AND* creates a larger group. John *AND* Betty are more people than John is by himself. *OR* is used for exclusion. "I will buy the coat *OR* the jacket" implies that both items will not be purchased. In Boolean logic, however, *AND* limits rather than expands a group while *OR* expands the group—Opera *AND* Ballet will produce only the information where both concepts are present while using *OR* (Opera *OR* Ballet) expands the set of information and creates a group where either concept is present. Using the Boolean *NOT* further limits a search. Opera *OR* Ballet *NOT* Symphony will produce a list of articles about opera or ballet, eliminating all the articles where symphony is a keyword. As the number of sophisticated databases increases, teaching Boolean logic may have to become part of any course that requires research.

As the college fulfills its commitment to the electronic library, students, staff, and faculty will be learning together. It will be an exciting time, but critical thinking skills and computer literacy will be essential to avoid the pitfalls inherent in using these new tools. Taking the time to understand the nature of database searching and to master the necessary search skills will ease everyone's transition from paper to electronic sources.

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Team Teaching for Success

Since fall 1993, we have experimented with students enrolling in one section of an intermediate-level reading course and in an introductory government course simultaneously, the content and text of the government course becoming the content and text for teaching reading. This collaboration was the result of desperation—students who were poor readers were failing the government course at extremely high rates. They not only had trouble reading the text, but their test-taking skills were poor, and their writing skills were nonexistent. However, the individual attention these students needed to develop their skills was often impossible to provide in large government classes.

Thus, the collaboration was born—the reading teacher often attending the government class, taking notes and using them to create examples in reading class and the government teacher often attending the reading classes to offer tips on how to study or to lead current events discussions. What has been the result? We have found that students who remain committed to both classes succeed in both. In the reading class, students learn and develop reading strategies by using the content of the government text and a teacher-produced handbook. Students learn strategies for previewing text, marking text, test-taking, recall, note-taking, and other components of active reading.

We have observed that as students implement these strategies, their increased confidence in their academic ability carries into other courses. However, to date, we have not collected data to document this general observation; therefore, during fall 1995, we will use release time to team teach these two courses in the true sense of the word. Our goals will be to conduct the research needed to examine the validity of this collaboration, to increase communication/coordination and interdisciplinary training between the faculty members, to determine the validity of this academic approach to instruction, and to explore the feasibility of expanding this approach to other content areas.

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