Teaching student use of academic metadata for resource discovery

Joseph M. Dudley
Bryant & Stratton College
USA
jmdudley@bryantstratton.edu

Abstract: As distributed research materials on the Web become increasingly popular, metadata becomes central to their discovery and use. This paper will discuss how I prepare students in my information literacy classes and in bibliographic instruction sessions in subject classes to search effectively in online library catalogs and research databases by creating a running list of subject-specific keywords, how to discover additional resources though selection of appropriate Library of Congress Subject Headings, and how to effectively interpret metadata sets as a first step in document analysis.

Introduction

The availability of Web-based tools to be used during the academic research process is revolutionizing the way that students work with their campus libraries to gather and use information resources. Tools such as virtual and digital libraries, Online Public Access Catalogs (OPACs), online electronic text resources such as netLibrary, online research databases such as those provided by EBSCOhost, and chat reference which puts students in contact with online reference librarians, have reduced the amount of time students are required to spend in the physical library, liberating them to perform research activities at any hour of the day or night from any networked computer.

In terms of the computer and Web savvy that students bring with them into the academic environment, Jones (2002), in a study prepared for the Pew Internet & American Life Project, observes that undergraduate students are typically early and frequent users of the Internet, browse the Web for fun, check email, use instant messaging software to communicate with friends, and download music (p. 2). However, Geck (2006), in an article appearing in *Teacher librarian*, notes that students are typically not familiar with many of the less obvious resources available on the Internet, such as dynamically generated pages and subscription databases on what has become known as the "invisible Web" (para. 6). Typically, these students are often confused by the redistribution of traditional library materials in Web-accessible format, while possessing a strong sense of how to discover non-academic information on the free Web by deploying keyword searches in general tools such as Google, thus believing that "the information they need to find a research answer or to complete a homework assignment is freely available on the Internet" (para. 10). Students may also suffer from "library anxiety" due to "feelings of being overwhelmed by the size and number of information resources available via the

library" (Grassian and Kaplowitz, 2001, p.91), thus seeing the scale of the Internet as less intimidating than the library (Leibovich, 2000, para. 15) with its confusing classification schemes and access codes.

Alison Ahearn (2007), in the *Journal of information literacy*, observes that "[s]tudents should be held to the standard of academic integrity expected of the reasonable student of ordinary competence" (para. 5) and that institutions of higher education "owe a duty to inculcate in students the ethos and competencies suited to our information age" (para. 7). In order to facilitate this goal, Geck (2006), suggests that teaching librarians integrate Internet technologies into information literacy instruction, provide students with information regarding both traditional print and Internet-based library resources, and demonstrate to students how to search effectively for library resources in both formats (para. 14).

In this paper I will discuss the most important points I present to students in information literacy and bibliographic instruction sessions at the Bryant & Stratton College Cleveland Downtown campus regarding how to locate print and electronic materials using the library catalog and the EBSCOhost research database Academic Search Premiere, and highlight the most significant research strategies to which students are introduced.

Introducing the academic search process

Bryant & Stratton College is a sixteen-campus career college (including an Online campus) where successful academic information retrieval skills are central to success in the Career Core and major courses students take during their degree programs. Further, successful information retrieval skills are central to the research involved in creating the student learning portfolio, the first draft of which should take place during the first semester of coursework. During this time, students take LIBS100 Information Literacy and Research and are introduced to the nature of academic literature in their disciplines and where such research-quality literature is likely to be discovered. However, due to their positive experiences searching the free Web, students are likely to at first reject the librarian's stance that the Web is much like a "library where all the books have been dumped on the floor and there is no catalog" (Taylor, 1999, p. 11), preferring early on to search the free Web exclusively when required to find and use support material as part of a writing assignment.

When addressing students for the first time in an information literacy context at the Cleveland Downtown campus, I always ask who feels that they are proficient in Web searching and ask for examples of Web search strategies that have been successful. Then I tell students (and I am careful to reinforce this point several times over the course of any given semester) that learning to perform academic research will build upon skills that have been developed in their previous experiences searching the free Web. Framing research activity in this way makes it less overwhelming for new students, who are confident in their Web searching skills and tend to respond positively when they can identify a bridge between what they already know and the new system of searching they find themselves required to learn.

I introduce at this time some of the key tools that students will be using, such as the Bryant & Stratton College union catalog (http://63.161.243.173:8081/common/welcome.jsp) and research databases available on the Bryant & Stratton Virtual Library (available to students upon login at (http://vl.bryantstratton.edu/). Over the course of instruction, rather this takes place in the information literacy classroom, the bibliographic instruction session in a subject classroom, or at the library's reference desk, I introduce the supplemental union catalogs WorldCat (http://worldcat.org/advancedsearch) ; a library network representing 10,000 libraries world-wide) and OhioLink (http://olc1.ohiolink.edu/search/) ; representing 86 academic libraries in Ohio) and other supplemental sources found on the Bryant & Stratton Virtual Library Cleveland portal (http://vl.bryantstratton.edu/Default.aspx?tabid=118), such as the Cleveland campus library's blog, which provides notification of new titles and electronic resources available to the campus community.

I also introduce the concept of *metadata*, which Rubin (2004) describes as "the critical means for locating and using [information in the electronic environment]" (p. 252) and which Cole and Foulonneau (2007) note "can help a user understand what a [resource] is about and can help a user decide if a specific [resource] is more or less likely to be relevant to his or her information need" (p.111). Metadata in this context includes both library catalog records and location information found in research databases, and I present the concept in terms of its role as information which will lead to the discovery of specific packages of subject content (either in print or electronic formats), being careful to relate this concept to the recognizable Web search tool's return set and how academic metadata will in the same way (but with more specificity) provide information about a resource's location and content. Although the introduction of metadata and how it is useful to the academic researcher is difficult for students at this stage (as they have mostly all been trained in recording personal reactions to a text rather than describing the attributes of a text), it is critical in order to then discuss how to effectively use online catalogs and databases.

Keywords and academic research

Students often begin college believing that the broad keyword searches they have found successful to some extent on the free Web will be just as successful in the academic environment. Since keyword searching using domain-specific subject terms is crucial to the discovery of useful academic resources, I begin discussion of this concept by polling students about keywords they feel are effective for producing good search results, and we then discuss the difference between types of information searched for in the academic and non-academic domains. While I am careful to point out that their Web searching behaviors need not necessarily change when performing non-academic searches, I do discuss the need for more specificity when searching for academic materials. As good keywords are often the first and (in the case of database content) sometimes the only way to discover the metadata records leading to these items, I introduce students at this point to Tensen's (2007) method of drawing possible keywords from class lectures, notes, and

textbook readings (p. 25), pointing out that these terms will reflect the specialized vocabulary that will be used in the research materials being sought. I instruct students to keep a running list of such terms for each research project, and to use these terms when searching the library catalog and research databases as well as the free Web.

Another set of beliefs students often bring with them is that Web search tools all employ natural language processing (which causes students to feel free to type phrases, sentences, and paragraphs into search fields when searching) and that in all cases the entire text of documents are able to be searched. I address with students the correct structure of good search strings, using one to three specific search terms from their lists at a time and, when appropriate, the Boolean operators AND, OR, and NOT in order to tailor their keyword searches. We then discuss the limits of a search tool's examination of a document, which in some cases may be limited to only a few lines of text. I also discuss how Boolean operators function specifically within library catalogs and EBSCOhost databases, which are the first databases I teach students to use and in which the AND operator must be used between multiple terms (unlike the Web, where in some cases certain Boolean operators are inserted automatically between terms).

Controlled vocabulary and document analysis

Once students have been introduced to the requirements of keyword searching in the academic information environment, I instruct them that, baring a case in which titles and authors are known (which is unlikely for more than a few resources when performing initial bibliographic research), keyword searching may be the best way to start to examine the metadata held in the library's catalog. At this point I will demonstrate to students how to search the catalog using keywords to produce a list of metadata records for items held both in the library's print collection and for electronic texts held in netLibrary. I point out that the circulation status of print items may be discovered by examining the *copies* area of the metadata record, and an electronic hold may be requested for the item from within the catalog whether or not the item is currently available on the shelves. Holds will be directed to the library staff though the circulation system so that we can take the appropriate action for securing the item as requested.

I direct students at this point to examine the controlled vocabulary terms assigned to the item in question, which in the case of the library catalog will be Library of Congress Subject Headings (terms in EBSCOhost databases are not controlled, but are keywords supplied by an article's author). If the term is hyperlinked, I demonstrate that clicking on the link will produce an additional return set of metadata records for titles which catalogers have determined to contain similar subject matter, so using these terms for further examination of records will in this way broaden an initial search and quite likely make the search more productive. I have found that students are usually very appreciative of learning this application of controlled vocabulary terms in order to discover additional resources, and some students start to explore this aspect of catalog searching immediately in the context of research projects for other classes.

I then direct students to look at the notes area of the catalog's metadata record, instructing them to always check here to see if a table of contents or an abstract has been included by the cataloger (keyword searching may also reveal this resources, as the metadata records may be searched in their entirety for these terms). If so, I point out that examining a table of contents or an abstract at this point in the search process will allow students to perform document analysis at a somewhat deeper level than examining the title only before the actual item is retrieved, and may help them to make a decision about whether or not they want to check out the item to examine at a still deeper level.

Discovering electronic books

Electronic books may be discovered both within the library's catalog and, with the appropriate login information, by searching through the netLibrary catalog (http://www.netlibrary.com/). I point out to students that there are two major advantages of electronic books: (1) that content can be opened directly from the metadata record regardless of the time research is performed or the location of the researcher, allowing work to be done from home or another remote location outside of normal hours of library operation (this is always an option that students find attractive due to the numerous demands on their schedules and the preference many have for Web-based resources), and (2) when print items cannot be immediately located due to previous checkout by another patron, students may still locate electronic books on similar topics (and at times an electronic copy of the print title for which they were searching) by deploying specific keyword and controlled vocabulary searches in the same way that they would for books in the library's print collection.

I again direct students to examine the controlled vocabulary terms assigned to a particular item and to check the notes area of the metadata record for a table of contents in order to fully explore all available resources and to perform deeper document analysis before committing themselves to a book-length electronic manuscript.

Research databases

Research databases represent a significant area of complexity for students, both in learning to use the search interface and in interpreting the result set. As metadata is arranged differently for these items than for the library catalog, I begin database instruction by relating database searching to what students already know about Web searching in terms of how to successfully manipulate the search interface. As I instruct students to learn database searching by using EBSCOhost Academic Search Premiere, I point out the search field and demonstrate that students must always use the Boolean AND when using multiple search terms. I then demonstrate how to limit the search to only articles from academic journals and how to limit the format to PDF files, adding that an article in PDF format will display exactly as it did in print, including any illustrations which may be important to understanding textual content.

After running a sample search, I display the metadata screen for the article, which I have found that students often bypass due to the perception that the material on this screen is not connected to the article content and therefore non-essential. I point out that this information should be printed and kept with the article itself as it includes all of the bibliographic information that students will need when creating a reference list. I also point out that metadata for EBSCOhost databases includes an abstract which will allow students to perform some initial document analysis in much the same way that viewing a table of contents or abstract allows when viewing metadata in the library catalog.

Finally, I demonstrate to students how to create a MyEBSCOhost account in which they can save links to articles to which they will need to return, rather that having to run a complete search a second time in order to find the article again.

Conclusion

Teaching undergraduates to appreciate the concept of metadata as it relates to the search for academic information is necessary in order for students to fully grasp the variety of tasks they are asked to perform as beginning academic researchers. Experience has shown that over the course of a semester, students will come to recognize academic metadata as the first step in discovering a variety of source materials (books, articles, Websites, etc.) and will become more comfortable using not only Web-based academic research tools but also the metadata that such tools provide regarding document content and location.

In order to foster a sense of mastery in students, exercises such as research logs and (for the semester-length information literacy class) online journaling via the course Website are useful, as they require students to gather complete bibliographic information, write short abstracts of resources, and do some basic evaluation of the resources' worth in a research context, which in turn helps to train students in what elements to look for when examining metadata sets returned from library catalogs and research databases, thus helping them to be more critical, Web-savvy researchers.

References

Ahearn, A. (2007). Guest editorial on teaching information literacy. *Journal of information literacy 1*(2). Retrieved March 18, 2008, from jil.lboro.ac.uk/ojs/index.php/JIL/article/view/GuestEditorial-V1-12-2007

Cole, T. W., & Foulonneau, M. (2007). *Using the open archives initiative protocol for metadata harvesting*. In *Third Millennium Cataloging*. Westport, CT: Libraries Unlimited.

Geck, C. (2006). the generation Z connection: teaching information literacy to the newest net generation. Teacher librarian 33(3), 19-23. Retrieved March 19, 2008, from Academic Search Premiere.

Grassian, E. S., & Kaplowitz, J. R. (2001). Information literacy instruction: Theory and practice. New York: Neal-Schuman.

Jones, S. (2002, September 15). The Internet goes to college: how students are living in the future with today's technology. *Pew Internet & American Life Project*. Retrieved March 19, 2008, from www.pewinternet.org/pdfs/PIP%5fCollege%5fReport.pdf

Leibovich, L. (2000, August 10). Choosing quick hits over the card catalog: many students prefer the chaos of the Web to the drudgery of the library. *New York Times*. Retrieved March 18, 2008, from www.nytimes.com/library/tech/00/08/circuits/articles/10thin.html

Rubin, R. E. (2004). *Foundations of library and information science* (2nd ed.). New York: Neal-Schuma.

Taylor, A. G. (1999). *The organization of information*. In *Library and Information Science Text Series*. Westport, CT: Libraries Unlimited.

Tensen, B. L. (2007). *Research strategies for a digital age* (2nd ed.). Boston, MA: Thomson Wadsworth.