



## Check the citation: library instruction and student paper bibliographies

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### Abstract

This article investigates the potential value of bibliometric analysis of student research paper bibliographies to assess student behavior in terms of skills and resources addressed in instruction sessions. References from 109 freshman English papers were analyzed to determine the type of work cited, the origin of the citation, and the characteristics of cited journal titles. It is suggested that student paper bibliographies provide a flexible, non-invasive, time-efficient assessment forum for the documentation of student library use. © 2000 Elsevier Science Inc. All rights reserved.

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### 1. Introduction

At its most fundamental, evaluation is simply the comparison of objectives with results. Even in the absence of the mandates of recision and accountability, evaluation makes sense. It is the structured assessment of the reaction to an action, be it the selling of a product or the teaching of a class. Librarians, in particular, can benefit from evaluation of the processes in which they take part because so many of their interactions are severely truncated. They do not have the luxury of either time or multiple meetings in which to assess, at more informal levels, the success of their transactions. Library instruction programs, multi-faceted at the outset, now face the added burden of vigilant response to constant and often substantial changes in the library environment, whose character they seek to impart. Assessment keeps programs on track, providing information that keeps future plans and adjustments out of the category of random guesswork.

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## 2. Evaluation of library instruction

The whole issue of the evaluation of library instruction confounds librarians to a far greater degree than the combined questions of what to teach or how to teach it. Why this should be the case has been the subject of scrutiny since the early 1970s, when Richard Beeler's edited work on *Evaluating Library Use Instruction* (Beeler, 1975) was published, continuing right on up through the publication of ALA's almost identically titled *Evaluating Library Instruction* (Shonrock, 1996) in 1996. Much of the librarian's dilemma can be attributed to the fact that, unlike education or psychology, the library profession lacks standardized test instruments and the associated body of accrued statistical data for comparative analysis. Library instruction is also subject to a more accelerated evolution of purpose and design than equivalent instruction in the standard academic disciplines. Where change is speedy and reactive (responding, for example, to the acquisition of new computer platforms or products), it is more difficult to build in evaluation measures—the suggestion having been made that the most useful measures are those incorporated into a program from its inception (Johnson, 1975).

Further complicating the matter is the hybrid nature of library instruction. The content is multi-faceted, focusing on both functional and cognitive skills; the targeted domain is variously aimed at the library user's behavior (i.e., attitude and motivation), knowledge, and/or the problem-solving associated with a specific task; and the instruction is directed at both present and future activities. Inasmuch as no single evaluation protocol can encompass all these variables, library instruction assessment is documented in the literature through a series of examinations of its parts.

## 3. Content, product, or process?

A common classificatory scheme for instruction elements is that typified by Thomas Kirk's early summary grouping into content, product, and process (Kirk, 1975). To these may be added the evaluation of delivery, with the assessment of instructor effectiveness and teaching techniques. The choice of which component to evaluate obviously influences the kinds of measures employed—tests for achievement and knowledge, surveys for attitude, and so on. There is a large degree of latitude in the choice of method, however. Quantitative manipulation of qualitative ratings has been successfully applied to many variables. See, for example, Virginia E. Young and Linda G. Ackerson's "Evaluation of Student Research Paper Bibliographies: Refining Evaluation Criteria" (1995) for the analysis of scholarship product, and David N. King and John C. Ory's "Effects of Library Instruction on Student Research: A Case Study" (1981) for the evaluation of sources used.

One of the things that enthusiastic evaluators need to keep in mind when choosing assessment methods is the extent to which they will be able to modify the program on the basis of the information collected. If one is aware of certain needs or problem areas and is realistically unable to devote either personnel or financial resources to the solutions, then, unless seeking documentation of need, it might be more worthwhile to expend the energy in areas that can be addressed.

#### 4. Theoretical use of the student product

Examination of student research paper bibliographies provides a flexible, non-invasive, time-efficient assessment forum in which one can quantify actual student behavior (as opposed to self-reported process or attitude) involving library products and resources. Behavior seems a particularly appropriate element for investigation when one considers that 94% of academic library instruction involves the lecture format (Shirato & Badics, 1997). Whether in conjunction with a demonstration or other lecture-activity combinations, the standard one-shot class session lecture will have its greatest influence on short-term behavior. The “here is how you do this” approach (and librarians are fully cognizant of its drawbacks) is simply too abbreviated to affect longer-term knowledge integration, attitudes, or motivation.

Those classes that avail themselves of library instruction, whether freshman English composition classes or more specialized upper-level classes, generally have research and writing projects. Where it is possible to examine these student products, one can determine if, in fact, students are performing the kinds of tasks suggested in instruction sessions. It may be difficult to arrange a control situation in which papers written by students in classes that did not attend library sessions could be examined to allow the investigation of the extent to which students are doing these tasks as a result of library instruction. In any event, however, we can view the results backwards. We may not be able to prove that students are engaging in suggested activities because they were so directed, but if, in fact, we find that those who received library instruction are *not* engaging in suggested activities, we can see that the instruction connection is ineffective.

The quantitative analysis of research paper bibliographies can show what databases the students are using; the relative percentages of book, periodical, and electronic citations; the currency of citations; and the use of in-house collections. Qualitative analysis (trickier to do and more successful in upper-division classes) can suggest student awareness of specialized resources, whether indexes, reference sources, or other collections. Indication of student mastery of advanced searching techniques might be mined from citations by subject specialists who could determine if source specificity and type were appropriate to the topic.

#### 5. Actual use of the student product

Analysis of student research papers and reports after library intervention has a secure niche in the arsenal of evaluative techniques. Kohl and Wilson (1982), Gratch (1985), and Ackerson and Young (1994) have all produced studies of research paper bibliographies to determine the impact of library instruction on student research. More recently, Malone and Videon (1997) used this approach to assess undergraduate use of electronic full-text databases.

Generally, in such studies, determination is made of the number of types of sources and their origins. Sources are judged by independent raters on the basis of selected criteria that address their number and appropriateness to the topic. Ambiguities abound in an evaluation of this kind. There are questions about differences in student scholar-

ship that have nothing to do with library input. And the origins of citations were more easily established in a pre-World Wide Web environment, when specific index configurations were run on in-house LANs. Concentrating on a bibliometric analysis of citations reduces both ambiguity and logistical complexity and can still create a clear picture of what sources students are actually using.

## **6. Analysis of freshman English research papers**

The freshman English program at Northern Illinois University brings students to the library twice. In the first semester, they receive a general introduction to library services and resources, and are instructed in the use of the online catalog system. Second-semester classes schedule library sessions prior to the time of the primary research paper assignment. Instruction examples are built around actual paper topics to demonstrate advanced online catalog searches for books, as well as searches for periodical literature on selected indexes most suitable for freshman topics, such as the Wilson products and InfoTrac. At the time of this study, the WilsonDisc indexes were mounted on their own LAN in the library. Another LAN offered primarily SilverPlatter products. Students also had access to CarlUncover and a large number of paper indexes. While the existence of other sources was indicated, students were not specifically instructed in their use but were typically directed to the Wilson LAN with its wide range of appropriate products. Instruction consisted of approximately 25 minutes of lecture and projected demonstration of searches. The classes then completed a search exercise at terminals in the general reference area.

The freshman English administration retains a selected group of student papers at the end of each year with which to conduct their own evaluations. I was fortunate in obtaining permission to examine this collection of papers before it was discarded. I scanned the first page or so of each paper to ascertain topics (not always evident from titles!) and jotted that information on the first page of the bibliography, which was then detached. I did not record grades, having elected to avoid the entire issue of the assigned value of the paper as a whole. This decision simplified the process considerably, as a straightforward bibliometric analysis could be undertaken by a single individual. Assessment of bibliography quality should involve multiple raters, both for subject considerations and to minimize bias.

While some English sections assigned topics to the students, the papers I examined were written on topics that the students selected themselves on the basis of interest. English instructors informed students that, while their bibliographies did not have to be of a specific length, they had to include journal literature as well as books. Most instructors precluded the use of popular magazines as sources, though recognizing that some topics demanded popular sources. Library instructors emphasized that Readers' Guide Abstracts was synonymous with popular titles. Topics ranged across a broad spectrum of contemporary social issues, with a smattering of biology, applied science, and biography. This group of papers did not include any exclusively historical topics. The total number of papers examined was 109. The average paper length was six pages, and the average number of bibliographic references was 8.3. The total number of citations analyzed was 912.

Table 1  
Citation percentages by type

Books	47.69%
Journals and magazines	42.1%
Newspapers	5.7%
Electronic sources	1.2%
Other	3.2%

## 7. Analysis of bibliographies

The breakdown of citations by type was a straightforward process. Entries were easily identified and tallied as monographs, journals, newspapers, electronic sources, and other—other being a miscellaneous category of interviews, pamphlets, personal communications, and so on. Table 1 shows the breakdown in percentages of the types of works cited in the students' bibliographies.

The step that took the most time was the determination of index sources for periodical titles. At the time of this investigation, the two LANs—one for WilsonDisc databases and the other for SilverPlatter products—ran CD-ROM databases with relatively little crossover. For example, there were no dedicated business or psychology indexes on the Wilson LAN (dubbed LEARN), to which the students were directed. The SilverPlatter LAN ran more subject-specific indexes, such as PsycLit and Eric. In education and the social sciences, certain journal titles might appear in indexes on both LANs—PsycLit and Social Sciences Index, for example. For most journal titles of this sort, *Ulrich's* provided a quick reference for index sources. In the two cases in which a single citation might have come from either LAN, the rest of the bibliographic entries made it overwhelmingly likely that one or the other LAN was involved. In actuality, there was more difficulty with anomalous titles (there is, for example, no *American Cinematography*, but there is an *American Cinematographer*). Altogether, there were 13 non-identifiable periodical titles in the students' bibliographies.

Magazine titles originated exclusively, and conveniently, from the LEARN network, and a certain small percentage of other titles could be traced to one of several unique products running on stand-alone terminals. The latter category represented specialized topics found on such databases as Communications Index and America History and Life. The final step was a comparison of the title list with the library's periodical holdings to assess on-site availability. See Table 2 for the number of citations identified as coming from each indexing source. Table

Table 2  
Source of article citations

Wilson network	63.28%	243 citations
SilverPlatter network	21.09%	81 citations
Other	15.63%	
Carl uncover		7 citations
Print indexes		3 citations
Stand-alone CD-ROMS		4 citations

13 Titles are non-identifiable.

Table 3

## Journal titles—sources and holdings

Titles indexed in Wilson network		49.35%
Popular magazine titles	(of total citations)	28.38%
Titles with local index access		85.32%
Titles available in-house		83.26%

Total of 233 individual titles were cited.

3 provides information about the periodical titles cited, including the percentage of popular magazine titles and the percentage of titles held locally.

One strength of an analysis of this type is its flexibility in adapting to prevailing situations. In this particular study, trends in source usage and holdings were readily documented. The presence of indexing databases that contain full-text titles would have made it difficult to determine the source of the *text* for common titles, but periodical titles would still be linked to specific index products. Working through the citations in bibliographies would make it possible to demonstrate student use of those indexes.

## 8. Conclusions

This group of students shows general mastery of both the online catalog system and the periodical indexes for source retrieval, book and journal citations being about equal. The category of electronic citations was understandably low. At this time, the library did not offer public access to the Internet. This is a point for which a repeat of the study could provide comparative, longitudinal data on changes in use of source types, particularly to determine the impact of web-based, full-text resources.

The analysis of the bibliographies showed that students were, in fact, using the networked databases in which they had received instruction. About two-thirds of the article citations originated with the LEARN network. Of actual periodical titles (citation numbers reflect multiple use of some titles), half were indexed in the Wilson products. The study also showed that students preferred periodical titles to which they had immediate access (no surprises here), as indicated by the overwhelming use of library-owned titles. However, given the prevalence of topics that would have appeared in the popular literature, students generally showed admirable restraint in the use of popular magazine titles. These students evidently had absorbed the lesson about avoiding Readers' Guide Abstracts.

The major short-term objective of library instruction for these students was to instruct them in the use of the online catalog and periodical indexes that they would need in order to locate appropriate resources for the assigned research paper. Instruction content addressed both the technical skills associated with the mechanics of choosing a database and performing a search, and the knowledge of the organization, classification, and evaluation of library resources that has become ever more essential as potential sources proliferate. Analysis of that part of the student paper, the bibliography, that reflects the direct manipulation of the library environment and involves the use of knowledge that is not "obvious" to the uninitiated—the suitability and location of the Wilson product cluster, for example—has given the instruction group a demonstrable basis for the assertion that students

are getting the instruction message. For those librarians who wish to evaluate the actual behavior of students who have passed through an instruction program, the analysis of research paper bibliographies can provide some excellent indications of skill and knowledge retention and of student preferences.

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