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Search Strategies for Finding Reports of Research: How Academic Librarians Can Support Student Success

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Abstract: The purpose of this study was to test various search strategies for locating reports of research in the extant literature. Implications from the findings of this study are generalized into recommendations for how academic librarians can apply their professional skill sets to aid students whether undergraduate, graduate, profession or doctoral to effectively find reports of research. More specifically, the concept of "research hooks" is presented as a way for librarians to help students craft more effective database search strategies. Research hooks are complementary words to leverage database searching and identify reports of research in the literature. This recommended search strategy presents an opportunity for librarians to play an important role and assist students with constructing effective search strategies.

1. Introduction

Effective database searching involves search knowledge and a series of decisions made by the searcher. An ideal search occurs when the search environment supports the "user's question and means of expressing it." (Haas, 2003, p. 796). On the other hand, a less than ideal search occurs when the user lacks some critical knowledge and/or the retrieval system is not intuitive to use.

According to Haas (2003), there are two main dimensions of the search environment that contribute to effective database searching. Two key dimensions to successful information retrieval are the user's knowledge and the configuration of the information retrieval (IR) system. The configuration of the IR system includes the overall structure and search mechanisms available to the user.

Previous research has compared subject headings and text-word searches (Fagan, 2001). However, this research did not examine the effectiveness of database searches by various research methods. More research is needed to understand existing search capabilities related to locating research reports.

This line of inquiry is important for a number of reasons. For example, a novice may want to learn more about the data collection process. In addition, a peer reviewer might suggest that an author should look at an example to help rewrite a journal manuscript. A researcher might want to explore how something was studied with a different or unfamiliar method. Furthermore, a professor may assign students to locate an article employing a specific method of data collection. Given these reasons, attempting to understand various database search capabilities related to effectively locating research reports is valuable. Therefore, the present study investigated the following research questions:

  i.   What are issues that impact success in effectively searching for and finding a report of research?
  ii.   Where might students encounter stumbling blocks in successfully identifying and locating reports of research?

2. Methods

To better understand the search capabilities of databases with regards to locating research reports, an experiment was conducted. Two databases were selected for this study: Library and Information Science Abstracts (LISA) and Education Resources Information Center (ERIC) both via the ProQuest platform. These two key databases were selected to test various search strategies for locating reports of research across library science, information science, and education-related scholarly journals. A number of searches were performed in the two databases for comparison. Search strategies included a search for articles by:

  1.   Methodology
  2.   Subject heading
  3.   Keyword

Three articles were used for this experimental approach to test the abovementioned search strategies in the two databases (LISA and ERIC). The three test articles in this study were representative of research reports that graduate students enrolled in a research methods course would be asked to retrieve and read (Chatman, 1999; Lim, 2008, and McKechnie, 2006).

After the experimental searches in the two databases were performed, the search results were analyzed in relation to the main research questions of the study. Issues that may influence the success of effectively searching for and finding a report of research were identified. Likewise, potential stumbling blocks related to successfully identifying and locating reports of research were revealed. The article abstracts were also analyzed further for possible "search" clues that could assist librarians, students, and others to effectively find research reports in the professional literature.

3. Key Findings
3.1. Search Comparison

An experiment to test several searches for research reports in two databases (LISA and ERIC) resulted in a number of noteworthy findings. First, it was discovered that only one of the databases (ERIC via ProQuest) supported the ability for users to search for articles by methodology (*i.e.* interview, focus group, etc.). When attempting to search for research reports by methodology in ERIC, it also became apparent that the methodology filters (or options) were limited. For example, a user could search for research studies that used interviews or focus groups. However, one limitation is that a number of popular and frequently used collection methods were missing from the options (such as content analysis, observation, and surveys).

Second, a comparison of subject and keyword searches revealed a number of different issues. Subject searches in both databases (LISA and ERIC) seemed to be more effective search strategies than keyword searches for some methods. In particular, subject heading searches for "content analysis," "literature review," and "focus group" were effective at locating relevant research reports. Thus, subject heading searches may be one useful search strategy to retrieve reports of research in the literature.

However, subject heading searches also retrieved articles about the process of conducting a particular method. For example, subject heading searches for "interviews" and "surveys" resulted in articles that were not relevant. These were not articles about research using a particular data collection method (*i.e.* using interviews). Instead of an article reporting the findings of a study using interviews, the article was about conducting research interviews.

Finally, keyword searches in the two databases resulted in a high volume of results and many of the articles were not relevant. For instance, a keyword search for "literature review" retrieved any articles in the database that included the words "literature review" in either the abstract or full-text of the article. This example illustrates how keyword searches are not sensitive, retrieve a lot of results, and many of the results are irrelevant. Moreover, this can be very time-consuming for the searcher to evaluate.

To summarize, only one of the databases in the experiment (ERIC via ProQuest) offered the ability to search by a particular research method (and these options were limited). Second, searching for research articles by subject headings or keywords also presented limitations. In conclusion, subject headings may be effective for some methods while keyword searches resulted in numerous and irrelevant articles.

3.2. Research Hooks

What actions can a database searcher take whenever subject headings and keyword searches are not effective search strategies? Given the abovementioned

limitations, the article abstracts for the three test articles were further analyzed for additional insight. Possible searchable words from the abstracts, or "research hooks," that could help librarians, students, researchers, and others with database searching were identified. In particular, terms found in the article abstracts such as "ethnographic," "response rate," and "field notes" could be useful search terms (Chatman, 1999; Lim, 2008, and McKechnie, 2006). These "research hooks" might be one way to leverage database searching.

The concept of "research hooks" refers to words that can help draw out and identify reports of research in the literature. These are complementary search terms to optimize database searching techniques. However, identifying potential "research hooks" requires a knowledge of research methods. This presents a unique opportunity for librarians to play an important role and assist students with constructing effective search strategies. **Table 1** illustrates potential "Research Hooks" and search terms for a number of data collection methods.

Table 1: Potential Research Hooks (*i.e.* search terms to help locate research reports)

Experiments
- Independent / dependent variable
- Hypothesis
- Control group
- Random
- T-test, ANOVA

Surveys
- Questionnaire
- Response Rate
- Pre-test
- Percent, median
- Descriptive research

Interviews
- Ethnographic
- Interview guide
- Probes
- Convenience / snowball

Focus Groups
- Moderator
- Grounded theory

Observation
- Field notes

- Transcription
- Ethnographic

The findings of this experiment and search comparison help build awareness of the factors that influence search results. Research that continues to identify effective search strategies for a fuller range of research methods would be useful. It would also be helpful to evaluate additional databases and to offer recommendations to vendors for improvements.

4. Conclusions

The purpose of this study was to test various search strategies for locating reports of research in the extant literature. An experiment of search strategies in two key databases revealed a number of search limitations and potential barriers to locating reports of research. Specifically, the capability to search by methodology is not always possible. While subject heading searches may be effective at locating some articles by a research method, keyword searches often retrieve too many irrelevant results which can be time-consuming for the searcher evaluate. As a result on this investigation, these preliminary findings help build awareness of the factors that influence search results.

Recommendations for promising search strategies for locating and retrieving reports of research were also highlighted. The concept of "research hooks" was presented as a way for librarians to help students craft more effective search strategies. Research hooks are complementary words to leverage database searching techniques and help identify reports of research in the literature. This recommended search strategy presents an opportunity for librarians to play a critical role in assisting students to construct effective search strategies.

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