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Citation Searching: Search Smarter & Find More

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All in all, citation searching is a wonderful way to build a comprehensive body of knowledge.
At the University of Connecticut, we have been enticing graduate students to join graduate student trainers to learn how to answer the following questions and improve the breadth of their research: Do you need to find articles published outside your primary discipline? What are some seminal articles in your field? Have you ever wanted to know who cited an article you wrote? We are participating in Elsevier's Student Ambassador Program (SAmP) in which graduate students train their peers on "citation searching" research using Scopus and Web of Science, two tremendous citation databases. We are in the fourth semester of these training programs, and they are wildly successful: We have offered more than 30 classes and taught more than 350 students from March 2007 through March 2008.

Chelsea is a Ph.D. candidate in the department of communication science at the University of Connecticut (UConn) and was trained as a librarian; she was one of the first peer trainers in the citation searching program. Stephanie is an electronic resource librarian at the University of Connecticut and is the librarian coordinating the program. Together, we would like to explain what we teach in the classes in the hopes of helping even more researchers perform better searches.

Stephanie's View: The Citation Searching Training Program

SAmP enabled Stephanie to hire Chelsea as a graduate student to train other graduate students. Chelsea and her training partner Dean Chauvin, who is a master's degree candidate in the department of geography, worked closely with Stephanie and other UConn librarians to learn about citation searching and training their colleagues. Chelsea and Dean ran 18 sessions in spring and summer 2007 and taught almost 200 of their peers. Stephanie hired two new graduate students in fall 2007, and those two students have taught 20 classes to more
than 150 fellow students. They have conducted most of these sessions in the library, giving students hands-on time to do their own searching; they have also taught sessions in graduate student labs and at regional campuses other than UConn's main Storrs campus.

One of our doctoral students prepares to teach a citation searching class.

In these sessions, we show two main components to citation searching, including the ability to search for articles that cite a particular article and the ability to search for articles outside the primary field of interest. We teach citation index searching on Thomson's Web of Science as well as Elsevier's Scopus. These are both proprietary databases, available to UConn patrons by virtue of the library's paid subscription; we did not cover the analogous and free Google Scholar (http://scholar.google.com).

Citation searching can show important links between articles. The 1971 *Science* magazine article by Peter D. Eimas, Einar R. Siqueland, et al., titled "Speech Perception in Infants," for example, has nine references at the conclusion of the article. Those references are "backward" citations, as they are the articles that the authors cited in their original paper, and thus they are sources of information that precede the article. Since "Speech Perception in Infants" was published in 1971, it has been mentioned in other articles more than 200 times. Those 200 references are "forward" citations as they represent articles that cite the original 1971 article. This type of article chaining demonstrates that this article was relatively influential—for good or bad—over the past 37 years.

Another useful aspect of citation searching is that it permits you to search for articles that are more broadly related to your topic than those you would find in a subject-specific database such as PsycINFO. For undergraduates and early graduate students in psychology, PsycINFO is an essential resource. However, for students in interdisciplinary majors, such as cognitive science, or for upper-level graduate students, it is equally important to know how the topic of speech perception is considered in broader domains such as medicine, biology, and perhaps even computer science or engineering. Both Scopus and Web of Science permit searching in a wide range of disciplines, including biology, chemistry, computer science, engineering, medicine, psychology, and many more. Eugene Garfield, the father of the citation index, calls this an "association-of-ideas," which is similar to the notion of serendipity and which appeals to many reference librarians, catalogers, and patrons looking for good books.

**Chelsea's View: Citation Searching Facilitates Building a Web of Information**

As librarians, we spend a lot of time looking for information. Citation searching is a very helpful way of finding comprehensive information about topics—especially finding information that is similar to, or offshoots of, an original topic. Searching for information often requires that we be detectives, able to think about the given topic in a number of different ways, allowing us to perform searches that are broad in scope and comprehensive in result. Many times we are looking for information on a given topic that we may be unfamiliar with; in these cases, it may be difficult to come up with synonyms related to our topic, or we may not have a good idea of the context that the topic is set in, which can make it difficult to do a comprehensive search.

Admit it—it can be frustrating sometimes! I've been there, searching for hours for information on an obscure or unfamiliar topic, questioning if there really isn't anything on the topic or if I'm just missing it because I haven't found the right terminology yet. For example, once I spent at least 6 hours searching for articles related to "spokes-character" (it's an advertising term for a "cartoon character that

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sells products," in case you're wondering) in my typical subject databases. I kept coming up with very few results based on the limited terminology I knew to search with. Had I known about citation searching then, I could have saved myself some time and effort: A recent search in Web of Science for the same topic yielded eight hits, but those eight articles also included more than 450 citations. So even though I only got eight hits from my original search, I was able to find much more information by following the citations associated with those eight documents. This shows how using citation searching can alleviate frustration. By following the citations in documents of interest, you can follow a web of information that will provide you with a wide-ranging body of information regardless of your database searching abilities or your level of knowledge about your search topic. In addition, it can save time. Following the chain of articles eliminates some of the guessing about the search terminology and topic area and reduces the number of searches you have to do.

Citation searching is actually quite easy. The nice thing is that you don't need to know a lot of key terminology or search words. All you need to do is find one or two relevant articles and follow the "bread crumbs"—the references associated with documents of interest—to find related articles. Begin your search as you would any in any other database and look at the articles matching your topic, author, title, or date. Plus, in addition to the standard metadata of title, article, and abstract, Web of Science and Scopus records also include a listing of all the cited references within that particular document as well as a listing of all the documents that have cited your specific document since it was published.

It's like finding gold! From one single document you could have access to dozens, possibly even hundreds, of other related documents. The cited references in one document are typically a rich source of information about your original topic. Similarly, those authors who are citing that work (forward citations) are also linking to related information about your topic. Following the cited references and the future citations can provide a web of past and forward citations that is right at your fingertips. In addition, by following both the cited references and the forward citations, you can gain a historical overview of a particular topic, obtaining insight into how that topic has changed throughout time. As a scientist, I am often interested in understanding the history of my research area of interest, computer-mediated communication (CMC), and past research findings will typically inform and guide my current investigation. The citations within the articles provide me with links to the past, while the forward citations allow me to understand how that topic developed after an article's publication.

One of the best ways to start a citation search is to find a seminal article in the topic that interests you. Seminal articles are those articles that offer profound and often new knowledge about a given topic; because they are so influential, they are often highly cited by other authors. Seminal articles are a great way to begin building your web of information because the cited references in the original article will be useful, and it will probably have numerous future documents that have cited it. If you are unsure of a seminal work in your subject area, an easy way to find one is to start with a document that has been highly cited; both Scopus and Web of Science allow you to sort your hit list by the number of times a document has been cited.

Here's an example involving CMC. I searched Scopus for "computer-mediated communication" and sorted the 2,848 results by the number of times an article was cited. The article that landed on top of that pile was "Computer-Mediated Communication: Impersonal, Interpersonal, and Hyperpersonal Interaction" by Joseph B. Walther, published in 1996 in Communication Research. The article itself has 151 cited references, which allowed me to see how Walther's thinking about CMC evolved. In addition, since 1996 this article has been cited by 395 other articles. This is clearly a seminal work in the area of computer-mediated communication. I now have 546 articles that are directly linked to my subject of interest—all from one single article! That is pretty amazing stuff, and it was so easy to do. I didn't have to guess at any other terminology to put into the search engine, and I didn't have to perform numerous searches.
publications are influential for job interviews, tenure and promotions, and grants. Make those publications work even harder for you. Just as you can use the number of times a document has been cited to find seminal works in particular areas, you can also use that function to investigate how many times your articles have been cited by others. You can see how many times the article has been cited, by whom, and in most cases what their affiliation is. Now you can tell a search or grant committee that you’ve not only been published 10 times but that your works have been cited in more than 90 articles by some of the leading authorities in your field. Now that’s the power of information!

As we all know, many databases now allow you to be notified when new articles match your search criteria or when new tables of contents are available for a particular journal. One nifty bonus of Scopus and Web of Science is that you can be alerted to when there are new citations to articles you are interested in (even your own). So if you want to be notified when another article cites yours in Web of Science or Scopus, simply create a citation alert. If an article were central to your research, you might want to set an alert to notify you when a new article cites that article.

Summary

All in all, citation searching is a wonderful way to build a comprehensive body of knowledge. The databases allow you to follow a trail of cited references that weaves a web of information across the boundaries of time and subject limitations. It eliminates your need to know appropriate synonyms or subject-specific lingo in order to perform effective searches that yield inclusive results. Citation searching saves time while also increasing the likelihood that your search results will be appropriate for your needs. Citation searching is not just useful for librarians but for other searchers as well. If you need a comprehensive literature review—whether you’re a librarian, faculty member, student, or scientist—you would benefit greatly from the capabilities of citation searching databases.

The training program for citation searching at the University of Connecticut taught graduate students all these tricks and more. Students who attended our sessions now know how to do broad, interdisciplinary searches after they have searched their primary subject database. They also understand how to “chain” from the original article to the “backward” citations in that article and to the “forward” articles that cited the original. Finally, they see how they can use citation databases to find information about who’s citing their articles, which they can use for job searching and grant proposals, promotion, and tenure. Try it yourself—you’re sure to find something new!

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