On Conducting Literature Searches: Guidelines for Beginning Researchers

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Literature refers to peer-reviewed, archival journal articles, which have gone through a rigorous revision process before being published in serial "magazines" dedicated to different fields. The number of issues published per year varies by journal, as does the number of papers in each issue. The magnitude of articles in the broad literature is extensive and only a few are directly relevant to the work that you are doing. However, it is essential that we locate these articles, read and understand what previous researchers have done so that we can learn from their efforts and advance our own novel work.

In order for a lone researcher, like us, to sift through this vast body of literature, we use search engines that rely on extensive databases containing the article information. Every database has limitations on the years that it covers, the journals that it tracks, etc. That is why it is usually necessary to search in more than one database. The information that databases track include, but are not limited to AUTHOR(S), TITLE, YEAR, JOURNAL, VOLUME, ISSUE, KEYWORDS, and ABSTRACT. The first 6 items are always included in a standard reference cited in a paper so that a researcher has the necessary information to locate that article.

I'll provide you an article or two and some starting keywords to begin your search.   When starting a search, it can be helpful to remember that this is very similar to detective work. Sometimes you get relevant leads for a pertinent article and sometimes the lead is harder to find. It is important to keep searching; strategies you can use include trying other keywords, do forward and background searches on the references in the article(s) you already have, try another database, use the internet to search for other names for your area. Google Scholar is an OK place to start your search and may help you find additional keywords. However, this search is not exhaustive and will not yield sufficient results for our purposes.

At MSU Libraries, I recommend using Web of Science as a preferred database. It is easy and fast to search, MSU allows unlimited logins, is fairly versatile for customizing your search, and has direct links to MSUs online journal access system.   You can access MSUs databases directly via:

http://library.msstate.edu/databaseportal/

Choose 'Engineering" and then 'Web of Science'.   Please feel free to try other databases after trying Web of Science. {ASIDE: My second favorite is Academic Search Premier, which comes up as EBSCO Host. In our field, the ultimate resource is Science Citation Index's SciFinder Scholar. This does require you to download software onto your computer and MSU only has 2 concurrent sessions that it allows for all of campus. I am only able to access this from on campus and have not been able to get on except very early in the morning or later at night.}

Entering the search information in the proper boxes is fairly self explanatory in Web of Science.   One you get the search results, you may need to expand or restrict your search terms to get a viable set of results. If your search yields more than 30 results, you may want to refine your search by a) searching within your current results list, or b) redefining your original search. Once you have a reasonable number of results, start assessing the relevance of each article to your own research. I tend to do this by reading the title and then clicking on that to skim the abstract. If the article is relevant, I click on the "Find It" icon and MSUs online journal interface comes up in a new window to indicate whether we have access to the article or not.   Once I obtain the pdf, I save the article by the first author's last name and year in a folder associated with that search topic. If I am ever unsure from the abstract if the article is truly relevant, I'll skim the full article before saving it. Web of Science also has a Marked List feature, so one can skim through all of the abstracts first, marking and saving only those that are relevant and then obtaining the full article once you have surveyed all of the results. It takes practice and familiarity with the topic before you will be really good at assessing how relevant an article is.

Once you find an article that is very closely related to your own work, you can do forward and backward searches from that article. A forward search checks for any more recent articles that have referenced the original article.   A backward search shows all of the articles that the original article cited. Both of these are useful when determining previous progress in your area.

As you compile relevant articles, reassess their relevance to your own research. Your initial search should result in at least 5 articles (undergrads will yield fewer, but graduate students should strive for a broader survey of the field), but usually not more than 20 are directly relevant.

Please take these five articles and read through them quickly (superficial read). Write up 2 to 4 sentences on each article specifying what was done (1 to 2 sentences) and how it relates to our research (1 to 2 sentences). Make sure to cite the article in proper citation format after each summary sentence. Include the references at the end of the summary document and attach to the email each of the 5 pdf files of the articles summarized.

ADDITIONAL INFORMATION: Journals have impact factors, which are calculated based on the number of times articles in the journal are cited by other papers. This is also used as an indicator of the quality of the work. If you find conflicting results, it is usually safer to rely on the article published in the higher impact journal (note: this isn't a hard and fast rule).