

Writing for Publications - Part One

Literature Review

A literature review is how to present significant context for your work. An important part of this is how you present significant content, what the challenges are, how you recognize disputed thinking, and identifying gaps. Your goal should be to identify three types of papers. First, identify five landmark papers. These are highly cited papers, often thousands of times, and typically published in prestigious journals such as Nature, Science, PNAS, ACS Nano, and so on. These are papers that started and defined the field that you are working in. Second, identify 10 papers which are specific to your field of research. These should be well-cited papers where you can find the subfield that you are working on. Finally, you should look for 15 papers that are very closely related to your field. These are studies that look at very similar systems and use similar techniques to what you are using. These should include recent papers that may not have many citations yet.

How do we use each type of paper in our own research? Let's pretend that you are working in Alzheimer's disease research, and this is the beginning of your paper. In the first paragraph you will typically discuss your landmark papers. You should talk about the general field of Alzheimer's disease in the second paragraph, getting more specific to your field of research, and then you note your hypothesis. In the third paragraph you start citing the papers that are more closely related to your field of research.

Here is a pro tip. A literature review can be very overwhelming because there's so much that you have to do and so much that you have to organize. To make things more simple, start by sort the papers that you find in the appropriate paragraphs of your literature review, one, two or three. Summarize each paper that you read into one or two sentences. Don't mind how rough the text may be at this stage, or the order. Everything will be fixed and organized later.

Finding papers is the most important step in your literature review process. Having a good literature foundation is crucial to be able to write a good review. It is important to choose the right papers and be able to connect the ideas between them. One of the most important steps is actually finding papers to cite. Here are two tools that you can use. First is Google Scholar. This is a public search engine that requires no subscription to use. Second is PubMed. It is an indexing service used in health sciences as part of the National Library of Medicine. There are many indexing services in your area, such as PubMed, that can be more specialized.

Here's a roadmap to follow when you start doing your literature research and writing. You want to narrow down your research topic. You want to word define your topic and then link the keywords that describe the field. You search the literature. You will become familiar with the current knowledge, and finally, you start your literature review.

As an example, let's start with Google Scholar. You open the website and you start searching. With any topic, the words you search make all the difference. For example, if we simply change dementia to Alzheimer's we get dramatically different results. It is impossible to read all of

these papers. However, there are tools to help you to narrow down the number of papers and find the ones that are more relevant to you.

First, you need to define a few keywords which you will use to search the literature. Here we are giving the example of Alzheimer's disease and nutrition. Obviously not all of the results will be relevant. We can so specify the year we want. For instance, if we want only papers published recently we can choose the 2020 option. This will now show only papers published from 2020 until now. Keep in mind that the more filters you put in your search, the less papers you will find. This can be a good thing or a bad thing. Similarly, you can also filter by relevance or by date. By relevance is a lot better to find good articles. However, they could be from decades ago.

Next, you can also check the papers that have cited this article. These will most likely be in a similar area of research to what you have searched, and therefore, might also be relevant to check out.

By clicking on Cited by, you will get all of the published work that has cited this article. This might be useful if you want to see similar research to what you have searched but without the same keywords or terms.

Lastly, another big of Google Scholar is that you can easily and quickly get the citation for a paper that shows up by clicking the quotation marks. There are formatted citations to five major citation styles, MLA, APA, Chicago, Harvard, and Vancouver. If that is not enough, you can also export BibTeX, EndNote, RefMan, and RefWorks to be used with other citation managers.

PubMed is another great way to search and find papers. The biggest downside, however, is that it was originally targeted towards biomedical sciences and might not be a good tool for other areas of research. Although, you might be surprised at what you can find. It is also more specific than Google Scholar, which is why you can start with Google Scholar and then go to PubMed for more specific papers.

The PubMed search engine works very similarly to Google Scholar's, with the exception of using an advanced search option. Here, we have searched the exact terms as we did with Google scholar, Alzheimer's disease and nutrition, and then press Search.

Right from the start we can and see how this differs drastically from Google Scholar. Comparatively, the results are much smaller. From this number we can make it even smaller by filtering out exactly what we want to find. For example, we can filter out by the article type, if we want books, clinical trials, meta-analysis, systematic reviews, et cetera. This is a great tool to have when you know exactly what you are looking for.

We can also filter by publication date, one year, five years, 10 years, or a custom range. This is where you can choose the exact range you would like to see.

You also get additional filters that allow you to dive even deeper into the types of study, the language that was published, and many more criteria that you can play with.

The search engine differs a little from Google Scholar. There is an Advanced search option, which allows you to define your terms a little better. For example, we searched Alzheimer's disease and nutrition. We got 3,904 results and an exclamation mark. If we click on the arrow beside that exclamation mark it shows us that for the Alzheimer's disease it also searched for many other terms related to Alzheimer's and disease, and the same thing for nutrition.

We can also search for these terms in the title of the articles. Therefore we want both Alzheimer's disease and nutrition to be in the title of the papers that is searched for. This is what we get with those specific title searches, only 51 results. This is a good thing if we wanted only papers with those words in the title, but bad if we want papers that covered both topics. Titles can be unique and not necessarily have both words in them, even though they might cover both topics.

So you may have a certain preference towards using Google Scholar versus more specialized indexing services such as PubMed. Here are the advantages and disadvantages of both.

Google Scholar is a very reliable source, while in more specialized indexing services like PubMed, you might have more options to search. Some of the disadvantages is that some of the indexing services give you a very narrow field of your research. Sometimes you may not find papers that you're looking for, which may result in some sort of bias towards older literature.

Google Scholar also has some disadvantages because it just gives you a large number of findings. And the user interface is very complex. It is also very difficult to limit the number of papers to be satisfied.

Recognizing disputed thought

By reading the most recent published papers you'll be able to get an idea of the current challenges in your area of study and recognize disputed thinking that might be shared among them. You can easily see what authors think by looking at specific sections in the paper, such as towards the end of the discussion section, or even conclusion, where authors may have statements such as the future directions are or further studies should. This is a good place to start if you are still not sure what the challenges in your area of study are.

Connected papers provide a way to see similar papers in the field once you have selected a paper to use reference. So take the paper that is most similar to your topic of interest and copy the title into the search box.

Once you have searched and pressed Build a graph you can explore and build graphs for papers that you find. This allows you to have a visual understanding of the trends, popular works, and dynamics of the field you're interested in.

Each paper is arranged according to similarity. Similar papers have strong connecting lines and cluster together, whereas not so similar papers are farther apart.

Try using the Prior works view to find important ancestor works in your field of interest.

And finally, use the Derivative works view. Here you can find literature reviews of the field as well as recently published papers that followed your input paper.