As part of their research program, many students are instructed to perform a literature review, without always understanding what a literature review is.

Most are aware that it is a process of gathering information from other sources and documenting it, but few have any idea of how to evaluate the information, or how to present it.

A literature review can be a precursor to the introduction of a research paper, or it can be an entire paper in itself, acting as the first stage of large research projects and allowing the supervisor to ascertain that the student is on the correct path.

A literature review is a critical and in depth evaluation of previous research. It is a summary and synopsis of a particular area of research, allowing anybody reading the paper to establish why you are pursuing this particular research. A good literature review expands on the reasons behind selecting a particular research question.

What is a NOT a Literature Review?
A literature review is not simply a chronological catalog of all your sources, but an evaluation. It pulls the previous research together, and explains how it connects to the research proposed by the current paper. All sides of an argument must be clearly explained, to avoid bias, and areas of agreement and disagreement should be highlighted.

A literature review is likewise not a collection of quotes and paraphrasing from other sources. A good literature review should critically evaluate the quality and findings of the research.

A good literature review should avoid the temptation of stressing the importance of a particular research program. The fact that a researcher is undertaking the research program speaks for its importance, and an educated reader may well be insulted that they are not allowed to judge the importance for themselves. They want to be re-assured that it is a serious paper, not a pseudo-scientific [1] sales advertisement.

Whilst some literature reviews can be presented in a chronological order, this is best avoided.

For example, a review of Victorian Age Physics may certainly present J.J. Thomson’s famous experiments [2] in a chronological order. Otherwise, this is usually perceived as being a little lazy, and it is better to organize the review around ideas and individual points.

As a general rule, especially for a longer review, each paragraph should address one point, and present and evaluate all of the available evidence, from all possible differing points of view.

**Conducting a Literature Review**

Evaluating the credibility of sources is one of the most difficult aspects of a literature review, especially with the ease of finding information on the internet.

The only real way to evaluate is through experience, but there are luckily a few tricks for evaluating information quickly and accurately.

There is such a thing as too much information. Google does not distinguish or judge the quality of results, only how search engine friendly a paper is. This is why it is still good practice to begin research in an academic library. Any journals found there can be regarded as safe and credible.

The next stage is to use the internet, and this is where the difficulties begin. It’s challenging to judge the credibility of an online paper. It can be helpful to structure your internet research as if it were conducted on paper. Bookmark papers, which may be relevant, in one folder and make another subfolder for a ‘shortlist.’

- The easiest way is to scan the work, using the abstract [3] and introduction [4] as guides. This helps to eliminate the non-relevant work and also some of the lower quality research. If it sets off alarm bells, there may be something wrong, and the paper is probably of a low quality. But be very careful not to fall into the trap of rejecting research just because it conflicts with your hypothesis [5]. Failure to do this will completely invalidate the literature review and potentially undermine the research project. Any
research that may be relevant should be moved to the shortlist folder.

- The next stage is to critically evaluate the paper and decide if the research is sufficient quality. Think about it this way: the temptation is to try to include as many sources as possible, and assume that a long bibliography [6] equates to a good paper. A smaller number of quality sources is far preferable than a long but irrelevant list.

- Check into the credentials of any source which you rely on heavily for the literature review. The reputation of the University or organization is a factor, as is the experience of the researcher. If their name keeps cropping up, and they have written many papers, the source is probably OK.

- Look for agreements. Good research should have been replicated by other independent researchers, with similar results, showing that the information is fairly safe to use. If the process is proving to be difficult (and in some fields like medicine and environmental research, there is a lot of poor science [7]) do not be afraid to ask a supervisor for advice. They should know some trustworthy sources to look at. It may be a little extra work for them, but there will be even more work if they have to tear apart a review because it is built on shaky evidence.

Conducting a good literature review takes patience and is a matter of practice. Take solace that even the best scientists can fall into the trap of using poor evidence. However, it’s all part of the scientific process [8]. If your research program is well constructed, a less-than-perfect literature review will not affect the results.

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