# **Identifying Sources**

Choosing suitable sources for any piece of scientific writing – especially a scholarly one, such as a lab report or essay – is extremely important. This is because these sources will help add relevant detail to your writing, provide more information for interested readers, and allow you to share evidence that supports the argument you are developing. The credibility of your writing will directly relate to the quality of the sources you cite, which is why it is so important that you are able to identify the different types before you cite them (**primary, secondary** and **tertiary**).

**Primary Sources**

As a rule of thumb, you can think of primary sources as being ‘primary’ because the information in them is coming to you directly from the person/people responsible for it (i.e. it is ‘primary’ because nobody else has adapted the message intended by the original author(s)).

Because the information in primary sources comes straight from the person/people who created it, there is less concern about how another author might have interpreted or misinterpreted the source. Thus, employing primary sources in scholarly writing is generally encouraged.

That being said, how we think about primary sources varies by discipline.

* In STEM disciplines, primary sources detail the results and interpretations of original research and experiments (and are typically written in IMRaD report structure).
* In the Humanities, primary sources are original documents, texts, and materials that are used for analysis and evidence. These might include historical documents, poems, novels, film, newspaper articles, or other archival or multimedia materials. As such, in the Arts, many scholarly articles are in fact “secondary sources” (which we discuss next) that build from non-scholarly primary sources.

**Secondary Sources**

Secondary sources are peer-reviewed texts that build from primary sources, adding layers of synthesis, analysis, and interpretation. As such, they are a step removed from the primary source of evidence or information. How secondary sources function in the scholarly conversation again varies by discipline.

* In STEM disciplines, secondary sources compile primary sources. For example, you could perform a literature search of all primary journal articles published in the past two years on the topic of ‘tropical fish evolution’ and then summarize the latest knowledge on this topic into one article. You would not have performed any of primary research, but have summarized it into a secondary source derived from it.
* Such “review articles” are common in STEM journals, and are often a great way to see the latest developments around a specific topic. However, you must remember that the author(s) of these secondary sources have summarized the primary material (and therefore synthesized and interpreted it), which means that the authors ask readers to also trust their interpretations of the primary sources. For scholars, that can be a big ask.
* Because secondary sources must cite all primary sources that they rely on (including providing a references list), readers have the chance to look back to the original sources to double check the interpretations and accuracy of the secondary source. Using secondary sources in your writing is perfectly OK – so long as you double check any significant claims against the original primary sources. It is your job as a scholar to be assured of the accuracy and credibility of your sources.
* In the Humanities many articles are secondary sources because they work with non-expert primary sources. To reflect the scholarly conversation about a topic in such disciplines, therefore, requires authors to cite frequently from secondary sources. This is markedly different from STEM disciplines, which typically prioritize primary sources.

**Tertiary Sources**

Generally, tertiary sources are not relied on in scholarly communication, in part because they are often not peer-reviewed, but also because of their distance from the sites of inquiry and scholarly conversation.

* Tertiary sources typically only report research/findings, and do not add to them, therefore they aren't typically used as a source in STEM research writing.
* Tertiary sources are compiled from the primary and secondary literature, and are often written in slightly less scholarly terms to appeal to an interested but often non-specialist audience. For example, most encyclopedias and textbooks use information from primary and secondary sources but don’t generally provide references to these sources, making it difficult to check for accuracy or to consult these to add more specific detail to the points the tertiary source makes.
* While tertiary sources, when published by academic publishers, are typically written by subject-matter experts, and can provide a very useful introduction for those new to a field, they are less credible as a source because they rely on the reader accepting the content without double-checking claims against the primary and secondary sources.
* Generally, avoid using tertiary sources in your writing; rather, focus on primary and secondary sources, because they are where the more focused and reliable scholarly conversation happens.

It is also important to understand that although there are types of sources (such as journal articles, review articles, blogs etc.) that *typically* fall into the primary, secondary, tertiary classification system, it is **not** the format that makes them one of these types; it is purely the link between the author(s) and the material itself, whether the material has been peer-reviewed, and how specific the information in it is.

**Expert vs. Non-expert Sources**

Above we noted how the process of peer review produces highly rigorous sources. Such works are sometimes called “expert” texts because they reflect the expertise of not just the author, but that of the reviewers who approved its publication as well. However, this does not mean that other sources are not valuable sources of knowledge that can inform the scholarly conversation.

* There are “non-expert” sources that can still support and inform the academic conversation in crucial ways. For instance, documenting the experiences of a midwife in an interview can add qualitative contexts and insights into a scholar’s statistical analysis of impacts of midwifery on postnatal outcomes. The interview would not be peer-reviewed and perhaps not even published in a scholarly journal (or if so, it would be in a separate section that demarcates it as not peer-reviewed); therefore, it would not be considered an expert source. Nonetheless, the midwife’s experience is its own source of specialized insight that is valuable and important to scholarly knowledge building. As such, the interview would function as a non-expert primary source. There are many non-expert and popular sources like this that may inform scholarly discourse by providing perspectives and contexts.
* Non-expert sources will usually play a secondary role to scholarly sources in an argument because of their non-expert status. Typically, scholarly writing assumes that citations reflect expert, scholarly, peer-reviewed sources, unless told otherwise. So, it is important to frame non-expert sources within your writing so that the reader knows what they are and can weight their contributions to the argument differently. Generally, scholars will note the source or publication type (“in an interview” or “in a blog post”) or the person’s title (“as one midwife says”) to help flag the non-expert status of the source. Such framing of the source helps readers see their relevance as non-expert specialist insights to the scholarly conversation.

**Why Does This Matter?**

Understanding the different ways knowledge is made and how it is shared can help us navigate the roles that a particular piece of scholarly writing takes as an addition to, or a summary of, the conversation. It also allows us to read, interpret, synthesize, and engage with this conversation from various vantage points and degrees of detail. Often, it is useful to start with a tertiary source from an expert voice we trust, to get a general sense of how the scholarly research has developed in the past, before jumping into primary and secondary sources that are more cutting edge and relevant to your own research.

As we’ve seen, different disciplines produce and engage with primary and secondary sources differently. In the Humanities, most of the scholarly discourse happens in and between secondary sources, and so your work should do the same. On the other hand, in STEM disciplines, scholars attend primarily to primary sources, with secondary sources providing added synthesis and review. In light of this, when looking for sources, you should first analyze how the disciplinary knowledge is being made and shared (and what task is required of you in response to it). Then, modulate your own research and writing accordingly in relation to these sources.

**Further reading:**

* [UBC Library’s guide on scholarly communication](http://wiki.ubc.ca/Identifying_Different_Types_of_Sources/Introduction)
* [University of Wisconsin’s guide on primary, secondary and tertiary sources](https://libguides.uwp.edu/c.php?g=439212&p=3983521)