**Identifying Different Types of Sources**

**Introduction**

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 justify any arguments you make by providing evidence. 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**

You can think of primary sources as being ‘primary’ because the information in them is coming to you direct 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)).

Typically, in science, these sources are journal articles that detail the results and interpretations of original scientific research. Because an article must be ‘peer-reviewed’ before appearing in one of these journals, you have a fair sense that it is a high-quality contribution to scientific thinking in the topic it addresses; after all, if the information did not move theory forward in some way, or was poorly put together, it would be unlikely to make it past the eyes of reviewers and into the journal.

Because the information in primary sources comes straight from the person/people who discovered it, you don’t need to worry that the message has been misinterpreted by anyone else. This is the other main reason why citing primary sources in your writing is generally encouraged over other types.

**Secondary Sources**

These sources are compiled solely from primary sources but the key difference is that the author(s) do not need to have conducted the research reported in these 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 this research, but because it came from primary sources, your summary would be a secondary one.

Such ‘review’ articles are common in science journals, and are often a great way of reading the latest developments in a specific topic. However, you must remember that the author(s) of these secondary sources have summarized the primary material (**and therefore interpreted it**), which means you are taking the accuracy of this summary on trust.

Because it is a requirement that all the primary sources are cited and provided in an accompanying references list, you do have the chance to look these original articles up yourself to ensure they have been accurately summarized. Using secondary sources in your writing is perfectly OK – so long as you take this important step.

**Tertiary Sources**

These sources are compiled from the primary and secondary literature, and are often written in slightly less scientific terms to appeal to an interested but lay audience. For example, most textbooks use information from primary and secondary sources but don’t generally provide references to these sources, so it is not possible to check for the accuracy (or to consult these to add more specific detail to the points they make).

**Why Does This Matter?**

Although it is not quite as simple as saying that primary sources are *always* better than secondary sources, which are *always* better than tertiary sources, you should try to use primary sources as much as possible for the reasons outlined above (ensuring accuracy and quality of material).

However, it is important to note that the quality of material does not *always* depend on whether it is a primary, secondary, or tertiary source. For example, a science blog might contain totally inaccurate, biased and misleading content, but it might also contain high-quality original research that has been peer-reviewed.

In all cases, it is most important to think of your audience, and to ensure that any material you cite is accurate and tailored to the level of interest they will have in your writing (for example, it would be wise to find specific primary sources detailing complex nanoscience experiments if that is what you are writing about, but you would need to adapt the complexity of this material hugely if you were addressing the general public with a poster at a science fair).

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.

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**Video Resource**

For a recap and for some extra information about identifying different types of sources for use in your writing, please watch Grammar Squirrel’s [video](https://www.youtube.com/watch?v=0207D87De7I) on the UBC Science Writing [YouTube Channel](https://www.youtube.com/channel/UCvynvmsn_NTlS9lc8cH-OFw). Included in this are two questions that can be applied to any source to help you decide whether it is a primary, secondary or tertiary source.

We then suggest you complete the quick quiz (below) to see whether you have mastered some of the important skills relating to identifying different types of sources.

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**Identifying Different Sources Quick Quiz**

1. Decide whether the following five sources are primary, secondary, or tertiary (five marks):

**a)** A newspaper article about the potential effects of climate change in BC featuring summaries of information from many other sources

**b)** A M.Sc. dissertation in which climate change effects on native plants were studied

**c)** A review of current knowledge about the effects of climate change that appeared in a high-profile journal

**d)** A textbook that covers climate change and other bio-geographical concepts

**e)** A blog post from the original author of some research in climate change that basically reprints the journal article that included this research

1. You are writing an article about the effects of climate change in BC for the local newspaper. Rank the types of sources you should use to **find** the most accurate information (from most accurate to least accurate, three marks).

Most =

Intermediate =

Least =

1. Choose the **most appropriate word** to complete the sentences below (two marks):

It is **never/sometimes/always** acceptable to use tertiary sources in scientific writing. Secondary sources will **always/generally** be more reliable than tertiary sources in ensuring the original source of the material is correctly interpreted.

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**Quick Quiz Answer Key**

To check your answers and see whether you are now a wizard at identifying different types of sources, access the answer key **below.**

1. Decide whether the following five sources are primary, secondary, or tertiary (five marks):

**a)** A newspaper article about the potential effects of climate change in BC featuring summaries of information from many other sources **TERTIARY**

**b)** A M.Sc. dissertation in which climate change effects on native plants were studied **PRIMARY**

**c)** A review of current knowledge about the effects of climate change that appeared in a high-profile journal **SECONDARY**

**d)** A textbook that covers climate change and other bio-geographical concepts **SECONDARY or TERTIARY [PROBABLY TERTIARY]**

**e)** A blog post from the author of some research in climate change that basically reprints the journal article that included this research **PRIMARY**

1. You are writing an article about the effects of climate change in BC for the local newspaper. Rank the types of sources you should use to **find** the most accurate information (from most accurate to least accurate, three marks).

**Most = PRIMARY**

**Intermediate = SECONDARY**

**Least = TERTIARY**

**The message here is that it doesn’t matter which audience you are approaching with your work; primary sources are still generally more reliable as source content than secondary, which are still generally more reliable than tertiary sources.**

1. Choose the **most appropriate word** to complete the sentences below (two marks):

It is **~~never/~~sometimes~~/always~~** acceptable to use tertiary sources in scientific writing. Secondary sources will **~~always/~~generally** be more reliable than tertiary sources in ensuring the original source of the material is correctly interpreted.