



Researching a Scientific Topic: Finding and Using Sources

Now that you have your topic, it's time to go to the library and research it. There are two different kinds of information you will find: **primary sources** and **secondary sources**, defined below. Use secondary sources to familiarize yourself with the topic and for general, common knowledge about your subject. Use primary sources to confirm the information found in secondary sources, and to cite specific studies on the information you are using. Remember that secondary sources are like the game Telephone; the farther information travels the more distorted it becomes. Always corroborate your information by looking it up in the primary source.

Kinds of Information

◆ Specific Information: Primary Sources

Primary sources are articles or books written by the researchers who have carried out their own work. These are usually in the form of journal articles, although they can be books. Most primary sources are peer reviewed, meaning the article has been read and approved by a panel of experts in the field.

These sources can be found in:

- ⊕ The periodicals
- ⊕ References of secondary sources
- ⊕ Online Databases, such as Cambridge Science Abstracts

They can be used for:

- ⊕ Specific data from studies
- ⊕ Checking the general info
- ⊕ Supporting the general info

◆ General Information: Secondary Sources

A secondary source is one that obtains its information from primary or other secondary sources and uses that info to inform the general public. Some secondary sources are:

- ⊕ Non-fiction books
- ⊕ Encyclopedias
- ⊕ Popular magazine articles, such as Science News
- ⊕ Newspaper articles
- ⊕ Websites

These sources can be found in:

- ⊕ The library catalog
- ⊕ The periodicals
- ⊕ Databases, such as Proquest and Ebscohost
- ⊕ Internet search engines, such as Google

They can be used for:

- ⊕ Definition of terms and answers to general questions
- ⊕ Better understanding of the topic
- ⊕ Basic facts
- ⊕ Life history
- ⊕ Natural history



Using Your Sources

Use your sources to learn more about your topic and to support subtopics of the outline of your paper.

Plagiarism:

Using another author's ideas or words without proper acknowledgment is plagiarism. Plagiarism is an academic crime. Colleges expel or dock credit from students caught plagiarizing. Whether it is intentional or unintentional, you are plagiarizing if you:

- 1) use another person's words without putting them in quotation marks,
- 2) use another person's ideas without citing them as a source,
- 3) borrow a fact from your source without citing it, or
- 4) reprint any tables, illustrations, or charts without documenting the source.

You do not need to cite when you:

- 1) use common knowledge (such as the name of the president or the date of WWI),
- 2) find the information undocumented in more than four sources, or
- 3) write your own ideas or experiences.

Avoiding Plagiarism: It will be easy for you to avoid plagiarism if you use the proper precautions. Always, credit your source by using standard citation methods (such as MLA or APA) and practice paraphrasing.

Paraphrasing:

When you use evidence or ideas from a source, but do not directly quote the original, you are paraphrasing. Paraphrasing is important because it forces you to put information and ideas into your own words. The process of paraphrasing demonstrates a deeper understanding of the material because it requires the writer to synthesize the information in the original source.

Example:

Original Source

Studies of moose-vegetation dynamics in other boreal forest systems indicate that browsing-induced reduction of canopy height and closure by as little as 12% to 50% results in higher light intensity, lower humidity, warmer and drier soils, and lower primary productivity of tree species (Bonan 1992, Kielland and Bryant 1998). Over the long term, soil chemistry can become altered through reductions in litter quality and rate of litter decomposition, causing a buildup of soil carbon that feeds from the bottom up to exacerbate the reduction in ecosystem productivity (Pastor et al. 1993).

--Taken from: Schmitz, O. J., Johnston, K. M., Post, E., Burns, C. E. (2003, December). Ecosystem Responses to Global Climate Change: Moving Beyond Color Mapping. *Bioscience*. 53 (12). 1199-1206.

Paraphrase

Moose can impact boreal ecosystem productivity even with minimal browsing. When browsing caused a 12% to 50% decrease in canopy height and forest closure, the result was lower reproduction of tree species, drier and warmer soils, greater light intensity, and less humidity (Schmitz et al. 2003). The long term effect is most prevalent in soil quality. Moose cause a reduction in the quality of litter and the rate at which it decomposes, thereby altering soil chemistry and increasing the amount of carbon in the soil. This furthers the reduction in overall productivity of a boreal ecosystem.

Strategies for Paraphrasing: Paraphrasing is putting the source's information into your own words. The following strategies can make the process more comfortable:

- 1) Imagine you are explaining the idea to a friend.
- 2) Avoid using the author's sentence structure, wording, or phrases.
- 3) Resist the desire to look at the original source when paraphrasing.



Created by the Evergreen Writing Center
Library 3407 ♦ ext. 6420