

Background Research by Reviewing Literature

Honors Research Project 2010-2011

A scientific literature review is a critical analysis of research that is conducted on a particular topic or question in the field of science and reported in a specific manner within a scientific journal. The fact that an article comes from a “scientific journal” is important – articles in such journals receive “peer-reviewing.” Conducting scientific literature reviews help you design your own scientific study by requiring you to:

- Determine the research and methods previously conducted on the topic.
- Discover what remains to be learned on the topic.
- Highlight mistakes, difficulties, or ethical issues encountered by others in order to save time and money with your own study.
- Identify parties with vested interest in this area of study including research competitors and potential partners.
- Clearly define parameters for your own scientific study.

Scientific Sources:

Peer-reviewed journal articles are always the best source of information to inform the researcher how to design their investigation. Scientific journals are a form of communication that will not publish a scientific study until fellow scientists have scrutinized it. Peer reviewed journal articles are considered more scientifically valid than other sources of information, especially sources from the internet.

- Example: Science, Nature, Molecular Ecology...
- Non-examples: National Geographic, Discover, Field and Stream...

Primary sources are first-hand accounts of events, such as diaries, patient charts, letters, eyewitness accounts, professional (peer reviewed) journals, autobiographies, research reports, and information collected by interviews and questionnaires. **Secondary sources** are second-hand accounts. These include: histories, biographies, textbooks, and materials that give secondary analysis of the data found in primary records. *Do not rely solely on secondary sources.* If you find information in a secondary source, try to obtain the primary source from which the information was initially obtained. This allows you to check for errors. Community professionals in the field of interest are also good sources of information and referrals for relevant professional publications and information.

After finding a first-hand account of the research (in the form of a research report), you must judge the quality of the article itself. Do you want to use this article as a source of information? When doing this, consider these questions:

1. **Abstract.** Is it clear and concise?
2. **Problem Statement.** What is the researcher investigating? Is it clearly defined?
3. **Definition of Concepts.** Are ideas and concepts clearly outlined? To what extent does the introduction inform the reader of pertinent aspects of the study?
4. **Hypotheses.** Is the hypothesis clearly stated and rationale given?
5. **Theories and Assumptions.** What theories and assumptions are the study based upon? Are they clearly defined?
6. **Research Methods, Materials and Experimental Design.** Do the sampling methods allow the author to generalize the findings? Were the methods of data collection ethical and proper? Are appropriate charts and graphs provided for clear communication of the results? Are the appropriate statistics used? How is missing data handled?
7. **Conclusions.** Is the data interpreted in a manner that supports or rejects the hypothesis? Does the author compare results to the findings of others? Are the strengths and weaknesses of the study discussed? Are specific recommendations for further research given? What still needs to be discovered?

8. **Author.** Is the author qualified to conduct the research? What organization does the author represent and how might this influence their work?
9. **Writing.** Was the writing clear and concise? Was information properly cited and referenced?

WHAT YOU NEED TO DO FOR THIS ASSIGNMENT:

Identify all current work from pertinent publications. The web may be a good place to start, however for this assignment you must obtain your three primary-source research articles from OSU's Valley Library. The Valley Library subscribes to hundreds of scientific journals. Full electronic versions of some of these journals can be accessed from within the library itself. Generally, a trip to the Valley Library can save you much time during the research project. You, as an individual, must find three different first-hand research articles FROM PRIMARY SOURCES (see below). YOU CANNOT USE THE SAME ARTICLES AS OTHER GROUP MEMBERS. You cannot use secondary sources to satisfy this assignment (see above). If you encounter difficulty in finding articles, come see your instructor for suggestions. After reading your articles (or as much as you can – there may be portions of them you do not understand – this is okay), you are to summarize the relevance of the articles to your research by doing the following FOR EACH ARTICLE.

1. Provide a brief but complete summary of the article (i.e. what was done and why).
2. List three ways that this article might be useful to you. (If you don't think your article will be useful to you in three ways, keep looking for more articles . . .).
3. Provide a hardcopy of your article.

Please note – while you only need to report on three articles for this assignment, YOU WILL LIKELY NEED MORE THAN THIS TO FULLY ANSWER QUESTIONS YOU HAVE ABOUT YOUR TOPIC. Also, secondary sources are also okay to utilize for the general project. However secondary sources SHOULD NOT be used to satisfy this assignment.