

How to Read and Review a Scientific Journal Article: Writing Summaries and Critiques

Definition of Genre

Summaries and critiques are two ways to write a review of a scientific journal article. Both types of writing ask you first to read and understand an article from the primary literature about your topic. The summary involves briefly but accurately stating the key points of the article for a reader who has not read the original article. The critique begins by summarizing the article and then analyzes and evaluates the author's research. Summaries and critiques help you learn to synthesize information from different sources and are usually limited to two pages maximum.

Actions to Take

1. Skim the article without taking notes:

- Read the abstract. The abstract will tell you the major findings of the article and why they matter.
- Read first for the “big picture.”
- Note any terms or techniques you need to define.
- Jot down any questions or parts you don't understand.
- If you are unfamiliar with any of the key concepts in the article, look them up in a textbook.

2. Re-read the article more carefully:

- Pay close attention to the “Materials and Methods” (please note that in some journals this section is at the very end of the paper) and “Results” sections.
- Ask yourself questions about the study, such as:
 - Was the study repeated?
 - What was the sample size? Is this representative of the larger population?
 - What variables were held constant? Was there a control?
 - What factors might affect the outcome?

3. Read the “Materials and Methods” and “Results” sections multiple times:

- Carefully examine the graphs, tables, and diagrams.
- Try to interpret the data first before reading the captions and details.
- Make sure you understand the article fully.

4. Before you begin the first draft of your summary:

- Try to describe the article in your own words first.
- Try to distill the article down to its “scientific essence.”
- Include all the key points and be accurate.
- A reader who has not read the original article should be able to understand your summary.
- Example of a well-written summary:

The egg capsules of the marine snails Nucella lamellosa and N. lima protect developing embryos against low-salinity stress, even though the solute concentration within the capsules falls to near that of the surrounding water within about 1 h.

5. Write a draft of your summary:

- Don't look at the article while writing, to make it easier to put the information in your own words and avoid unintentional plagiarism.
- Refer back to the article later for details and facts.
- Ask yourself questions as you write:
 - What is the purpose of the study? What questions were asked?
 - How did the study address these questions?
 - What assumptions did the author make?
 - What were the major findings?
 - What surprised you or struck you as interesting?
 - What questions are still unanswered?

Format

- A complete citation of the article goes at the top of the page, below your heading.
- Don't skip a line between the citation and the start of the essay.
- Indent the first line of the essay.
- Be concise and eliminate superfluous information.

Organization

- The introductory paragraph summarizes the background information and purpose of the research (specific questions the study researched).
- Then, explain the methods that were used to investigate the research questions (use past tense).
- Mention the major results of the study (use past tense).
- State what the author of the study learned.

Critique: A Critical Review and Assessment of the Article

- Include a summary as well as your own analysis and evaluation of the article.
- Know the article thoroughly.
- Do not include personal opinions.
- Be sure to distinguish your thoughts from the author's words.
- Focus on the positive aspects and what the author(s) of the study learned.
- Note limitations of the study at the end of the essay:
 - Do the data and conclusions contradict each other?
 - Is there sufficient data to support the author's generalizations?
 - What questions remain unanswered?
 - How could future studies be improved?

This handout is condensed from information published in Pechenik, Jan A. "Writing Summaries and Critiques." *A Short Guide to Writing about Biology*. Ed. Rebecca Gilpin. 6th ed. New York: Pearson, 2007. 130-138. Print.

Helpful Links:

- How to read a scientific paper (biology):
<http://www.biochem.arizona.edu/classes/bioc568/papers.htm>
- Finding and reviewing appropriate scientific articles. This site will help you select up-to-date and relevant articles for your review (biology):
<http://www.stanford.edu/~siegelr/readingsci.htm>