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Tips for Reading Scientific Journal Articles

Scientific journal articles highlight research conducted by experts and therefore, they are the basis for many academic assignments. These articles are complex, so it is important to allocate an adequate amount of time to read them. This handout will explain the structure of scientific journal articles and includes tips on how to read, record, and comprehend the content.

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Article Structure

Although an author may combine or move the sections in an article around, scientific journal articles generally have the same structure:

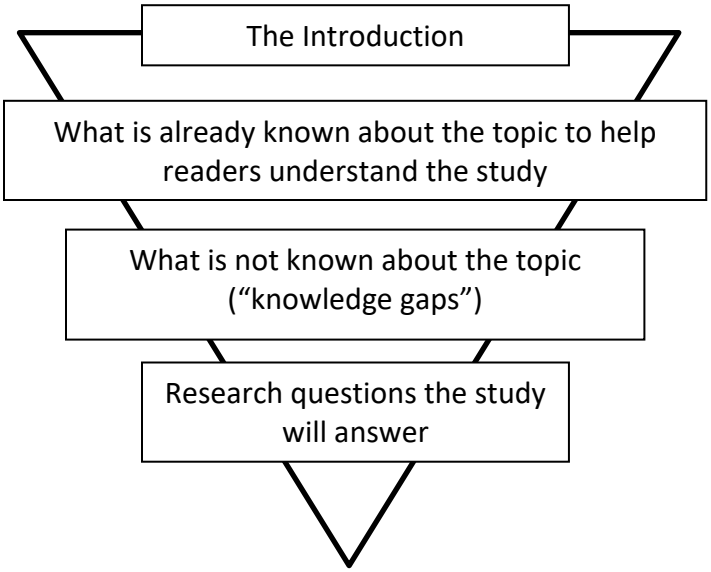
1. Abstract
2. Introduction
3. Methods
4. Results
5. Discussion
6. Conclusion

First, a reader will encounter the **abstract**, which provides an overview of the article. The abstract will cover the following questions:

- Why was the study done?
- How was the study done?
- What did the study find?

When initially identifying sources for an academic assignment, it can be very helpful to read an abstract to determine if the article addresses the content needed.

The **introduction** section comes next and begins with broad content before narrowing down to the specific research questions that the study will answer. It follows the inverted triangle pattern pictured below.



After the introduction, there is a section for the methodology that was used during the study to answer the research questions. The **methods** section is often extremely detailed and one of the most difficult parts to read because it includes complex terminology. Because of this, some authors may list the methods section at the very end of the article.

The **results** and **discussion** sections follow the methods section. The results section provides specific findings from the study and refers to figures and tables displayed in the article. It is not until the discussion section that the study's findings are put into context using references to other academic works. The discussion section also identifies how the results answer the research questions and identifies the conclusions that can be drawn from the study. The **conclusion** section summarizes the research and explains its significance. Some articles may combine the results, discussion, and conclusion sections.

Reading the Article

While it is useful to skim an article in the order in which it is written during the first reading, the reader should avoid spending too much time on any one section. The methods section is

often quite detailed because it can be used as a guide to replicate the study. Instead, the article's sections can be read in the following order:

1. **Read the abstract.**
   The abstract will let readers know if the article has useful information for their assignment.

2. **Read the last paragraph of the introduction.**
   The last paragraph of the introduction usually states what research questions are going to be answered in the article.
   Note: If it is the first time that the reader is being introduced to a topic, it may a good idea to read the entire introduction right after the abstract.
3. **Skim the remaining sections, including the figures and tables.**
   The study's key findings are shown in its figures and tables. Skimming the article allows readers to pick up on where important information is located. Words and phrases such as "surprisingly," "compared to previous work," and "we propose" are all indicators that a main point is about to be discussed.
4. **Read the results and discussion.**
   The results and discussion sections explain what was learned from the study, and they discuss the findings in relation to previous studies. They also clarify the figures.
5. **Read the conclusion.**
   The conclusion recaps the study's discoveries and importance.
6. **Read the rest of the introduction.**
   The background in the introduction is not as important once readers are familiar with the topic, so it does not have to be read first.
7. **Read the methods.**
   The methods section is primarily used for recreating the experiment.

Taking Notes

Taking notes is important so that readers do not waste time rereading articles. This can be done in numerous ways, and people often use a variety of methods when reading. A few notetaking styles are explained below:

1. Highlighted and Annotated Notes

One way to take notes while reading an article is to highlight important information and write annotated notes in the margins of the paper. This method helps readers generate questions as they read.

2. Annotated Bibliography
   With an annotated bibliography, notes are written below the Works Cited entry of their respective article. This makes it easy to identify from which source a note came. This method can also support active reading, but it is important to write down the page or paragraph from which each note was taken. Please refer to the ACE Annotated Bibliography handout to view an example.

Below is a list of questions that a reader should consider when taking notes on scientific journal articles:

- How credible is this source? In other words, what are the author's/publication's credentials?
- What are the specific research questions being addressed?
- Is the reader recording and explaining all technical or confusing terms in their notes?
- Could the experiment have been done differently or more effectively?
- What specifically did the study discover?
- Why are the findings important?
- Is evidence provided to back up the results?
- How do the results compare to the findings from other scientific papers? (if applicable)
- How did the author interpret the results? Could they have been interpreted differently?
- Are there news articles that explain the scientific journal article's findings in terms that a nonexpert would more easily understand?
- How do the study's findings support the reader's assignment?

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