



How to Read a Scientific Article

Being able to read and comprehend a scientific article is a valuable skill to develop. No matter the field you are entering, there will be research in your field that will come in the form of scientific articles.

Initial Overview

When you first get the article, skim over it and identify the structure. Look for visuals to cue you into the subject of the article.

Pro Tip: Studying a figure for a few moments is like skipping to the last page of a book. Knowing what the results of the experiment are will clue you in to what you need to pay attention to as you read through the whole article.

Most journals use the IMRD structure:

→ Abstract

- ◆ Purpose or rationale of the study (why they did it)
- ◆ Methodology they followed (how they did it)
- ◆ Results (what they found)
- ◆ Conclusion (what it means in context of the purpose)

→ Introduction

- ◆ Sparks interest from the reader in the subject of the article
- ◆ Provides them with sufficient information to understand the article
- ◆ Leads the reader from broad information - what is *known* about the topic - to more specific information - what is *unknown*

→ Methods

- ◆ Tells the reader how the experiment was designed and conducted

→ Results

- ◆ States what was discovered
- ◆ References data depicted in visuals (figures and tables)

→ Discussion

- ◆ Puts the results in the context of the broader field
- ◆ Draws conclusions in the context of the originally proposed question

Recently, more modern journals have begun structuring their articles as an **abstract** that leads into an **introduction**, then **results** and **discussions**, with **methods** last. Regardless of the exact structure, recognizing these characteristics will help you read more quickly and comprehend more.

As you read...

- ✍ Jot down any words you see repeated and do not initially recognize. These will be helpful to answer for your own understanding and to reflect on when you refer back to the article at a later time
- ✍ Highlight important and interesting information
- ✍ Annotate for the meaning of paragraphs, data points, and figures
- ✍ Write down questions for the authors to answer in the article and to propose in future discussion

Taking notes will improve your recall and comprehension. To ensure your understanding of one section before you go into the next, complete these notes as you read:

Complete Citation: authors, date of publication, title of book or article, journal name, volume #, issue #, # of pages

***If web access:** URL, date accessed

Key words: words that continue to pop up and are important to the purpose of the article

Hypothesis: proposed explanation of the question being researched (find in the Abstract or deduce from the Introduction)

General subject: the basics of what is being experimented on (find in Introduction, remember how articles will often start broad here and then narrow in on the topic)

Specific subject: Who was studied where? What was being tested?

Methodology: How were the elements gathered?

Results: findings of experiments (find in Results)

Summary of key points: the big takeaways (find in Discussion)

Context: how this article relates to work in the field, how it ties in to your own interests (find in Discussion)

Important Visuals: offer brief descriptions and page numbers (find throughout)

Cited references to follow up on: other work referenced in the article that may be important for your replication of the study or for further research (find throughout)

Other comments: offer critique on how the article read (you are a scholar yourself reading other scholars' work), what you think of the research, anything you found particularly interesting

Refer to these notes to recall what was important in the article.

Adapted from "How to Read a Scientific Article" by

Mary Purugganan, Ph.D. and Jan Hewitt, Ph.D.

Cain Project in Engineering and Professional Communication

And from teachings of Holly Martinson, Ph.D. at McDaniel College