

Critical Reading Guide for Scientific Articles

Critical reading goes a step beyond reading for information: it involves evaluating the information rather than simply absorbing it. When reading critically, it is more important to ask questions than to learn facts.

Preliminary Information (before you start reading)

Title:	<ul style="list-style-type: none">• The title may give you information about the content of the article: the focus, methodology, subject, etc.• What does the title lead you to expect from the article?
Author(s):	<ul style="list-style-type: none">• Note the author(s) of the text.• What is the author's discipline/expertise/background?• Reading names at first may not make sense to you, but as you expand your knowledge about a particular field you will see the same names appearing again and again.
Source:	<ul style="list-style-type: none">• Where was the work published? Note its original source.• Is it from an academic journal, textbook, or popular magazine?• When examining an article, the publication it appeared in can lend to or deny the material credibility.

Analysis Information (skimming quickly)

Purpose	<ul style="list-style-type: none">• Why do you think the author wrote this paper/conducted this study?• Does it seem to be refuting someone else's interpretation of some phenomenon? Is it offering new information?• You'll usually find clues to the answer to these questions in the abstract.
Abstract:	<ul style="list-style-type: none">• Read the abstract carefully. This will give you an uncritical summary of the paper's subject/content; it will give you an idea of the following:<ul style="list-style-type: none">-The rationale for the study-The main results-How they were discovered-An interpretation of the result

Primary Details (while you are reading)

Introduction:	<ul style="list-style-type: none">• Read the introduction to get a sense of the goals/purpose of the study (i.e. what the author is trying to validate/argue/discover.• Is the study mostly based on other studies? Is it something new?
Hypothesis:	<ul style="list-style-type: none">• Write out the hypothesis as you find it in the article. It is sometimes only one sentence, but it is sometimes two or three.• Knowing the author's stated hypothesis will allow you to think about whether or not she/he has proved it as you read the paper.
Limits:	<ul style="list-style-type: none">• Does the text you are analyzing focus on a particular methodology, phenomenon or idea?• Is it restricted to a particular group of people?• Is it more widely applicable than the study actually tests for? Why or why not?
Concepts / Words:	<ul style="list-style-type: none">• Note the words or concepts you had to look up.• Did the author coin his/her own terms, or use common terms in unusual ways?

Presentation and Argumentation (while you are reading)

Central Objective:	<ul style="list-style-type: none"> • What is the central objective of the paper and what is the major question that is being addressed?
Hypothesis/ Follow-Through:	<ul style="list-style-type: none"> • Does the hypothesis address the main question of the study? • Are there any underlying assumptions to the hypothesis? • Has it been tested properly?
Use of Controls:	<ul style="list-style-type: none"> • What controls were used in the study? • Are these controls adequate? Why or why not?
Procedures:	<ul style="list-style-type: none"> • What procedures/methodologies have been used in order to address the central question? • What kind of experimental procedures have been conducted? • What is the rationale behind each procedure? • Has each procedure been explained properly? • Does each procedure properly test the central hypothesis? • Are there any limitations to the procedures/methodologies used?
Results:	<ul style="list-style-type: none"> • Do the results adequately and accurately describe the data presented? • Are the results consistent and do they fit into the context of the paper? • Are the results good enough to test the central hypothesis? • Do they allow the researcher/reader to accept/reject that hypothesis? • Do they substantiate the author's claims? Why or why not?
Figures and Tables:	<ul style="list-style-type: none"> • Are the figures and tables helpful to your understanding/ease of reading, or are they redundant? • Are they organized effectively?
Discussion:	<ul style="list-style-type: none"> • Are the author's conclusions logical based on the results or do they seem too optimistic/large/unjustified? • Are facts and opinions clearly separated, or are they difficult to distinguish?
Summary/Conclusion:	<ul style="list-style-type: none"> • Overall, is this article useful for your purposes? • Does it fit into your knowledge/current understanding of the topic, or is it something new? • If it is new, does it help you to understand the topic, or do you need more information?

Evaluation (after you have finished reading)

Interpretation:	<ul style="list-style-type: none"> • Has the author drawn an effective/logical interpretation from his or her results? • Did the control mechanisms have any influence on the experimental results? • Do you agree with the author's interpretation? (Why or why not?) • Are there any limitations to the results obtained or the interpretation of the results? • Does the author's interpretation of the results expand your knowledge of the topic?
Other:	<ul style="list-style-type: none"> • Record anything else you may like to recall about the reading. • What is a question that this article makes you ask? • Where has the author made assumptions about the work? • Is there another way that the author could have explored/researched/answered this question? • Is further research necessary?