

There are many approaches to reading scientific articles. Below is one approach.*

One does not read most journal articles from start to finish as you would, say, a novel or a newspaper article. There are several reasons for this:

- 1) Journal word limits and scientific jargon do not facilitate easy reading. The information is often too dense to comprehend it with a single simple reading.
- 2) You may be interested in a specific aspect of the article rather than the entire thing. The special structure of such articles allows one to find the desired section more easily.
- 3) Understanding one part of an article will often require reference to a different part of the article you are reading or a different article altogether.

For adequate understanding of an article, you should be prepared to read it at least two, three, or more times. Information that seems completely incomprehensible on the first reading often starts to make perfect sense on subsequent readings. Even seasoned academics must read articles over and over again. Further, there will be things you don't understand because a) you don't have an adequate background, b) they are just too complicated, or c) the author simply did a poor job of explaining it. Do not overlook this last possibility. Just because something is in print doesn't mean it's clearly or even intelligently written.

Be prepared to do some work in order to really understand an article. This may include:

- 1) looking up points made in the referenced articles;
- 2) referencing textbooks;
- 3) checking dictionaries for terms you're unfamiliar with;
- 4) asking questions of people who may know.

Still, no one tries to fully grasp every article they encounter. They tend to go through a sequential process of studying the article - all the while deciding whether or not to give it further attention.

The decision to continue digging is based on many factors (an not necessarily in this order):

- 1) Whether the article is sufficiently interesting
- 2) Whether the article is relevant to their work
- 3) Whether the article is of general importance
- 4) Whether the article is of high quality and or accurate
- 5) Whether the article is clearly written and accessible at least after reasonable amount of effort
- 6) Whether the article is "meaty." Does it contain an adequate amount of new and pertinent information?
- 7) Whether the article is short.

Ok, on to the reading part.

* These notes borrow quite heavily from [this post](#) by Prof Bob Siegel at Stanford University

READING A PEER-REVIEWED JOURNAL ARTICLE

Phase I: Screening the article (1 minute)

- 1) Read the title once fast looking for key words. Read the title slowly until it makes sense.
- 2) Look through the authors to see if there is anyone whose name you recognize, whose work you know. This can help you judge the quality of the data.
- 3) Look at the date. In fields like molecular biology, where information rapidly changes, the date may be all-important. With policy issues, the date may be less important than the quality of thought. Bear in mind that there is always a lag period between when the research gets done, when the article gets written and when it gets published. To that end, many journals also list the date when the article was received and accepted.
- 4) Most articles have a brief list of key words. They can sometimes be informative, but I think increasingly less so with full-text searching offered by most tools now. Still, its good to glance at them early on.
- 5) Skim the abstract. Get a sense of the main argument and findings, and how they relate to your interests.

Phase II: Getting the punch line (3-10 minutes)

- 1) Read the abstract more slowly until it makes sense.
- 2) Read the introduction. The introduction is often the easiest part of an article to read. In some cases, it is also the most informative - not so much in terms of presenting new information, but in consolidating background information. Some authors will also present the punch line of their research in a way that is easier to understand than the way it is presented in the abstract.
- 3) The introduction will often cite many of the references. This is a good time to begin looking at them. The references are particularly informative if they contain the titles of the articles being cited. You will go back to the reference page over and over again.
- 4) Once you know a field (and its literature) really well, these last two steps may become boring.

Phase III: Understanding the approach (10 minutes)

- 1) Peruse the figures and tables. You may not really understand them this first time through, but this will help you know what to look for when you read the article. Often a figure or table summarizes the article's main point.
- 2) Go to the discussion. Read the first few paragraphs and the last few paragraphs. If it is short and/or easy to understand, read the whole thing.

Phase IV: First reading (30 minutes)

- 1) If you've gotten this far, save a pdf of the article (or print it) if you have not already done so.
- 2) Skim the abstract and the introduction once again, reminding yourself of the main points.
- 3) Skim the methods section. In this first pass, the methods need to be studied carefully only in so far as they contribute to your understanding of the rest of article.
- 4) Read the results section.
- 5) Read the discussion.
- 6) Study the figures and tables.

Phase V: Increasing understanding (2+ hours)

- 1) Reread the article in its entirety. You may wish to read several times.
- 2) Annotate the pdf (free pdf/citation manager software programs, like Mendeley and ReadCube, have built-in pdf editors) or write on the article if printed. Highlight words you do not know. Write questions/thoughts in the margins. Mark things that are wrong. Jot down further ideas or questions.
- 3) Consult the references. Look up points that were not fully explained. Consult textbook to clarify points or fundamentals. Look up words that are unfamiliar.
- 4) Understand any statistical techniques, and their strengths or limitations vis-à-vis the authors' findings.
- 5) Understand the authors' study design, and its strengths or limitations vis-à-vis the research question(s).
- 6) For place-based research, look up a little background on the area. Read a Wikipedia entry or look up some of the major events from the study's time period. Put the research in a broader context.
- 7) Before leaving the article, reread the abstract once again.