ENGL 1AS – Library handout
Link: https://tinyurl.com/Reading-Journal-Articles

Anatomy of a journal article
Main parts of a journal article may include:

- Abstract – This is a summary of the article
- Introduction – This includes background information or a literature review, which sets the stage for the rest of the paper.
- Themed sections or Methods / Results / Discussion or Conclusion – Depending on whether the article is primary or secondary, the main sections may differ (please see below for more info).
- References – This is a list of all of the works that are cited throughout the article.

Primary and Secondary Research
Broadly speaking, journal articles can be grouped into two categories: **primary research** and **secondary review articles**.

Primary research (also called original or empirical research) is when the author(s) of the journal article are the same people who designed and conducted a study, gathered data, identified findings and are reporting their results for the first time.
Clues that you are looking at a primary research study are:

- The article sections may be in IMRaD or similar format (Introduction, Methods, Results, and Discussion/Conclusions). This is often the format for scientific studies / research.
- The abstract identifies a sample or group of participants in the study (e.g. "135 older adults were sampled … (N=135)"
- The article includes tables with data and statistical analysis
- The authors write phrases like "in the present study…", "in this work…", "according to our results," etc.

Secondary Review Articles (including meta-analysis and systematic reviews) is when the author(s) of the journal article didn't do their own study but instead are summarizing and synthesizing or bringing together the results and conclusions of a bunch of other studies on a topic to give an overview about what is currently understood about a research topic or question and what questions remain unanswered or unexplored. Review articles (particularly recently published ones) can save you time and effort when trying to get quickly up to speed on a new topic or research area.
Clues that you are looking at a review article include:

- The article doesn't have IMRaD sections. Sections may instead be themes of previous research.
- The text itself, the title, or the database record for the article identifies it as a "Review"
- The authors say something like "here we review studies conducted on [a research question]".

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How to read a journal article
The following guidance was written by Dr. Jennifer Raff, a geneticist and Professor of Anthropology, and describes steps for reading and understanding a journal article or primary research article. Primary research articles are a type of journal article where the authors are presenting their own original research and findings for an audience of peers (i.e. other biologists, educators, sociologists, professors in a discipline, etc.).

Because this is an audience of specialists in a discipline, journal articles often include technical language and vocabulary, which can be difficult to understand for non-specialists. This is one of the things that can make journal articles "difficult texts". Using the tips below, you'll be able to read and review journal articles to understand big questions researchers are hoping to answer in their articles.

Key tips:
- Keep track of any words that are unfamiliar by writing them down and looking them up (Google, Wikipedia, a library reference book).
- Write down any questions you have as you're reading.

1. **Begin by reading the introduction, not the abstract**
    a. The abstract and title are useful for deciding whether an article is relevant to your research topic or question. Once you have selected it and are seeking to understand it, read the abstract last and start with the introduction of the paper.

2. **Identify the BIG question**
    a. Not "What is this paper about", but "What problem is this entire field trying to solve?" This helps you focus on why this research is being done.

3. **Summarize the background in a few sentences**
    a. What work has been done before in this field to answer the big question? What are the limitations of that work? What, according to the authors, needs to be done next?

4. **Identify specific question(s)**
    a. What *exactly* are the authors trying to answer with their research? There may be multiple questions, or just one. Write them down.

5. **Identify the approach**
    a. What are the authors going to do to answer the specific question(s)?

6. **Read the methods section**
    a. You can draw the experiment using arrows, pictures, or words to understand the steps the authors used to conduct their experiment / research.

7. **Read the results section**
    a. Results may be in the form of sentences or summarized in tables or graphs with data and statistics. Some questions you can ask: do the authors say something is "significant"? Are there graphs? Do the graphs include error bars for confidence intervals? What is the sample size?

8. **Do the results answer the specific question(s)? What do you think the results mean?**
    a. Before reading the authors' own conclusions based on their results, pause and consider what you think the results mean in the context of the research question(s) that were asked. What do you think the results mean?

9. **Read the conclusion / discussion / interpretation section**
    a. What do the author(s) think the results mean? Do you agree with them? Can you think of any alternative ways of interpreting the results? Do the authors identify any weaknesses in their own study? Do you see any that the authors missed? (Don't assume they're infallible!) What do they propose to do as a next step? Do you agree with that?

10. **Now, return to the abstract**
    a. Does it match what the authors said in the paper? Does it fit with your interpretation of the paper?

11. **What literature do the authors cite in their paper? How many times and by whom has this paper been cited since it was published?**

Adapted from: Raff, Jennifer. (2013). Step-by-step instructions for reading a primary research article. Retrieved from https://chem.utah.edu/_resources/documents/undergraduate_site/How%20to%20critically%20read%20a%20scientific%20paper.pdf