



Reading scientific papers

As a science student, it is essential that you learn how to find, read, and evaluate papers published in scientific journals. While textbooks are a good starting point to develop your understanding of a topic, they do not always provide the most up-to-date evidence in your field; science moves quickly! To stay current and produce high-quality work, you'll be expected to rely on the scientific literature for most of your research.

Remember, you can access peer-reviewed scientific articles through [OneSearch](#), [Google Scholar](#), [Web of Science](#), or through discipline-specific databases. Often your Unit Coordinator will provide you with a list of journal articles in your Unit Readings which is a great place to start your research.

Types of journal articles

There are 3 main types of scientific articles you will likely encounter: original research, review articles, and commentary/opinion pieces. These broad categories come with many different sub-types and discipline-specific conventions.

Original research articles

These papers report on one or more original scientific experiments and are written by the scientists who conducted the research. They usually follow the IMRD (Introduction, Method, Results, Discussion) structure.

Review articles

These papers summarise, synthesise and critically review the current state of knowledge in a particular area. They can be useful as a 'way in' to an area of study, because they can help you to get an overview of the cumulative findings in a field, the main methodologies and major research gaps. However, they are often very long!

Commentary/opinion pieces

These types of papers are normally short, written for a wider readership, and argue for a specific point of view. They tend to be written by influential researchers in a particular field and address more subjective questions arising out of scientific findings, such as how scientific research should focus its efforts, which methodologies are most valid and reliable, or how findings should ideally be translated into policy or practice.

How to approach reading

Reading scientific papers for the first time can feel overwhelming, so be patient with yourself – most people find it challenging at first.

Identify your purpose

When reading ask yourself: *why am I reading this paper?* For example, are you looking for background information, methodological ideas, or evidence to support a claim? Your purpose will shape how you approach your reading.

Don't read the paper from start to finish

Skim the paper first to decide whether it is relevant to your needs and jump between sections as required. Try starting with the big picture by identifying the aims and main results. Ask yourself:

1. What research question is this paper trying to answer?
2. What did the researchers find?
3. Why does it matter?

If you can summarise this in a few sentences, you've got the gist. After this, you can delve deeper into the methods, analyses and implications of the findings.

Focus on structure

Scientific papers are highly structured. Many will follow the **IMRD** structure (Introduction, Method, Results, Discussion) so you can be guided by these sections. Try to orient yourself by identifying what each section is trying to achieve – for example, the introduction provides essential background and establishes the research question, the method outlines how the study was conducted, the results present the data, and the discussion interprets what the findings mean.

Learn as you go

As you read, it's normal to come across technical terms, methods, or statistical techniques you don't understand. Use this as an opportunity to learn. You might start with your textbook, try a YouTube explainer, or ask AI for a plain-language summary. However, try not to get too bogged down in the detail. At first, you may only look up concepts which are central to the paper's main findings, appear multiple times or are stopping you from understanding the overall argument.

Most scientists do not read journal articles in a linear way; [they tend to approach reading more strategically](#).

Critically analysing scientific papers

It's normal to feel unsure about how to read critically when you're starting out. It doesn't mean being negative or finding fault with everything – it just means asking questions while you read. Try using questions to guide your thinking.

- What are the strengths and weaknesses of the study?
- How does this paper compare with other research on the same topic?
- Were the experiments well designed (e.g. adequate sample size, control conditions)?
- What are the implications of this research (theoretical or practical)?
- What new research questions does this paper raise?
- Have limitations of the study been taken into account?
- Are the conclusions logical and supported by the data?

The answers to these questions will become more nuanced as you develop expertise in your field. If you're stuck, remember you don't need to critique the entire paper. Start by analysing one claim, methodological choice or result.

In sum

Engaging with scientific literature is a skill that takes time to develop, but with practice it will get easier. It's important to approach your reading strategically: know what you're looking for, use the structure of the paper to guide you, and don't be afraid to look things up as you go. As you grow familiar with the technical terminology of your field, common research methods, and the structure and style of scientific writing, you'll find it easier to navigate and evaluate the literature.

Other resources

- [An introduction to referencing at UWA](#).
- [UWA Library guide on composing a search](#).
- [Using Google Scholar](#).