

At its core, scientific writing is meant to convey complex information in a clear, concise manner, which causes its structure, content, and style to vary from other types of writing. Whether you are an experienced writer or writing your first scientific article, this Info Sheet is meant as a quick reference to help streamline your writing process.

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Getting started

There are many considerations when writing a scientific publication and many can be field-dependent. This guide is meant to serve as recommendations and general considerations. We recommend referring to articles and publications in your field, especially in the journal you are interested in publishing in. It is also advisable to consult with your peers, collaborators, and PIs.

When to begin?

Tip:

Have writers block? Consider changing up your writing process. A few options include:

- Pomodoro Method
- Change your physical environment
- Try writing on paper
- Try a brain dump
- Start with an outline
- Try using an AI assistant

There are many schools of thought on when to begin writing, and the best approach will depend on what works for you. However, since writing can be a lengthy process we recommend beginning early and allowing the writing and research process to be integrated (following [G. Whitesides'](#) advice). This can include concept mapping, outlining, and/or writing your methods as you conduct your research.

Also, note that developing your personal scientific writing style is part of improving as a writer. Scientific writing has some specific requirements, but there are possibilities to adjust the way you present your research according to your personal preferences. Keep writing and reading scientific articles to improve.

Style

Scientific writing style differs from other types of writing because it is meant to convey quantitative information in a clear, precise, concise, and logical way. Here are some of the typical do's and don'ts of scientific writing:

DO:

- Construct simple, clear sentences
- Aim for brevity
- Use active voice when appropriate
- Use concrete and specific terms
- Focus on quantitative rather than qualitative statements
- Use positive phrases

DON'T:

- Write in a complicated manner
- Use unnecessary adjectives, adverbs, or constructions
- Use vague qualifiers
- State quantities with more significant digits than their accuracy
- Overstate your results

Scientific storytelling: Context-Content-Conclusion (C-C-C) scheme

The Context-Content-Conclusion (C-C-C) Scheme ([Mensh and Kording, 2017](#)) is a method to structure your paper both at the paper scale and at the paragraph scale to increase coherency. At a paper level, the introduction provides the context, the results are the content, and the discussion brings the conclusion. Within a paragraph, the C-C-C scheme starts with 1-2 sentences of context, followed by the content in the body of the paragraph, and finally, ending with a summarizing statement. This scheme has the advantage that the series of context and conclusion statements allows readers to follow the flow of your research, even when they struggle to understand certain details. This can be particularly helpful for readers that are not from your field, broadening the reach of your work.

Article structure and content

The majority of scientific articles have similar components. Each section has a specific purpose and serves a role in sharing your research with the community. The following is a guideline to help you approach the different sections, determine what content should belong where and what grammatical tense should be used in each section (Note: This was developed with a physical/natural sciences article in mind¹).

Tip:

The structure of the article depends on the type of article you are writing, the journal/book you are submitting to, and the field you work in. It is best to check the Author's Guide for your journal to determine the exact components you need for submission and publication.

Writing Resources

- Strunk, William Jr: [Elements of Style](#)
- Wallwork, Adrian: [English for Writing Research Papers](#)
- The University of Manchester: [Academic Phrasebank](#)
- Zinsser, William: [On Writing Well](#)
- Mensh and Kording: [Ten Simple Rules for Structuring Papers](#)

¹Originally developed by W.P. Gardner (Univ. of Montana) and iterated on by E. Knappe.

Citing

Paraphrasing

In scientific writing, direct quoting of a source is rare. Instead, you want to integrate the sources into your writing by paraphrasing. Techniques to help with paraphrasing:

- Only include the information that is relevant to your argument while retaining the meaning/intention of the primary source
- Change the sentence structure and/or word order

“When in doubt, cite” is a good rule of thumb. However, here are the cases when citing is not necessary:

- General/common knowledge (e.g. plants photosynthesize)
- Observable or generally accepted facts (e.g. water flows downhill)
- Your original ideas and results (e.g. the results section of your paper)

Citing reviews vs. primary literature:

- Cite a review to cover established theories in your field
- However, if a certain finding is particularly relevant for your study, consider finding, reading and citing the relevant primary literature

Finally, don't cite anything you haven't read.

Tip:

Ensure you are using appropriate references. This includes peer reviewed articles as well as books, encyclopaedias, and scholarly works from reputable sources. Preprints can be cited but you should check the rules of your journal. Websites, blogs and magazines are almost never cited.

Formatting

Main article

Some journals allow your first submission to be formatted according to your own preferences. Other journals have guidelines. Check the journal's “Author's Guide” to learn more.

References

The format of your references will depend on the journal you are submitting to. To save time and effort, we recommend using a literature management software, such as [Zotero](#) or [EndNote](#), to easily create and adapt your reference list. See our [website](#) or [trainings](#) to learn more.

Prepping for review

Many people will review your article, from your collaborators to external peer reviewers. Scientific writing is an iterative process. Reviewers' input can significantly improve your manuscript. We recommend thinking about how to format your manuscript for ease of review, such as adding line numbers or double-spacing lines. This helps both you and the reviewer suggest and implement changes.

Tip:

Programs like [LaTeX](#) can make formatting and changing formatting easy. Need help getting started? Check out our [trainings](#).

Finished with writing your manuscript? Congrats! Ready to start the publication process? Check out our Info Sheet on [Scientific Publishing](#). We break down the different steps to help you navigate the world of scientific publishing.

Tip:

For a PDF version of this Info Sheet that contains all the relevant links, please scan the QR code or go to <https://www.lib4ri.ch/info-sheets-videos#info-sheets-sciwriting>. Still have questions? Reach out at publicationservices@lib4ri.ch or consider joining our [training](#).

