

Scientific Writing Info Sheet | Submit & Publish

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At its core, scientific writing is meant to convey complex information in a clear, concise manner, which causes it's 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.

Contact & help desk

In Person: Phone: E-mail: Website:

Getting started

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

At the information desks in Birmensdorf, Dübendorf and Villigen + 41 58 765 57 00 publicationservices@lib4ri.ch www.lib4ri.ch/scientific-publishing

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.

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 sentencesAim for brevity
- O Use active voice when appropriate
- O Use concrete and specific terms
- O Focus on quantitative rather than qualitative statements
- O Use positive phrases

DON'T:

- O Write in a complicated manner
- O Use unnecessary adjectives, adverbs, or constructions
- O Use vague qualifiers
- O State quantities with more significant digits than their accuracy
- O 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 structure of the article depends

on the type of article you are writing,

check the Author's Guide for your

journal to determine the exact components you need for submission

and publication.

the journal/book you are submitting to, and the field you work in. It is best to

Tip:

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).

Writing Resources

- o Strunk, William Jr: Elements of Style
- o Wallwork, Adrian: English for Writing Research Papers
- o The University of Manchester: Academic Phrasebank
- o Zinsser, William: On Writing Well
- o Mensh and Kodring, Ten Simple Rules for Structuring Papers

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





Section	Purpose	Content	Tense
Title	Concise, specific and engaging phrase	 Main finding What is new/interesting? Includes 3-5 keywords 	Present simple
Key points/ highlights	Meant to convey the main contribution	What is the main point of your article?What do you want the reader to take away?	Present simple
Abstract	Standalone summary	 What did you do? (~1 sentence) How did you do it? (~2-3 sentences) Key results (~2-3 sentences) Implications/impact (Final sentence) 	Present simple
Plain language/ layman summary	Explain your research to a broader audience	 Short summary of your paper using non-technical terms. Follow the same structure as an abstract but broader and simpler so anyone can understand. 	Present simple
Introduction	Set up the context and importance of your objectives	 O Problem statement (broad, ~1 paragraph) Why is this research important? What is the broad problem? 	Present simple
		 Scientific background (~2-3 paragraphs) What has been done? What do we already know? Statement of contribution (last sentence in scientific background) 	Past perfect
		 What is the problem this research is addressing? Remaining question (final paragraph) What is the contribution this research is making? 1-2 sentences on the basic method used. Fundamental results and implications. "In this paper we investigate" 	Present simple
Methods	Detailed procedure	 Method of solution how did you do it? Theory/equations Domain/geographic region Lab/field measurements Models/Numerical code Boundary & initial conditions Material/chemicals Instrumental techniques Data analysis 	Past simple
Results	Findings <u>without</u> interpretations	 What did you find? Majority of this section is likely to be tables and figures 	Present simple
Figures & tables	Communicate complex information	 Easily readable axes and labels Good captions (enough detail to understand the figure without the main text) 	Present simple
Discussion	Interpretion and evaluation of your results	 Answer your question Compare your results Discuss nuances (anomalies, specific data, etc.) Limitations of your study 	Present simple
		 Compare to what exists in the literature Implications/significance of your findings 	Past perfect Present simple
Conclusion	Wrap up	 Contribution what did you do? Summarise important results Broad implications and other applications/further research to be considered 	Present simple





Citing

Paraphrasing

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

References

Prepping for review

Tip:

Programs like LaTeX can make formatting and changing formatting easy. Need help getting started? Check out our trainings. 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:

- o 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.

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.

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.

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.

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.



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