WRITING A RESEARCH PAPER:

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Outline

• Before writing
• What a good paper should(not) contain
• Start writing
• Introduction
• Discussion
• Abstract
• Conclusion
• Acknowledgement
• Reference
• Before submission
BEFORE WRITING

• From the beginning of your project, think about experiments in terms of future papers, especially the FIGURES

• What is your message? What point are you making

• Why is this message important?

• Has this point been made before? How is your contribution different from what has been said a thousand times before?

• Give an informal ORAL presentation of the work before you start to write the paper

• It is easier to assemble all the data BEFORE writing the paper, than during the process
What a good paper should contain

- A hot start: tell the reader early why he should read your paper. Don’t summarize
  - Abstract does not summarize the paper
  - You should clearly say what your contribution is
- Reviewers are lazy or busy, do not assume reviewers will read the paper carefully
- A large reference section
- Experimental evidence: you need to confront your idea with the real-world and report on how well it fares
- Pictures! Really, **even if you feel silly doing it or that you think you can’t draw.**
- A conclusion telling us about future work and summarizing (**again**) the strong points of the paper.
What a good paper should not contain

- Weak and unnecessary results
- Technical details: technical papers made of several small ideas are usually not interesting
Start writing

• Download Instructions for Authors
  • Note limitations

• Print out one or two examples of a high quality paper

• Note specific styles (Italics/bold for headings; Hours/hrs; Fig/Figure and other special features)

• Start writing RESULTS and MATERIALS and METHODS.

• Next, write the INTRODUCTION, DISCUSSION, and finally
  • ABSTRACT

• The TITLE is critical- it must be short and ”big-picture” without over selling
INTRODUCTION

• The first paragraph should catch attention and convey importance of paper
• Formulate the problem
• The last paragraph of the Introduction should be a short summary of what you set out to do and what you have achieved
• Example:

  “In this paper, we have studied the …… by using a .... technique in which ……. This approach has allowed us to directly compare A and B, and to distinguish between alternative possibilities for their functions. We conclude that ….. and provide a model to reconcile our findings and those of others”
DISCUSSION

• Discussion is not a rehash of introduction or results. It should present the overall significance of your work

• Include a figure of your model

• First paragraph of the Discussion should give a brief overview of the main findings of the paper: the final conclusions and an outline of the supporting data.

• Final paragraph can make predictions for the future
DISCUSSION

• In the Methods take special care over the units

• Figures must have a short title in the form of a sentence

• Follow conventions of the journal precisely

• Sentences can be in passive or active tense

  • WHATEVER TENSE IS USED, BE CONSISTENT AND DON’T SWITCH BACK AND FORTH IN THE SAME PARAGRAPH !!!
DISCUSSION

- **Paragraphs** are important to break the text up into readable units.
- Avoid excessive use of **boring verbs** such as “show, observe, occur, exhibit…..”
- Use strong verbs (replace “we made use of categorization” by “we categorized”)
- Always give the example first, and the result next
- Use as few parenthesis, footnotes and bold characters as you can
- Do not use negations…”
DISCUSSION

- Avoid UA (useless acronyms)
- DUAT: Do not use acronyms in titles and abstract
- Employ uncomplicated terms
- Short sentences: no more than 15 words are better
ABSTRACT

• Write it at last
• Hardest and the most important part
• Use present tense
• Your abstract should be one paragraph, of 100-250 words
• summarizes the purpose, methods, results and conclusions of the paper
• Start by writing a summary that includes whatever you think is important, and then gradually prune it
• Don't use abbreviations or citations in the abstract. It should be able to stand alone without any footnotes
• Check it and amend it over and over
CONCLUSION

• Easier than writing abstract
  • A naïve way to start: to take your abstract and change the tense from present to past.

• Make a full circle

• Answer the question so “what”?

• Suggest briefly what about this topic needs further research

• Summarize the argument for your reader
Acknowledgements

• Grants and funding

• People who read the paper or contributed to discussion and/or ideas

• People who gave tools e.g. probes  Technical and secretarial assistance

"To be honest, I would have never invented the wheel if not for Urg's ground breaking theoretical work with the circle."
References

• List of all the sources you used to get information at the last section
• Different ways of ordering:
  • Alphabetically, by first author
  • Appearance in Body
  • …
• Different conventions
References

- **Book**: Author(s). Book title. Location: Publishing company, year, pp.


- **Articles from Conference Proceedings**: Author(s). “Article title.” Conference proceedings, year, pp.

- **Standards/Patents Author(s)/Inventor(s)**: “Name/Title.” Country where patent is registered. Patent number, date.
BEFORE SUBMISSION

• Have the paper read by several people. Listen to what they say, especially if same criticism comes up several times

• Make sure you have followed all the requirements of the journal about electronic submission (Figures, Fonts, Tables, References and etc.)

• Check the Figures/Table versus the text

• Check the References versus the text

• Check the Figure/Table legends

• Be psychologically prepared to throw out and rewrite whole sections and not to cling to the original
  • Be flexible
Our References

3. R.H. Kallet, “How to write the methods section of a research paper”
Thanks for your attention