Writing and Presentation Tips

Communication skills are very important for us to share our research with others. The following is a collection of tips for writing and presentation.

Criticism and testing are of the essence of our work. This means that science is a fundamentally social activity, which implies that it depends on good communication. —— Hermann Bondi

Notes from Reading “How to Write and Publish a Scientific Paper “, 4th edition by Robert A. Day

- The key characteristic of scientific writing is clarify. Scientific writing should be as clear and simple as possible.

- Title
    - A good title is using the fewest possible words that adequately describe the contents of the paper.
    - Avoid waste words such as “Studies on”, “Investigations on”, and opening “A, An, The”.
    - The title should be as specific as possible.
    - Title is a label not a sentence.
    - Avoid abbreviations and jargons

- Abstract: summary of the information in a document
    - Abstract should (1) state the principal objectives and scope of the investigation, (2) describe the methods employed, (3) summarize the results, (4) state the principal conclusions.
    - Should be written in past tense because it refers to work done.
    - Should not give any information/conclusion not available in the paper.
    - When writing the abstract, remember that it will be published by itself, and should be self-contained.
    - The language should be familiar to the potential reader. Omit obscure abbreviations and acronyms.
    - Finish the paper before the abstract, if possible.
    - Unless a long term is used several times within an Abstract, do not abbreviate the term. Wait and introduce the appropriate abbreviation at first use in the text.
    - Abstract should be written clearly and simply. If you cannot attract the interest of the reviewer in your Abstract, your cause may be lost.

- Introduction
    - The purpose of the Introduction is to supply sufficient background information to allow the reader to understand and evaluate the results of the present study without needing to refer to previous publications on the topic.
    - The Introduction should also provide the rationale for the present study. You should state briefly and clearly your purpose in writing the paper.

- Choose references carefully to provide the most important background information.
- Introduction should be mainly written in the present tense, because you will be referring primarily to your problem and the established knowledge relating to it at the start of your work.
- A good Introduction should (1) present first, with all possible clarity, the nature and scope of the problem investigated, (2) review the pertinent literature to orient the reader, (3) state the method of the investigation and the reasons for the choice of a particular method over other methods, (4) state the principal results of the investigation, (5) state the principal conclusion(s) suggested by the results.

- Methods/Materials/Formulations
  - Mainly write in past tense.
  - Describe enough details so that others can follow and reproduce.

- Results
  - Mainly write in past tense.
  - You can provide an overall descriptions of the results/numerical examples.
  - The results should be representative, selective.
  - It is important to present the negative aspects of your results.
  - Do not repeat what is already apparent from figures or tables.
  - Do not be verbose in citing figures and tables. For example, “It is clearly shown in Table 1 that xxxx “ should be replaced by “xxxx ((Table 1).”

- Discussions
  - Present the principles, relationships, and generalizations shown by the results.
  - Point out any unexpected results, and limitations of the results/theories.
  - Show how your results/observations agree/contrast with previous work.
  - Don’t be shy; discuss the theoretical implications of your work, as well as any possible practical applications.
  - State your conclusions as clearly as possible.
  - Summarize your evidence for each conclusion. New assume anything.
  - Discuss the significance of your work supported by the results, simply state the little progress you made in the work, not extrapolate to something bigger which cannot be supported by what you have presented in the paper.

- Tables
  - As a rule, do not construct a table unless repetitive data must be presented. Whenever a table, or columns within a table, can be readily put into words, do it.
  - Give only significant figures in numbers. Nonsignificant figures may mislead the reader by creating a false sense of precision. They also make comparison of the data more difficult. Unessential data should be omitted.
  - Present the data in the text, or in a table, or in a figure. Never present the same data in more than one way. Selected data can be singled out for discussion in the text.
  - Vertical rules/lines should not be used.

    - The table should be arranged to read now not across.
    - Numbers should be aligned to the right and words to the left.
    - The title of table (or legend of figure) is like the title of the paper itself: concise, not divided to two or more clauses or sentences, waste words should be omitted.

- Figures
    - If the data show pronounced trends, making an interesting picture, use a graph. If the numbers just sit there, with no exciting trend in evidence, a table should be used.
    - Figure should be clear and readable.
    - Figure should present info which cannot be presented by text and table.

Writing Tips

- How to Write a Paper how-to-write-paper.pdf (6 MB, uploaded by Wenbin Yu 2 years 11 months ago)
- Academic Phrasebank
- Most Common Habits by Chinese Students The_Most_Common_Habits.pdf (136 KB, uploaded by Wenbin Yu 1 year 11 months ago)
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- Whitesides's Group: Writing a PaperWhitesides_writing_res_paper.pdf (55 KB, uploaded by Wenbin Yu 1 year 1 month ago)
- Suo's Group: Paper TemplateSuo_group_pape_template.docx (193 KB, uploaded by Wenbin Yu 2 months 22 hours ago)

Presentation Tips

- Adapt the presentation to your audience.
- Avoid including too many formulas. Only include the most relevant ones for your presentation.
- Clearly identify the main takeaways of the presentation or alternatively, each slide.

Purdue Dissertation/Thesis Tips

- Start documenting your work, derivation of formulation, and simulations early in your PhD. Publishing conference and journal papers helps.
- If you are copying from your conference/journal papers into your dissertation, you need to reference them at the beginning of each chapter (plagiarism check).
- In case you are using data provided by project sponsors, check with them how you need to acknowledge them and publish the data. Some sponsors may require to have your thesis/presentation cleared before your deposit or defense. This can be avoided if you cleared the data for a conference or journal presentation.
- Go through the Purdue Graduate School's Formatting Guidelines and Deposit Procedures presentation.
- Get the most updated LaTeX template from the Purdue Graduate School and check for

further updates. Purdue students have a free Overleaf account.

- Schedule an thesis consultation before you send your thesis to your committee for smooth deposit process. Ashlee Messersmith is the advisor familiar with the LaTeX/Overleaf template.
- Add the defense/deposit etc. deadlines to your calendar. Send a calendar invite to committee members with the details.
- Think about the most relevant keywords when you deposit your thesis in Hammer.
- Once the thesis is deposited, Xerox prints the dissertation with Case Binding option. Walk-ins or email replies. It takes around 4-6 weeks. They can deliver to a campus address for an extra shipping fee.
- Back-up your data at the cdmHUB. Start backing up early so that it is easier for you to organize the material.