

Essentials of Technical Paper Writing

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Why to Write

- Academicians are supposed to generate new knowledge as a part of their profession
- Ideas need to be communicated to students, colleagues and to the scientific community for refining the thoughts and/or benefiting the society at large
- Scientific documentation reflects your intellectual strength
- Must for getting recognition- publish or perish
- Linked to promotions

When to Write

- Write after completion of sufficient amount of original work
- Write after you have detailed notes on your proposed paper i.e. Consolidation of information on data, references, drafts of tables and figures, etc.
- Write review after in-depth reading on a particular topic
- Write review after working in particular research area for a long span of time
- Do not cut and paste other's work as it may be protected by copyright and is unethical

Where to Write

- Target a good journal preferably internationally recognized and refereed one with good impact factor
- For example an article in "Nature" can recognize you a noble laureate
- Unfortunately the experience of Indian journals (except a few) is not very encouraging
- A beginner may start with some conference but do not write for conferences for a longer time

How to initiate the Process

- Consolidate all the information
- Write when your energy is high and not when you are tired
- Try to find a time and place where you can think and write without distractions
- Plan for an outline with logical headings and sub-headings
- Evolve first draft as quickly as you can
- Express yourself more precisely
- Write without much editing
- Put aside your first draft for at least one day
- Revise the draft for clarity

Key Considerations for Technical Paper

- Highly structured
- Clear statement of the problem
- Proposed solution(s)
- Results achieved
- What has been done before on the problem, and what is new

- On equal scientific merit, a badly written article will have less chance of being accepted
- Makes extensive use of devices such as numbered headings, numbered figures, and hierarchical
- Arrangement of the components of the document
- Guidelines for referencing, artwork etc needs to be strictly followed

Components of a Standard Manuscript

- Title (Use Title/ Sentence case as specified/Avoid Uppercase)
- Author (s) name- Do not use salutation, mark corresponding author
- Affiliation and communication details- Write all affiliations in details, phone, fax and e mail addresses
- Abstract- 150-200 words synopsis of your paper
- Keywords- 3-5 keywords be identified
- Nomenclature, if any- Explain roman and other symbols and abbreviations used if large in number
- Introduction – Introduce the topic with objectives, scope and limitations, Refer to earlier work on the subject- Be brief and tell reader what this paper is about.
- Repeating the abstract in the introduction is a waste of space
- Body of Paper- Survey Details/ Experimental Setup/ Analytical tools etc be written here logically using figure tabulation, equations. Make sections and sub-sections
- Results and Discussion- Write salient results and discuss their implication and tell limitations, if any
- Conclusion-Conclude the paper and tell its usefulness and future scope of work
- Acknowledgements if any- Funding agencies and grants and important person, if any
- References- List only those works, which are cited in the text of paper. Do not give bibliography unless asked for
- Appendices if any- Flow charts and other information may be given if absolutely necessary
- List of Figures and Tables
- Figures- All photographs, charts and line diagrams are figures
- Tables- All tabulations with no vertical rule or as asked by the journal
- Author's biography- 100-150 word on author (s) and photographs

Common Bugs in Manuscripts (Indicative)

- Extensive use of passive voice and inconsistent tense
- Inconsistency in headings and subheadings
- Lots of nouns instead of verbs (Make an assumption vs. assume)
- No logical connection of paragraphs and sections
- Starting the sentence with And and abbreviations
- Use of symbols like &, >, = + and slash abbreviations like i/p, o/p in the text
- Improper use of units e. g. kWh and not Kwh, KWH

- Omitting zero before decimal point
- Not referring to figure numbers and table numbers in the text
- Use of GIF images
- Use of tables and figures to explain same data/results
- Too old and obsolete references
- Use of et al in reference list
- Non use of equation editor/character writer for equations and matrices
- Describing unnecessary details which are already there in textbooks
- Spelling errors

Reviewer's Expectations

- Originality of the work done and clarity of thought
- Looks for objective of writing, scope and limitation if any
- Research methodology if up to date or not
- Tools used, validation of results
- Correct referencing and citation of earlier work
- Good artwork
- Good English

Concluding Remarks

- Each one of us should generate some additional knowledge and then write
- You can write for recognition.