


VIT
 Vellore Institute of Technology
(Deemed to be University under section 3 of UGE Act, 1956)

Nuances of Research Publications



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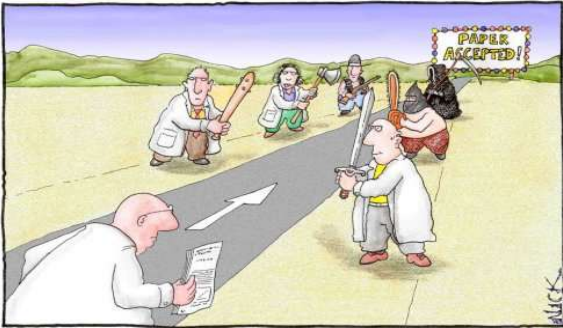
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Topics to be covered

- Research methodology
- Selection of a Journal
- Structure of a Journal paper
- Language issues
- Presentation of results and discussion
- Tools for quality improvement
- Avoiding Plagiarism
- Sample Exercises
- Concluding remarks

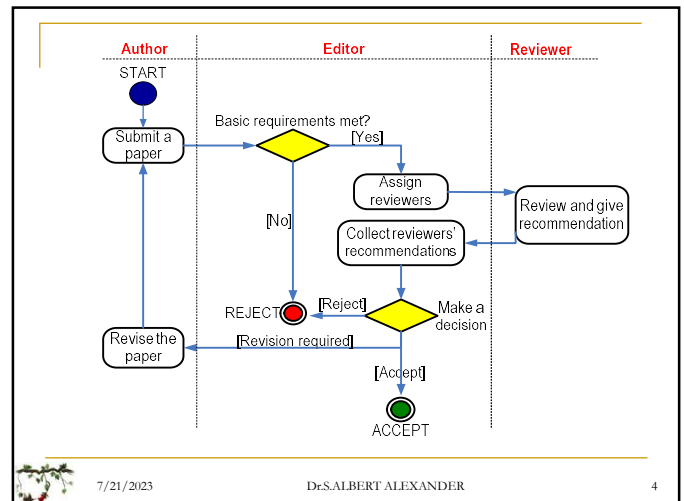
If you can't explain something simply, you don't understand it well.
 Albert Einstein

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Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

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Why publish?

- Part of academic / research life
- Sharing of technical/ scholarly / research material
- Career progression – Grant applications
- Esteem:
 - Yours
 - Your group / Department / Organization
- It allows you to travel all over the world



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What to publish?

- New and original results or methods
- Reviews /summaries of particular subject/ concept
- Manuscripts that advance the knowledge and understanding in a certain scientific field

What NOT to publish?

- Reports of no scientific interest
- Out of date work
- **Duplications** of previously published work
- Incorrect/unacceptable conclusions



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Choosing the particular topic

- **Breadth:** Let the research take **narrower**
Example: Broad: EV, Narrow: BMS in EV
- **Originality:** Choose a topic that will allow to contribute to the field, rather than just regurgitate facts
- **Sources:** Choosing a topic that has scholarly grounding



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Topic selection

1. Previous knowledge
2. Course content
3. Personal or professional experience/interests



who, what, where, when, why

What is it similar to or different from?

What are the **causes**?

What are the **consequences**?

What is the **essential function**?

What are the **definitions**?

What is the **history**?

What is the **present status**?

What case can be made for or against it?

How did it **happen**?

Why did it happen?

What is my **personal reaction** to it?



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Aspects of writing a paper

- Contents
- Language
- Figures and Tables
- **Literature (introduction, discussion)**
- Choosing a Journal
- First draft
- Submitting draft for language correction
- Submitting to the Journal



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Starting a paper

- Make an **outline** of the major headings
- List the **key ideas** to be covered under each heading
- **Organize** the thinking logic and the logic of arguments
- Separate out the three tasks of:
 - (1) Figuring out what to say
 - (2) Planning the order and logic of arguments
 - (3) Crafting the exact language to express the ideas



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Types of paper

- **Inventions**
 - clever variations/innovations that are appealing in their elegance
- **Progress**
 - solves open problems that have arisen from recent work
 - typical conference/journal paper
- **Survey**
 - surveys and unifies a specialized subject
 - contains added value (frameworks, taxonomies)
 - brings together disparate work



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Types of manuscript

- **Full articles / Original articles**: the most important paper type. Often substantial and significant completed pieces of research
- **Letters/ Rapid Communications / Short communications**: quick and early communication of significant and original advances. Much shorter than full articles
- **Review papers / perspectives**: summarize recent developments on a specific topic. Highlight important previously reported points



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Length of a manuscript

Length of the manuscript:

- 25-30 pages is the ideal length for a submitted manuscript, including ESSENTIAL data only.
 - Title page
 - Abstract 1 paragraph
 - Introduction 1.5-2 pages
 - Methods 2-4 pages
 - Results and Discussion 10-12 pages
 - Conclusions 1-2 pages
 - Figures 6-8
 - Tables 1-3
 - References 20-50 papers
- Letters or short communications have a stricter limitation of the length. For example, 3000 words with no more than 5 illustrations.



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Essential Parts of a Scientific paper

- **Title:** Describe concisely the core contents of the paper
- **Abstract:** Summarize the major elements of the paper
- **Introduction:** provide context and rationale for the study
- **Materials:** Describe the experimental design so it is reproducible
- **Methods:** Describe the experimental procedures
- **Results:** Summarize the findings without interpretation
- **Discussion:** Interpret the findings of the study
- **Summary:** Summarize the findings
- **Acknowledgement:** Give credit to those who helped you
- **References:** List all scientific papers, books and websites that you cited



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Steps involved

- Pre writing
- Writing
- Post writing



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Time management

1. Write down all due dates
2. Break down the research process into steps
3. Assign a due date for each step
4. Make weekly and daily priority lists



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Knowing the audience

- Scientific and technical writing is never a '**general purpose**', but written for a specific audience, i.e. the **community who read a particular journal** or **study a particular subject**
- You must adopt the **style** and **level** of writing that is appropriate for your audience
- They are manifested in a selection of highly regarded papers and in the "**Instructions for Authors**" for key journals



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Title

- The title should be very specific, not too broad
- The title should be substantially different from others
 - ❖ "Topology control for multihop wireless networks"
 - ❖ "Topology control of multihop wireless networks using transmit power adjustment"
 - ❖ "Distributed topology control for power efficient operation in multihop wireless networks"
- Avoid general / big titles, e.g.,
 - ❖ "Research on data mining",
 - ❖ "Some research on job assignment in cluster computing",
 - ❖ "A new framework for distributed computing",



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General organization

- (1) Abstract
- (2) Introduction
- (3) Methods
- (4) Results / Results and Discussion
- (5) Discussion / Conclusion
- (6) Literature Cited

Do not mix Results and Discussion!



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Abstract

- Shortened version of the paper and should contain all information necessary for the reader to determine:
 - (1) what the objectives of the study were
 - (2) how the study was done
 - (3) what results were obtained
 - (4) and the significance of the results
- Frequently, readers of a scientific journal will only read the abstract, choosing to read at length those papers that are most interesting to them
- Should be written carefully and succinctly to have the greatest impact in as few words as possible
- Although it appears as the first section in a paper, most scientists write the abstract section **last**



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Abstract

- It should not exceed 250 words
- It should be written in one paragraph
- It should be written in the **past tense** as it refers to work done.
- Long words should be followed by its abbreviation which would be used through out the abstract and paper
- It should not cite any references (except in rare cases)
- It should never give any information or conclusion that is not stated in the paper
- Must be accurate with respect to figures quoted in the main text



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Introduction

- Why is this study of scientific interest and what is our **objective**?
- Discusses the results and conclusions of previously **published studies**, to help explain why the current study is of scientific interest
- Organized to move from general information to specific information
- **Limit** the introduction to studies that relate directly to the present study
- **Emphasize** our specific contribution to the topic
- The last sentences of the introduction should be a statement of objectives and a **statement of hypotheses**



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Introduction

- Use the present tense when referring to work that has already been published
- Use past tense when referring to your own study
- Use the active voice as much as possible
- Avoid lengthy or unfocused reviews of previous research
- Cite peer-reviewed scientific literature or scholarly reviews
- Avoid general reference works such as textbooks



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Cite Sources in the Introduction

- It is important to cite **sources in the introduction section of our paper**
- **Evidence** of the claims we are making
- There are ways of citing sources in the text
- Articles by one or two authors are always cited in the text using their last names
- If there are **more than two authors, the last name of the 1st author is given followed by the abbreviation et al..**



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Methods/Materials

- This section provides all the methodological details necessary for another scientist to duplicate our work
- It should be a narrative of the steps we took in our experiment or study, not a list of instructions
- An important part of writing a scientific paper is deciding what bits of information needs to be given in detail



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Results

- This section **presents the results of the experiment but does not attempt to interpret their meaning**
- As with the methods section, the trick to writing a good results section is knowing what information to include or exclude
- We will not present the raw data that we collected, but rather we will **summarize the data with text, tables and/or figures**
- Use the text of the paper to state the results of our study, then refer the reader to a table or figure where they can see the data for themselves



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Results

- Results section is written in the past tense
- It is the core or heart of the paper
- It needs to be clearly and simply stated since it constitutes the new knowledge contributed to the world
- The purpose of this section is to summarize and illustrate the findings in an orderly and logical sequence, without interpretation
- The text should guide the reader through the findings, stressing the major points



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Components of discussion

- Present the principles, relationships, and generalizations shown by the results
- Point out any exceptions or any lack of correlation and define unsettled points
- Show how our results and interpretations agree or contrast with previously published work
- Discuss the theoretical implications of our work, and any possible practical applications.
- State our conclusions as clearly as possible
- Summarize our evidence for each conclusion



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Cite Sources in the Discussion Section

- It is important to **cite sources in the discussion section of your paper as evidence** of the claims you are making
- There are ways of citing sources in the text so that the reader can find the full reference in the literature cited section at the end of the paper, yet the flow of the reading is not badly interrupted
- Make sure you give a full citation in the Literature Cited section ("references") for all sources mentioned in the text



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Summary/Conclusion

- Kill all exclamation points !!!
- Use words correctly, irregardless how others use them
- Understatement is always the absolutely best way to put forth earth-shaking ideas
- Use the apostrophe in it's proper place and omit it when it is not needed

Finally:

- Proof read carefully to see if any words out



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Literature Cited

- This is the last section of the paper
- Provide an alphabetical (or numbered according to the occurrence in your paper) listing of all the published work you cited in the text of the paper.
- A standard format is used both to cite literature in the text and to list these studies in the Literature Cited section.
- For papers published in journals you must provide the date, title, journal name, volume number, and page numbers
- For books you need the publication date, title, publisher, and place of publication



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Basic grammar and spelling

- The more time and emotional energy he/she spends on correcting **basic English usage**, the less remains for issues of content or fine-tuning
- **Responsibility** for mastering the basics of the language
- With word processors and spellcheckers having become standard writing tools, types or other **spelling errors** should be very rare



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Do not turn in a first draft!

- Most people's first drafts are terrible
- **"Good writing is rewriting"**, and should make a serious effort at editing, rewriting, and fine-tuning before giving the manuscript to anyone else to read
- If you need to put a piece of writing away for a few days before you can approach it dispassionately enough to **rework** it, do so



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Check before submission

- Numbered the text pages consecutively, beginning with the first or title page
- Numbered your tables (typed separately from the text, not more than one on a page) consecutively in the order in which you want them to appear
- Carefully read our final typescript at least twice, the second time preferably on a different day
- Kept for our files a complete copy of your manuscript and accompanying material



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Letter to the editor

Example:

Respected Editors,

We would like to submit the revision for the manuscript entitled, **"Optimal Harmonic Stepped Waveform Technique for Solar fed Cascaded Multilevel Inverter"** for the possible publication in **"Journal of Electrical Engineering and Technology"**. The manuscript is approved by all authors for publication is a original research work that has not been published previously, and not under consideration for publication elsewhere, in whole or in part.

This work is completely sponsored by Department of Science and Technology, Government of India (Ref. No.: DST/TSG/NTS/2009/98). This paper deals with the improvement of power quality in solar photovoltaic systems with a optimal harmonic stepped waveform technique with its corresponding implementation in hardware.

Yours sincerely,



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Responding to the editor

Acceptance without revision

Take no further action until the proofs reach us, except prehaps write a note thanking the editor

Minor revisions requested ("accepted")

- **Consider the suggestions carefully, and if we agree that they will improve the paper, modify or rewrite sentences or sections as necessary**
- In our covering letter sent with the revised version, **thank the editor and referees for their help and enclose a list of the substantial changes made in response** to their suggestions; if you have rejected one or more of the recommendations, explain why



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Responding to the editor

Major revisions requested ("further consideration")

- We have to **think hard if the effort is worth while**

Rejection

- If the editor says the article is too specialized or outside the scope of the journal, your best course is to **send it to another journal**, first modifying the style to comply with the instructions of that journal

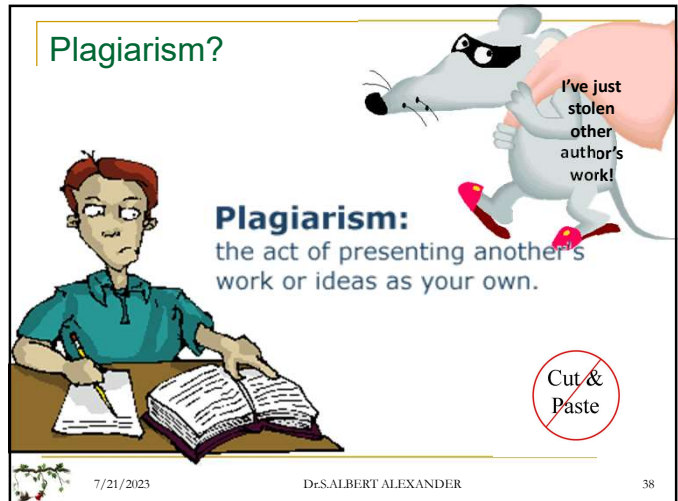


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Plagiarism?



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Plagiarism

- A piece of writing that has been **copied** from someone else and is presented as being our own work
- To steal and pass off (the ideas or words of another) as one's own
- To use (another's production) without crediting the source
- To commit literary theft
- To present as new and original idea or product derived from an existing source



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How to avoid plagiarism?

Direct quote from research:

"Japan's beautiful Mount Fuji last erupted in 1707 and is now classified as dormant. Dormant volcanoes show no signs of activity, but they may erupt in the future."

Non-plagiarized paraphrase:

Mount Fuji, the highest mountain in Japan, is actually a dormant volcano. Dormant means that it is not active. The last time Mount Fuji erupted was in 1707, and there is always the possibility of a future eruption.

"I WILL NOT
PLAGIARIZE I
WILL PUT MY
PAPER INTO MY
OWN WORDS."



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Journal impact analysis

- Impact of the Journal – Journal Impact Factor
 - Journal Citation Reports
 - SCImago
- Your Impact based on citations to articles
 - Web of Science
 - Scopus
 - Google Scholar



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Impact factor

- Impact factor of a journal is the average number of **citations** to those **papers** that were published during the two preceding years
 - Calculation of 2022 IF of a journal:
 - A = the number of times articles published in 2020 and 2021 were cited by indexed journals during 2022
 - B = the total number of "citable items" published in 2020 and 2021
 - 2022 impact factor = A/B
 - Example: 600 citations/300 articles = 2



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Quartile ranking

- Q1 denotes the top 25% of the IF distribution
- Q2 for middle-high position (between top 50% and top 25%)
- Q3 middle-low position (top 75% to top 50%)
- Q4 the lowest position (bottom 25% of the IF distribution)



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h index

- An index to quantify an individual's scientific research output. J.E. Hirsch
- The **h-index** is based on the set of a researcher's most cited papers and the number of citations that the researcher has received in other people's publications
- "A scientist has index h if h of [his/her] N_p papers have at least h citations each, and the other ($N_p - h$) papers have at most h citations each"

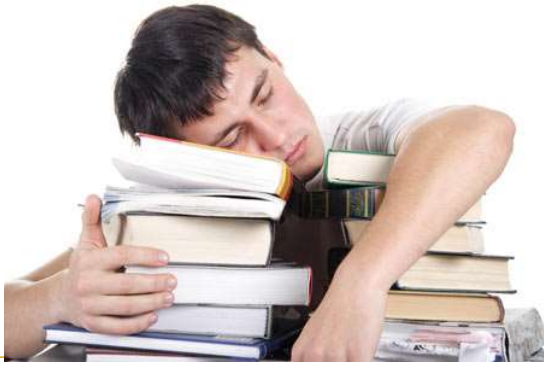


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Finished!!! You did it!!!



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