



RECENSIÓN, SÍNTESIS Y ELABORACIÓN DE ARTÍCULOS

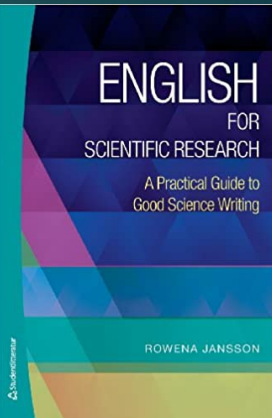
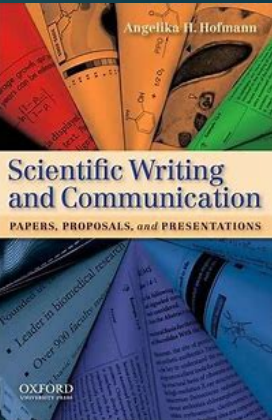
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How to write and publish a Scientific paper

References:

- Day, R. A. and Gastel, B., 2016, How to Write and Publish a Scientific Paper, 8th Ed., Cambridge Un. Press.
- Hoffmann, AH., 2010, Scientific Writing and Communication, Oxford Un. Press.
- Jansson, R., 2013. English for Scientific Research: A practical guide to Good Science Writing, Studentlitteratur, Lund.



How to write and publish a Scientific paper

What is Scientific Paper?:

An acceptable primary publication must be the first disclosure containing sufficient information to enable peers (1) to assess observations, (2) to repeat experiments, and (3) to evaluate intellectual processes.

- Therefore a scientific paper is:
 - The first publication of an original research results
 - Peers of the author can repeat the experiment
 - Publish in a journal or other source available for scientific community
 - The paper had been reviewed before publication

How to write and publish a Scientific paper

A scientific paper is really three (3) separate papers. This fact is critically important when you set out to write a paper, or to read one.

Title: Fishing for readers

Abstract: The “Reader’s Digest” version

The body of the paper: The whole story

Different types of Scientific Writing

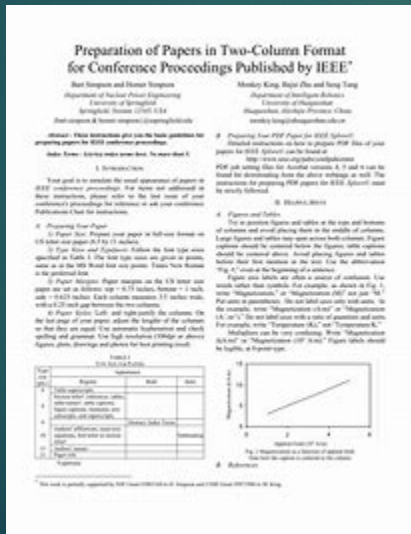
Similar principles apply to any type of scientific writing, but the purpose and constraints may be different.

- Review article
- Thesis
- Book: ~Thesis
- Report
- Conference papers
- Technical papers
- Case Studies
- Discussion papers
- Presentations: Oral, poster: [More opportunities to make exciting](#)

How to write and publish a Scientific paper

Ingredients of good Science paper

- Novelty of research
- Comprehensive coverage of relevant literature
- Good analysis (including statistics)
- Thought provoking discussion



Ingredients of good Conference papers

- Good organization
- Appropriate use of figures and tables
- Right length (=short)
- Writing to intended audience

Journals or conferences

- Scientific Journals
 - Peer reviewed
 - Scientifically more rigorous
 - Easier to access through internet
 - You reach the relevant readers
- Conferences
 - Less rigorous peer reviewing
 - Establish a network, feedback
 - Oral presentation skills

How to write and publish a Scientific paper

Some mayor features of scientific writing

- Communicate information in *concise and logical* way
- Make your paper *stand out*: convey how your results have changed the world
- Audience, forma, grammar, spelling and politics impose *constraints* on the scientific writing.
- The secret is to *match the mind* of the reader.
- In scientific writing there is no such thing as “writer’s block”.
- Scientific writing is a thankless job.

How to write and publish a Scientific paper

Why Publish a Scientific Paper?

- For other researchers to learn about your work.
- Scientific publications are the most important indicator of a scientist's track record.

- **PLANING:**

- Aim and main message of the article?
- Article or conference presentation?
- What journal?

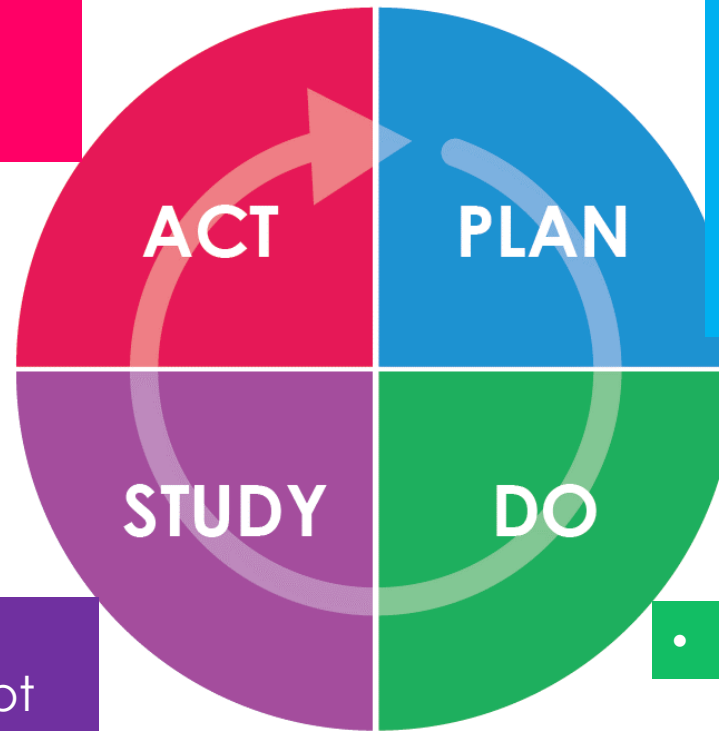


A research project is unfinished without a publication.

How to write and publish a Scientific paper

The improvement cycle

- Revise
- Check Language
- Submit



- **Plan the work carefully before you start**
- What question (problem) is studied? (Introduction)
- How is the problem studied? (Methods)
- What are the findings? (Results)
- What does these findings mean? (Discussion)

- Scrutinize
- Discuss the manuscript with the others

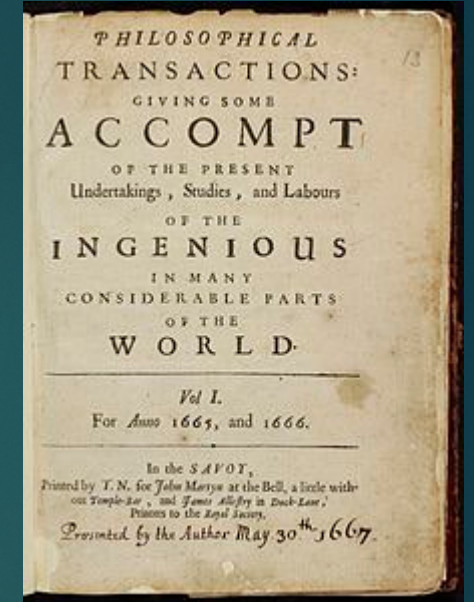
- Make a manuscript

How to write and publish a Scientific paper

Organization of scientific paper

- **IMRAD**: is usually used.
 - Introduction
 - Method
 - Results (Text, Tables, and Figures)
 - Discussion

Some times it is desirable to combine the Materials and Methods and the Results into an integrated “Experimental” section. Or combine Results and Discussion. In this case, there is usually a section on Conclusions. Refer to “Instructions to Authors”.



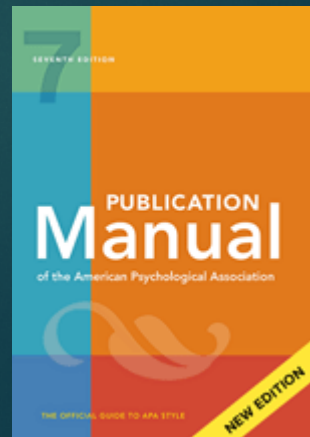
First Scientific Journal appeared in 1665. In 2020 about 30000 Journals exists.

How to write and publish a Scientific paper

Ideas for Preparing to write

- Highly regarded papers in the research area should be studied.
- Reading papers from the journal you would like to submit your article.
- Instructions of the journal should be followed.
- General instructions can be found in:
 - – The Chicago Manual of Style 2017
 - – Publication manual of the American Psychological Association 2020.

While reading create files for each section include new ideas.



How to write and publish a Scientific paper

How to Prepare the Title

- The title will be read by many people while the paper will be read by few.
- What is a good title?
 - It is the fewest words that can describe the contents of the paper.
 - Indexing and abstracting depends on the title.
 - Titles should not contain:
 - Abbreviations
 - Chemical formulas
 - Proprietary names (ownership names)
 - Jargon (slang)

How to write and publish a Scientific paper

Length of the Title

- Titles should be short but not too short.
- Should be specific.
- Long title is waste of words.
- Words to be avoided: Studies on, Investigation on, Observation on, A, An or The.
- **The Title as a Label**
 - The title of a paper is a label not a sentence.
 - The order of words is very important.
 - Should be suitable for indexing.
 - The title should highlight the significant content of the paper.
 - Running title are printed on the top of each page to help the reader.

How to write and publish a Scientific paper

How to List Authors and Addresses

- There are no agreed rules on the right order of authors.
- Some prefer to list their names alphabetically. (In Mathematics this is universal).
- In the past the Head of Lab etc. was used to put his/her name.
- Now the first author is the senior author (the senior author is the person who did the largest part of the research).
- Once you decide which journal your paper will be submitted to, then read the instruction for authors in that journal carefully.

How to write and publish a Scientific paper

ABSTRACT

- Abstract should be short but give the overall idea:
 - what was done?
 - what was found?
 - what are the main conclusions?
- What is an“ABSTRACT”?
 - The Abstract is a miniature version of the paper.
 - An Abstract should provide a brief summary of each main sections of the paper (Introduction, Materials and Methods, Results and Discussion).

How to write and publish a Scientific paper

Types of Abstracts

- In research papers we use informative abstract.
- In reports, review papers and conference reports we use indicative or descriptive abstract. Indicative abstract is more or less like table of content.
- Abstracts will be published by itself. Thus it should contain no bibliographic, figure, or table reference....
- The language should be familiar to the potential reader. Omit abbreviations and acronyms. **Write the paper before you write the abstract.**

How to write and publish a Scientific paper

Introduction

- The introduction is one of the most important sections of a scientific article. It should:
 - ✓ Introduce the reader to the problem
 - ✓ Give the context of the problem
 - ✓ Review previous work
 - ✓ Justify the work
 - ✓ Give scope and objectives
 - ✓ **Make the reader interested**

Introduction Moves

- The four different types of information and ideas found in the introduction are commonly structured in a particular way.
- One linguistic researcher, Swales (1984), after surveying a substantial number of published articles across a wide range of disciplines, he has described the way these types of information and ideas are structured as a pattern of moves.

How to write and publish a Scientific paper

THE MOVES

- **MOVE 1** : Introduce the topic and emphasize why is it important!
- **MOVE 2** : Relate to current knowledge: "What's been done" and "What need's to be done?"
- **MOVE 3** : Preparing for present research, indicating a gap, raising a question.
- **MOVE 4** : Introduce your work give the purpose and main objective.

How to write and publish a Scientific paper

THE MOVES-Example

- MOVE 1 : Introduce the topic and emphasize why is it important!

1. INTRODUCTION

[2] Fair weather atmospheric electricity and the solar-terrestrial electrical environment have been studied for many years. The serious study of atmospheric electricity began with the experiments of B. Franklin, J. Canton, G. Becarria, and C. A. de Coulomb more than 200 years ago [[Chauveau, 1925](#); [Chalmers, 1967](#); [Herbert, 1997](#)]. Early observations showed that the electric field in the lower atmosphere responded strongly to meteorological changes [[Everett, 1868](#)], and Lord Kelvin suggested that future weather forecasting would be possible with an electrometer [[Thomson, 1884](#)].

[3] Of central importance to the physics connecting the atmospheric electrical system with clouds and weather is the behavior of cosmic rays, which are modulated by solar activity and are themselves modulators of the atmospheric electrical system. Cosmic rays generate ions deep within the troposphere and control the atmospheric electric field even down to the planetary surface. Compelling reasons to examine the atmospheric effects of cosmic rays have arisen in recent years: Theory now links the ions produced by cosmic rays with aerosol formation and changes in the rates of aerosol coagulation and removal of particles by water droplets in clouds. The myriad processes of cloud physics therefore occur within a weak ionic plasma, susceptible to changes on all spatial and temporal scales.

How to write and publish a Scientific paper

THE MOVES-Example

- MOVE 2 : Relate to current knowledge: "What's been done" and "What needs to be done?"

[6] The importance of atmospheric electricity, and cosmic ionization in particular, to cloud and atmospheric processes was realized by C. T. R. Wilson [[Galison, 1997](#)]. Variations in ionization were suggested [[Ney, 1959](#)] as an explanation for changes to weather and climate [[Bering, 1995](#)]. Theoretical considerations [[Mason, 1971](#)] prevent direct nucleation of water droplets on ions at atmospheric supersaturations, but it has become apparent that there may be other effects of ionization. Natural and laboratory-generated aerosols may acquire substantial electrical charges, which can influence their dynamical behavior. Coagulation rates [[Fuchs, 1964](#)] and aerosol removal rates by droplets (scavenging) [[Pruppacher and Klett, 1997](#)] can be greatly affected by electrical charging of aerosols, which can be further enhanced if the particles are radioactive [[Clement et al., 1995](#); [Tripathi and Harrison, 2001](#)]. High levels of radioactive ionization [[Bricard et al., 1968, 1972](#); [Megaw and Wiffen, 1961](#)] can produce ultrafine aerosol particles in artificial and filtered air, and particle formation has also been reported [[Vohra et al., 1984](#)] at atmospheric levels of radioactivity. Although radiolytically produced ultrafine aerosol particles produced by ionization would have to persist and grow substantially to permit water condensation at atmospheric supersaturations, it is not justified to completely neglect possible direct or indirect electrical influences on aerosols and clouds [[Harrison, 1997, 2000](#)]. Recent modeling work [[Yu and Turco, 2001](#)] indicates that small ions can provide a source of atmospheric cloud condensation nuclei, which indicates a potential effect on clouds and ultimately climate [[Carslaw et al., 2002](#)]. Many studies have suggested that variations in cosmic rays on the scales of days and years influence global cloudiness [[Svensmark and Friis-Christensen, 1997](#)], cloud cover [[Todd and Kniveton, 2001](#)], mid-latitude cyclones [[Tinsley and Deen, 1991](#)] and high-level cloud [[Pudovkin and Veretenenko, 1995](#)]. Variations in ionization have also been suggested to account for variations in the planetary albedo of Neptune [[Lockwood and Thompson, 1979](#); [Moses et al., 1992](#)].

[7] The electrical properties of aerosols are well recognized in sciences outside geophysics. Aerosol electrification modifies aerosol deposition in the human lung [[Hashish et al., 1988](#)], including deposition of therapeutic aerosols [[Cohen et al., 1998](#); [Hashish and Bailey, 1991](#)]. Modifications to particle deposition may also occur as the result of corona ions from overhead power lines [[Fews et al., 1998](#)]. Domestic ionizers are designed to release large quantities of negative ions, causing unipolar aerosol charging. There are known biological effects of small ions [[Kellogg, 1984](#)], and bacteria may be killed or their growth inhibited by positive or negative ions [[Krueger and Reed, 1976](#)]. Additional complication in evaluating

How to write and publish a Scientific paper

THE MOVES-Example

- MOVE 3 : Preparing for present research, indicating a gap, raising a question.

[8] Although electrification is recognized to influence particle microphysical processes to some degree, it is far from clear that variations in the atmospheric electrical state will lead to observable changes in aerosol or cloud properties. The influence of the atmospheric electrical state on global meteorology and planetary cloudiness caused by variations in aerosol and cloud properties [e.g., [Hobbs, 1993](#); [Charlson and Heintzenberg, 1994](#)] would, if confirmed by testable physical mechanisms, be important for atmospheric science. However, establishing a causal link between large-scale meteorological processes and small variations in the atmospheric electrical parameters is hampered in several ways. First, our basic understanding of the electrical state of the atmosphere itself is incomplete [[Kridler and Roble, 1986](#)], as high-resolution global monitoring of clouds and lightning is in its early stages. Second, any influence of electrical variability on clouds and aerosols is likely to be masked by large natural variability. Third, appropriate models and measurements relating the electrical state of the atmosphere and aerosol and cloud processes do not yet exist with which to test possible links. Fourth, even if a link between small variations in electrical parameters and local cloud processes could be established, an extrapolation from the local effects to global climate scales would be complex.

How to write and publish a Scientific paper

THE MOVES-Example

- MOVE 4 : Introduce your work give the purpose and main objective.

[9] The goal of this paper is to review the “state of the science” regarding atmospheric electrical processes and their effect on aerosol and cloud microphysical processes. We begin by reviewing our understanding of the basic physical processes involved in atmospheric electrification ([section 1](#)) and atmospheric ionization ([section 2](#)) through to aerosol electrification ([section 3](#)) and the effects of such electrification on aerosol physical processes. Such a didactic review is necessary because much of the literature on this subject appears to be largely unknown to practitioners of modern atmospheric aerosol science. Our summary of aerosol electrification studies is the first to be aimed at those interested in aerosol physical properties and aerosol-cloud interactions rather than the electrical properties of the atmosphere. We then summarize the studies that have suggested a link between the electrical state of the atmosphere and weather ([section 4](#)) and examine the magnitude of electrical effects in each case. [Section 5](#) considers ion-aerosol-cloud processes on other planets in our solar system. We close by outlining what further studies are needed to advance the field, emphasizing the need to formulate hypotheses amenable either to physical experiments or numerical modeling ([section 6](#).)

How to Write the Materials and Methods Section

- **Purpose of this Section:**
- This part is usually written in the past tense.
- In this part full details are to be given about the techniques used.
- In case experiments are used they should be reproducible. The potential of reproducing the same results must exist.
- Include the exact technical specifications and quantities and source or method of preparation.

How to write and publish a Scientific paper

Materials and Methods

- Avoid trade names.
- If trade name is to be cited then it should be capitalized to distinguish it from generic name.
- Normally generic name immediately follow the trade name (e.g. Kleenex facial tissues).
- Description of what was needed to do the work (e.g., specimens), what was done, and how it was done, when and where (if these are necessary details).
- Not a narrative, as you might write to your friend describing your day (“First we drove the van to the river, then we launched the boat and ”) but rather a concise description of what a reader would need to envision, understand, assess, and (if needed) **replicate the work**.

Measurements and Analysis (Results)

- Be precise.
- Questions such as “how much” and “how” should be precisely answered by the author.
- Statistical analysis are often necessary. Discuss the data not the statistics.
- Ordinary statistical methods are to be used without comment; advanced or unusual methods may require literature citation.
- Figures (as needed), Tables (as needed).
- No interpretation, no comparison, just the facts, with no editorializing.

The main principals

1- Write with the reader in mind:

- To obtain good results is very nice.
- Collection of data can not speak for it self. It needs to be well communicated.
- Your readers are scientists, reviewers, students, researchers...etc.

How to write and publish a Scientific paper

2- Use Precise words

Bad example:

- The current remained increased for **several** hours.
- Nests were observed **frequently** for signs of predation.
- The carbonate layer was prepared **with** sodium carbonate.

Revised good sentences:

- The current remained increased for **6** hours.
- Nests were observed **12** hours for signs of predation.
- The carbonate layer was prepared **in the presence** of sodium carbonate.

How to write and publish a Scientific paper

3- Use Simple Words. Words should be precise and simple.

Bad example:

- Fractions of 0.8 ml were collected, **reduced to dryness**, and dissolved in 3.4% methanol prior to being sequenced.
- Our results **reflects deviations** from thermal equilibrium during desorption.

Revised good sentences:

- Fractions of 0.8 ml were collected, **dried**, and dissolved in 3.4% methanol prior to being sequenced.
- Our results **deviate** from thermal equilibrium during desorption.

How to write and publish a Scientific paper

- Many English as a Second Language authors convert vocabulary of their native language for use in English writing.
- In some cultures pompous words are extensively used, and statements tend to be indirect.
- Be careful not to overuse pompous words and phrases. Use direct statements.
- To ensure that your readers understand what you are writing use simple words.

How to write and publish a Scientific paper

How to Write the Discussion

- This is the hardest part to write.
- Papers are rejected because of a faulty discussion.
- Many discussions are too long and verbose.

First paragraph

- Provide the essential interpretation based on key findings
- Include a main piece of supporting evidence

Second paragraph

- Compare and contrast to previous studies
- Highlight the strengths and limitations of the study
- Discuss any unexpected findings

Last paragraph

- Summarize the hypothesis and purpose of the study
- Highlight the significance of the study
- Discuss unanswered questions and potential future research

Components of the Discussion

1. Try to present the principles, relationships, and generalizations shown by the results.
2. Point out any exceptions or any lack of correlation and define unsettled points.
3. Show how your results and interpretations agree (or contrast) with previously published work.
4. Begin with the interpretation of the data, with respect to the specific objectives of the study, and ending with the concepts used to start the Introduction.
5. Discuss the theoretical implications of your work, as well as any possible practical applications.
6. Summarize your evidence for each conclusion.

Factual Relationships

- The *Methods* and the *Results* should correspond to each other.
- The *Introduction* and *Discussion* should function as a pair.

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Effective Tables

When to use a Table:

- ❖ Do not construct a table unless repetitive data must be presented.
- ❖ Present the data in the text, or in a figure or in a table but do not mix.
- ❖ Simple data does not require a table.
- ❖ Try to avoid exponents in table headings like “cpmX103”.

Effective Graphs

Graphs are pictorial tables:

- ❖ Giving a figure does not add importance to the work.
- ❖ In case words can describe the data, then it is better to use words.
- ❖ Remember that the graph will be reduced so choose proper size of the symbols.
- ❖ Do not put too much information on the graph.
- ❖ Use graph instead of a table if it is more representative.

How to State the Acknowledgments

Ingredients of the Acknowledgments:

- The paper is usually followed by Acknowledgment and References.
- Two main things are required in the Acknowledgement:
 - Any significant help received from an individual.
 - Source of special equipment, and other materials are to be acknowledged.
 - Any outside financial assistance such as grants, scholarship, or contract.

How to Cite a Reference

Two Rules to Follow:

- 1- Cite the significant published references.
- 2- References to unpublished data, abstracts, theses, and other secondary materials should not clutter up the References. A paper that has been accepted for publication can be cited followed by “in press” or “forthcoming”.
- 3- Check all parts of every reference against the original publication before the manuscript is submitted and perhaps again at the proof stage.

How to write and publish a Scientific paper



References Styles

- Journals has various styles of handling references.
- It is better that you write full information about the references you used because you might submit the paper to another journal or use the references in future work.
- Follow the instructions otherwise it might be considered as a sign of previous rejection or evidence of lack of care.
- Although there are different reference styles. Three main styles are very common:
 - Name and year
 - Alphabet-number
 - Citation order

How to write and publish a Scientific paper



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How to write and publish a Scientific paper

References Styles

Name and Year System

Engling, G., Lee, J.J., Tsai, Y.W., Lung, S.C.C., Chou, C.C.K., Chan, C.Y., 2009. Size-resolved anhydrosugar composition in smoke aerosol from controlled field burning of rice straw. *Aerosol Sci. Technol.* 43, 662–672.

Feng, L., Shen, H., Zhu, Y., Gao, H., Yao, X., 2017. Insight into generation and evolution of sea-salt aerosols from field measurements in diversified marine and coastal atmospheres. *Sci. Rep.* 7, 41260.

Galindo, N., Yubero, E., Nicolás, J.F., Crespo, J., Pastor, C., Carratalá, A., Santacatalina, M., 2011. Water-soluble ions measured in fine particulate matter next to cement works. *Atmos. Environ.* 45, 2043–2049.

Citation order system

- [1] T. May, R. Comeau, P. Sun, et al., A comparison of survival outcomes in advanced serous ovarian Cancer patients treated with primary Debulking surgery versus neo-adjuvant chemotherapy, *Int. J. Gynecol. Cancer* 27 (2017) 668–674.
- [2] R.E. Bristow, R.S. Tomacruz, D.K. Armstrong, E.L. Trimble, F.J. Montz, Survival effect of maximal cytoreductive surgery for advanced ovarian carcinoma during the platinum era: a meta-analysis, *J. Clin. Oncol.* 20 (2002) 1248–1259.
- [3] N.S. Horowitz, A. Miller, B. Rungruang, et al., Does aggressive surgery improve outcomes? Interaction between preoperative disease burden and complex surgery in patients with advanced-stage ovarian cancer: an analysis of GOG 182, *J. Clin. Oncol.* 33 (2015) 937–943.

How to write and publish a Scientific paper

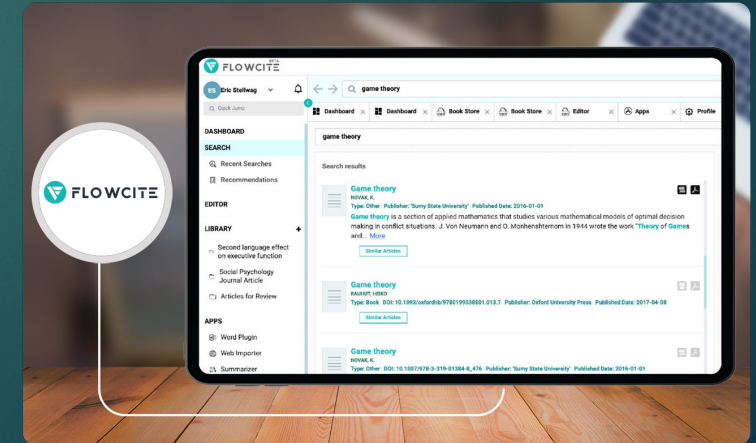
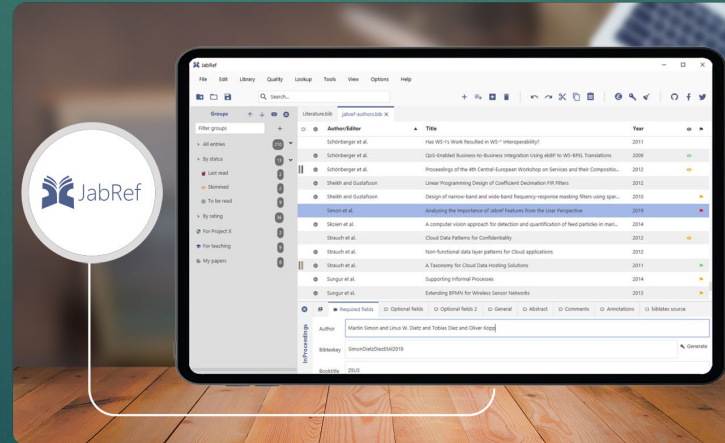
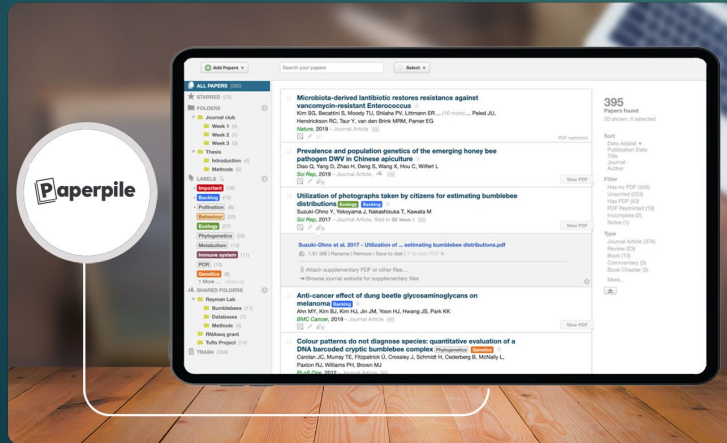
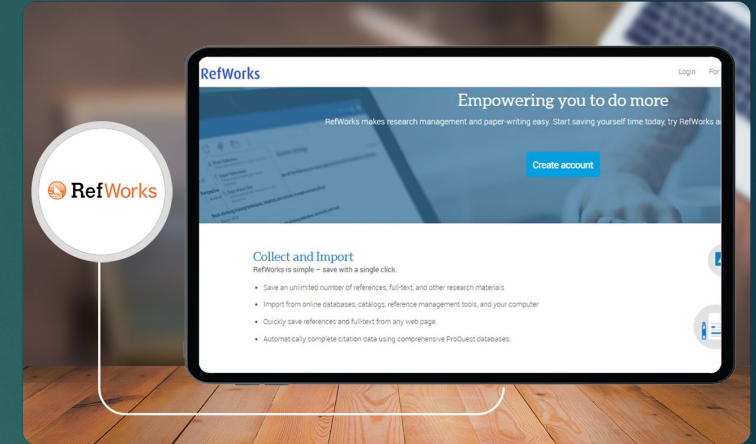
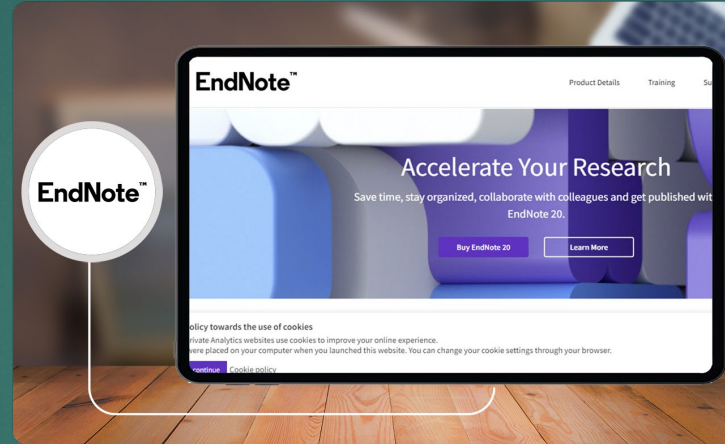
References Styles

Alphabet-
Number
system

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How to write and publish a Scientific paper

Software use to Arrange References



Revising your Work

- Good writing tends to be largely a matter of good revising.
- Revision is not for students only.
- Show the work to others and get feedback and revise your work some more.

How to write and publish a Scientific paper

In revising your work ask yourself the following questions

- Does the manuscript include all the information it should?
- Does it contain anything it shouldn't?
- Is all the information accurate?
- Is what you say consistent throughout?
- Is everything logically organized?
- Is everything clearly worded?
- Have you stated your points briefly, simply, and directly?
- Are grammar, spelling, punctuation, and word use correctly?
- Are all figures and tables well designed?
- Does the manuscript comply with the instructions?

Where to Publish

- What is the scope of the paper?
- Who do you want to read your paper?
- Once chosen, publish in as high impact journal as possible

How to Publish

Golden rule: Write for the reader

- Template often provided by the journal
- Build "your case" around figures, plots, graphs and/or equations.
- Any of the above introduced should be discussed in detail. No dead figures!
- Be clear and structured.

Where to Submit Your Manuscript

Why Decide Early, Why Decided Well

- It should be early decided at what journal should we publish our paper in so that we follow the journal requirements.
- Choosing the right journal you can reach the most suitable audience.
- In case you pick the wrong journal then:
 - The manuscripts may simply be returned to you.
 - Your manuscript might receive poor or unfair review.
 - Even if the paper is accepted, small number of people will see it.

How to write and publish a Scientific paper

Prestige, Access, and Impact

- A paper published in “garbage” journal does not equal a paper published in prestigious journal.
- Search for papers published in your field.
- In case you picked three journals A,B and C and A is a new journal published by a commercial company. B is an old, well known small journal published by a famous hospital or museum and C is a large journal published by a society. Then C is the first choice followed by B and then A.
- New journals not sponsored by a society might fail before it will be known to scientific world.
- Electronic journals should be avoided if they are not prestigious.

How to write and publish a Scientific paper

Use the “impact factor” to choice the journal

- In a given year, the impact factor of a journal is the average number of citations to those papers that were published during the two preceding years.

For example, the 2010 impact factor of a journal would be calculated as follow:

A= the number of times articles published in 2008 and 2009 were cited by index journals during 2010.

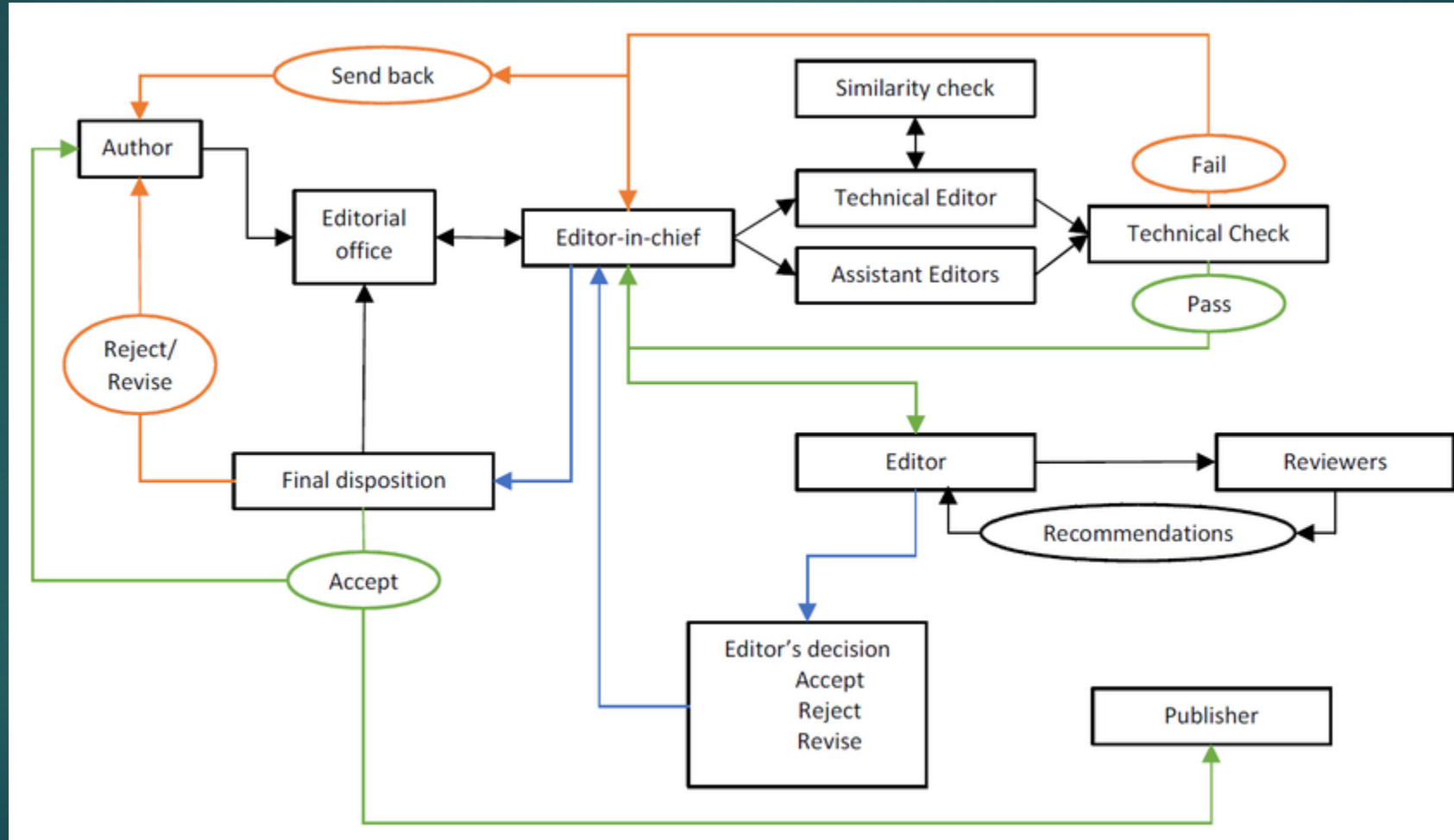
B= the total number of citable items published in 2008 and 2009. (citable items are usually articles, reviews, proceedings, or notes; not editorials or letters to the editor.).

2010 impact factor = A/B

(note that the 2010 impact factor are actually published in 2011;they can not be calculated until all of the publications had been received by the indexing agency.)

How to write and publish a Scientific paper

The process of publishing a scientific paper



Ethics in Scientific Publishing

- **Authenticity and Accuracy**
 - The research should be actually done.
 - Statistical data should be done properly if they exist.
 - The figures must include all data.
- **Originality**
 - The findings must be new.
 - Manuscripts should be sent to one journal only.
 - Slicing the findings into several papers should be avoided.
- **Credit**
 - Scientists build on other's work.
 - Ideas or work of others should be cited otherwise you will be guilty of plagiarism (piracy, larceny).
 - Every one who qualifies for authorship in the paper should be written.

How to write and publish a Scientific paper

Thanks for your attention and enjoy writing!!!

