Academic Paper Writing

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Content

Part I: Some Preliminaries

Part II: Preparing the Text

- How to prepare the title
- How to list the authors and addresses
- How to prepare the abstract
- How to write the introduction
- How to write the materials and methods Section
- How to write the results
- How to write the discussion
- How to state the acknowledgements
- How to cite the references

Part I – Some Preliminaries

What is Scientific Writing?

1. **The Scope of Scientific Writing**

- The reporting of original research in journals, through scientific papers in standard format.
- Also includes communication about science through other types of journal articles, such as review papers summarizing and integrating previously published research.
- Also includes other types of professional communication by scientists—for example, grant proposals, oral presentations, and poster presentations.

Part I – Some Preliminaries

What is Scientific Writing?

2. **The Need for Clarity**

- The key characteristic of scientific writing is clarity.
- Successful scientific experimentation is the result of a clear mind attacking a clearly stated problem and producing clearly stated conclusions.
- State your facts as simply as possible, even boldly. No one wants flowers of eloquence or literary ornaments in a research article..

Part I – Some Preliminaries

What is Scientific Writing?

3. **Receive and Understand the Signals (Scientific Paper)**

- Scientific writing has a clear purpose: to communicate new scientific findings. Scientific writing should be as clear and simple as possible..
- Scientific writing is the transmission of a clear signal to a recipient. The words of the signal should be as clear, simple, and well-ordered as possible.
- Science is simply too important to be communicated in anything other than **words of certain meaning**.

Part I – Some Preliminaries

What is Scientific Writing?

4. **Understanding the Context**

- Clarity in scientific writing requires attentiveness to such questions: What is the recipient's background? What is the recipient seeking? How does the recipient expect the writing to be organized?
- Know your audience. As well as know the conventions, and thus the expectations, for structuring the type of writing that you are doing.

Part I – Some Preliminaries

What is Scientific Writing?

5. **Organization and Language**

- Effective **organization** is a key to communicating clearly and efficiently in science. Such organization includes following the **standard format** for a scientific paper. It also includes organizing ideas **logically** within that format
- The best English is that which gives the sense in the fewest short words.

(湖人，谁也打不过！)

Part I – Some Preliminaries

Historical Perspectives of Scientific Communication

- Human beings have been able to **communicate** for thousands of years. Yet scientific communication as we know it today is relatively new.
- The first journals were published about **350** years ago, and the **IMRAD** (introduction, methods, results, and discussion) organization of scientific papers has developed within about the past century.
- Cave paintings carved onto rocks were among the first human attempts to leave records for succeeding generations.

Part I – Some Preliminaries

IMRAD Organization

- The early journals published papers that we call descriptive. Typically, a scientist would report, “First, I saw this, and then I saw that,” or “First, I did this, and then I did that.”.
- In fact, this straightforward style of reporting still is sometimes used in “letters” journals, case reports in medicine, geological surveys, and so forth.
- The IMRAD format, which had been slowly progressing since the latter part of the nineteenth century, came into almost universal use in research journals after WWII.

Part I – Some Preliminaries

IMRAD Organization

- IMRAD is convinced to be the simplest and most logical way to communicate research results.
- IMRAD save space in journals.
- IMRAD made life easier for editors and referees by indexing the major parts of a manuscript.

Part I – Some Preliminaries

IMRAD Organization

- The logic of IMRAD can be defined in question form:

1. What question (problem) was studied? The answer is the introduction.
2. How was the problem studied? The answer is the methods.
3. What were the findings? The answer is the results.
4. What do these findings mean? The answer is the discussion.

Part I – Some Preliminaries

IMRAD Organization

- The simple logic of IMRAD does help the **author** organize and write the manuscript, and IMRAD provides an easy road map for **editors, referees, and ultimately readers** to follow in reading the paper.
- Although the IMRAD format is widely used, it is not the only format for scientific papers. For example, in some journals the methods section appears at the end of papers, like Nature.
- Other possibilities include IRDAM, IMRADC, IMRMRMRD, ILMRAD. L presents literature review.

Part I – Some Preliminaries

Approaching a Writing Project?

Writing is easy. All you do is stare at a blank sheet of paper until drops of blood form on your forehead.

—Gene Fowler

Holy Crap! What sh*t am I writing?

Part I – Some Preliminaries

Approaching a Writing Project?

1. Establishing the Writing Mindset – Make Writing Manageable

- Academic Paper is serious, therefore, writing academic paper is doing something serious.
- Establish the mindset means critical thinking before writing.
- Never try to write anything before you critically think about what you are doing to establish your mindset.
- Otherwise, it is not only quite unmanageable; it is but also violating the clarity rules. Believe it or not, even yourself can not understand what you are talking about if you write this way.

Part I – Some Preliminaries

Approaching a Writing Project?

1. Establishing the Writing Mindset – Make Writing Manageable

- The thought of preparing a piece of scientific writing can intimidate even the best writers.
- Establishing a suitable mindset and taking an appropriate approach can make the task manageable.
- Remember that you are writing to **communicate**, not to impress.
- If you do good research and present it clearly, you will please and satisfy readers.

Part I – Some Preliminaries

Approaching a Writing Project?

1. Establishing the Writing Mindset – Make Writing Manageable

- People often make constructive criticisms. But they are not doing so because they dislike you; rather, they do so because they want your work to succeed. Do not be paralyzed by the prospect of criticism. Rather, feel fortunate that you will receive feedback that can help your writing to be its best.
- In narrower sense, a writing mindset means logical structuring of the paper.

Part I – Some Preliminaries

Approaching a Writing Project?

2. Prepare to Write

- Good writing is largely a matter of effective **imitation**.
- Therefore, obtain copies of highly regarded scientific papers in your research area, including papers in the journal to which you plan to submit your current work.
- Notice how these papers are written.
- Successful writing also entails following instructions. Essentially every scientific journal issues instructions to authors

Part I – Some Preliminaries

Approaching a Writing Project?

2. Prepare to Write

- Instructions for authors often refer readers to standard style manuals. Among style manuals commonly used in the sciences are the following:

- The ACS [American Chemical Society] Style Guide (Coghill and Garson 2006)
- AMA [American Medical Association] Manual of Style (Iverson et al. 2007)
- The Chicago Manual of Style (2010)
- Publication Manual of the American Psychological Association (2010)
- Scientific Style and Format (Style Manual Subcommittee, Council of Science Editors 2014)

Part I – Some Preliminaries

Approaching a Writing Project?

2. Prepare to Write - Suggestion

In preparing to write, realize that sometimes ideas must percolate for a while. If, for example, you cannot come up with an effective way to begin your paper or to structure a section, take a break. Exercise for a while, take a nap, or maybe discuss your work with someone. A solution may then occur to you.

To write good, you need good eating and good sleeping and most importantly you need a working and functioning brain for **inspirations**.

Part I – Some Preliminaries

Approaching a Writing Project?

3. Doing to Write

- Writing is, if not more important, as important as other parts of conducting a research project. So, make time to write.
- With a well established mindset, write section by section, without necessarily following a predefined order.
- Don’t let you be disrupted by anything until you finish the section.
- You can write the introduction last, but it does not mean introduction is easy or unimportant; instead, introduction is the most important part and most difficult to write.

Part I – Some Preliminaries

Approaching a Writing Project?

3. Doing to Write - Suggestion

- It is not a good idea to let a deadline to push you move forward in writing. In writing a scientific paper, you need to solve more, if not the same as, problems than doting the project. Let writing be causal and be relaxed.
- Writing scientific paper is no difference from creation. Always write first before revise it in your brain.

Part I – Some Preliminaries

Approaching a Writing Project?

3. Doing to Write - Suggestion

- As a non-authentic English speaker, never ever write Chinese first, and then translate into English. It is not only time-wasting, but also making the language unreadable.
- Writing in English means thinking in English.
- Clarity is top I priority, instead of the language.
- Several grammar/vocabular mistakes do not make a consequence.

Part I – Some Preliminaries

Approaching a Writing Project?

3. Revising the Writing

- Good writing is a matter of revising, both for beginners and qualified researchers.
- After a presentation to a scientific-writing class, a well-known scientist and journal editor was asked, “Do you revise your work?” He answered: “If I’m lucky, only about 10 times.”

Part I – Some Preliminaries

Approaching a Writing Project?

3. Revising the Writing – Ask yourself following questions

- Does the manuscript include all the information it should?
- Should any content be deleted?
- Is all the information accurate?
- Is all the reasoning sound?
- Is the content consistent throughout?
- Is everything logically organized?

Part I – Some Preliminaries

Approaching a Writing Project?

3. Revising the Writing – Ask yourself following questions

- Is everything clearly worded?
- Have you stated your points briefly, simply, and directly? In other words, is everything concise?
- Are grammar, spelling, punctuation, and word use correct throughout?
- Are all figures and tables well designed?
- Does the manuscript comply with the instructions?

Part I – Some Preliminaries

Approaching a Writing Project?

3. Revising the Writing – Suggestion

- Once your manuscript is nearly the best you can make it, show it to others and request their feedback.
- Scientists were advised, “Show your manuscript to a guy in your lab, a guy in a lab down the hall, and your wife.”
- But avoid the temptation to keep revising it forever. No manuscript is perfect (There is always a ceiling over there, but you never know where it is).

Part I – Some Preliminaries

What is A Scientific Paper?

1. Definition of A Scientific Paper

An acceptable primary scientific 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; moreover, it must be susceptible to sensory perception, essentially permanent, available to the scientific community without restriction, and available for regular screening by one or more of the major recognized secondary services (e.g., currently, Biological Abstracts, Chemical Abstracts, Index Medicus, Excerpta Medica, Bibliography of Agriculture, etc., in the United States and similar services in other countries).

Part I – Some Preliminaries

What is A Scientific Paper?

1. Definition of A Scientific Paper – Simpler but less accurate term

Primary publication is

(1) the first publication of original research results,

(2) in a form whereby peers of the author can repeat the experiments and test the conclusions, and

(3) in a journal or other source document readily available within the scientific community.

By definition, scientific papers are published in peer-reviewed publications.

Part I – Some Preliminaries

What is A Scientific Paper?

2. Organization of A Scientific Paper

- A scientific paper is organized to be highly stylized with distinctive and clearly evident component parts.
- The most common labeling of the component parts, is introduction, methods, results, and discussion (hence the acronym IMRAD).
- IMRAD system was prescribed as a standard by the American National Standards Institute, first in 1972 and again in 1979.

Part I – Some Preliminaries

What is A Scientific Paper?

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- Always follow the template!

Part I – Some Preliminaries

What is A Scientific Paper?

2. Organization of A Scientific Paper

- The preparation of a scientific paper has less to do with literary skill than with organization.
- Organization is a system of reporting data that is uniform, concise, and readily understandable.

Excellent papers, like the ones published in Nature, is first scientific papers, but also superb literature.

Part I – Some Preliminaries

What is A Scientific Paper?

3. Shape of A Scientific Paper

- BROAD: First providing broad orientation,
- NARROW: then focusing narrowly on the specific research,
- BORAD: and then considering the findings in wider context.

Part I – Some Preliminaries

What is A Scientific Paper?

4. Other Definitions – Scientific Paper vs Research Report

- Research reports are not original, are not scientific, or somehow fail to qualify as scientific papers.
- Some Terms:

1. review paper
2. conference report
3. meeting abstract

Part I – Some Preliminaries

What is A Scientific Paper?

4. Other Definitions – Review Paper

- A review paper may review almost anything, most typically the recent work in a defined subject area or the work of a particular individual or group.
- Review paper is designed to summarize, analyze, evaluate, or synthesize information that has already been published.
- Reviews contain nothing new.
- Dual publication (duplicate publication of original data) does not normally arise because the review nature of the work.

Part I – Some Preliminaries

What is A Scientific Paper?

4. Other Definitions – Conference Report

- A conference report is a paper published in a book or journal as part of the proceedings of a symposium, national or international congress, workshop, roundtable, or the like.
- Conferences commonly are not designed for the definitive presentation of original data, and the resultant proceedings (in a book or journal) do not qualify as primary publications.
- Vast conference literature that appears normally is not primary.

Part I – Some Preliminaries

What is A Scientific Paper?

4. Other Definitions – Meeting Abstract

- Although meeting abstract generally do contain original information, they are not primary publications, and publication of an abstract should not preclude later publication of the full report.
- It was usually understood that many of the papers presented at these meetings would later be submitted for publication in primary journals.
- Clarify primary vs secondary communication of scientific information

Part I – Some Preliminaries

Where to Submit the Manuscript?

1. Decide Early and Decide Well

Part I – Some Preliminaries

Where to Submit the Manuscript?

1. Decide Early and Decide Well

- Decide where to submit before writing.
- This way, the paper can be geared appropriately to the audience.
- Thus you can initially prepare your manuscript in keeping with the journal's requirements, rather than having to revise it accordingly.
- The journals publishing the papers that you will cite are often journals to consider.
- Read journal statements describing its purpose and scope.

Part I – Some Preliminaries

Where to Submit the Manuscript?

1. Decide Early and Decide Well – Consequences of Poor Choice

- First, your manuscript may simply be returned to you, with the comment that your work “is not suitable for this journal.
- Second, if the journal is borderline in relation to your work, your manuscript may receive a poor or unfair review because the reviewers (and editors) of that journal may be only vaguely familiar with your specialty area.
- Third, even if your paper is accepted and published, your glee will be short lived if you later find that your work is virtually unknown because it is buried in a publication that few in your intended audience read.

Part I – Some Preliminaries

Where to Submit the Manuscript?

2. Prestige and Impact

- There is the matter of prestige in choosing the most suitable journals.
- One or two solid publications in prestigious journals is more impressed than 10 or more publications in second- or third-rate journals.

✓ Journal A is an attractive new journal published by a commercial publisher as a commercial venture, with no sponsorship by a society or other organization;

✓ Journal B is an old, well-known small journal published by a famous university, hospital, or museum;

✓ Journal C is a large journal published by the principal scientific society in your field.

Part I – Some Preliminaries

Where to Submit the Manuscript?

2. Prestige and Impact - JCR

- One tool for estimating the relative prestige of journals in a given field is the electronic resource Journal Citation Reports, commonly available through academic libraries.
- With this resource, you can determine which journals have recently been cited most frequently, both in total and in terms of average number of citations per article published, or impact factor.
- Not all good journals have impact factors computed, but impact factor can be worth considering in judging the prominence of journals.

Part I – Some Preliminaries

Where to Submit the Manuscript?

2. Prestige and Impact - JCR

- In some countries and institutions, impact factors of journals in which papers appear are among criteria considered when candidates are evaluated for promotion.
- The impact factor merely indicates how much the papers in a journal are cited on average. Impact factors should not be used to compare importance of journals in different fields.
- The impact factor does not say everything about the journal's quality and its suitability for your work.
- Other article-level metrics: viewed, cited, downloaded, or bookmarked.

Part I – Some Preliminaries

Where to Submit the Manuscript?

3. Access – Regarding Open Access

- Open access—that is, the provision of articles online free of charge to all who may be interested.
- Such journals, which do not have subscriptions and so lack this source of income.
- The costs typically are defrayed at least in part by fees charged to authors.
- Some journals give authors the option of making their articles freely accessible upon publication in return for paying a fee.

Part I – Some Preliminaries

Where to Submit the Manuscript?

4. Avoid Predatory Journals

- Open-access journals typically charge authors fees as these journals lack income from subscriptions. Some dishonest people take advantage of this model without peer review or editing trying to get authors' money.
- Such journals often market themselves vigorously, filling researchers' email with invitations to submit papers.
- Perhaps consult a mentor or senior colleague.

Part I – Some Preliminaries

Where to Submit the Manuscript?

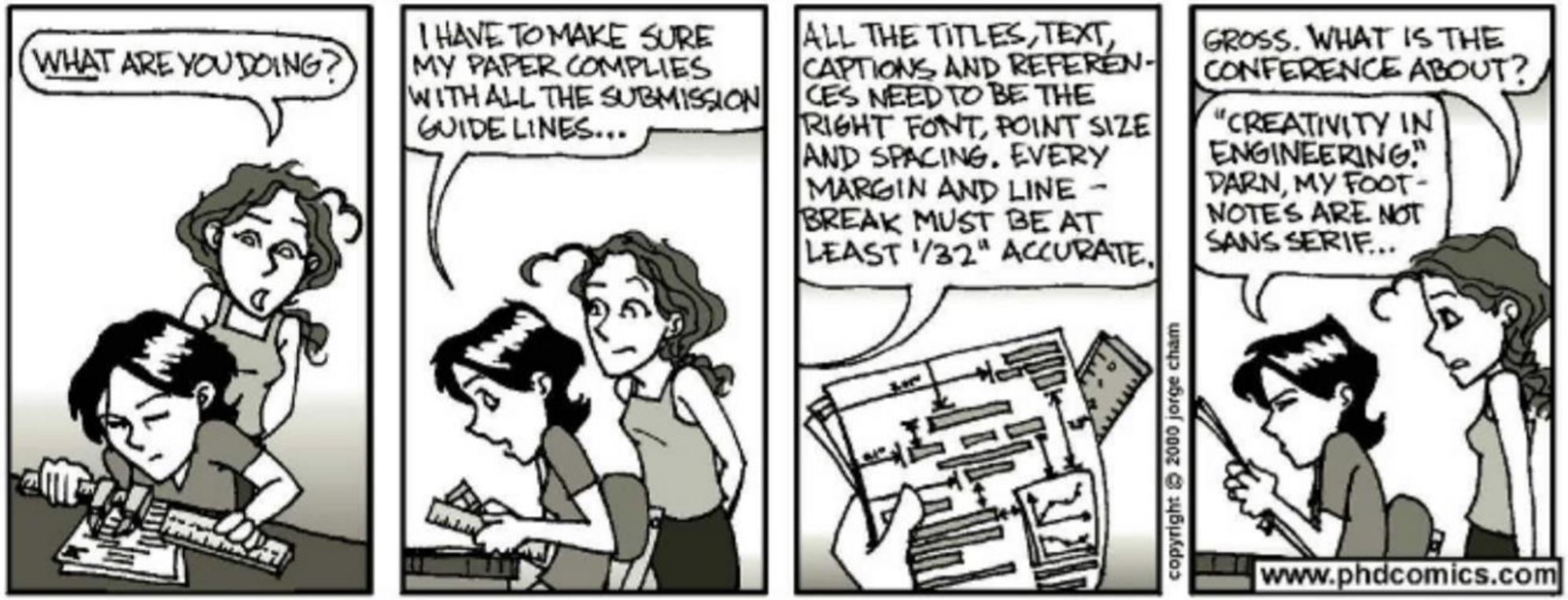
5. Other Factors to Consider

- Speed of publication – particularly publish online.
- The publication lag of a monthly journal is almost always shorter than that of a quarterly journal.
- Quality of printing can be a consideration.
- Consider likelihood of acceptance. Most papers belong in journals in their disciplines or subdisciplines.

Part I – Some Preliminaries

Where to Submit the Manuscript?

5. Using Instruction to Authors



Part I – Some Preliminaries

Where to Submit the Manuscript?

5. Using Instruction to Authors

- Typically, journals' instructions appear on the website of the journal.
- instructions to authors can have a variety of other names, such as information for authors, guide for authors, and submission instructions.
- a lack of instructions can be a clue that a journal is predatory.
- Pay particular attention to those aspects of editorial style that tend to vary widely from journal to journal.
- If the instructions include a checklist, use it.

Part I – Some Preliminaries

Where to Submit the Manuscript?

5. Using Instruction to Authors – Find Answers of Following Questions

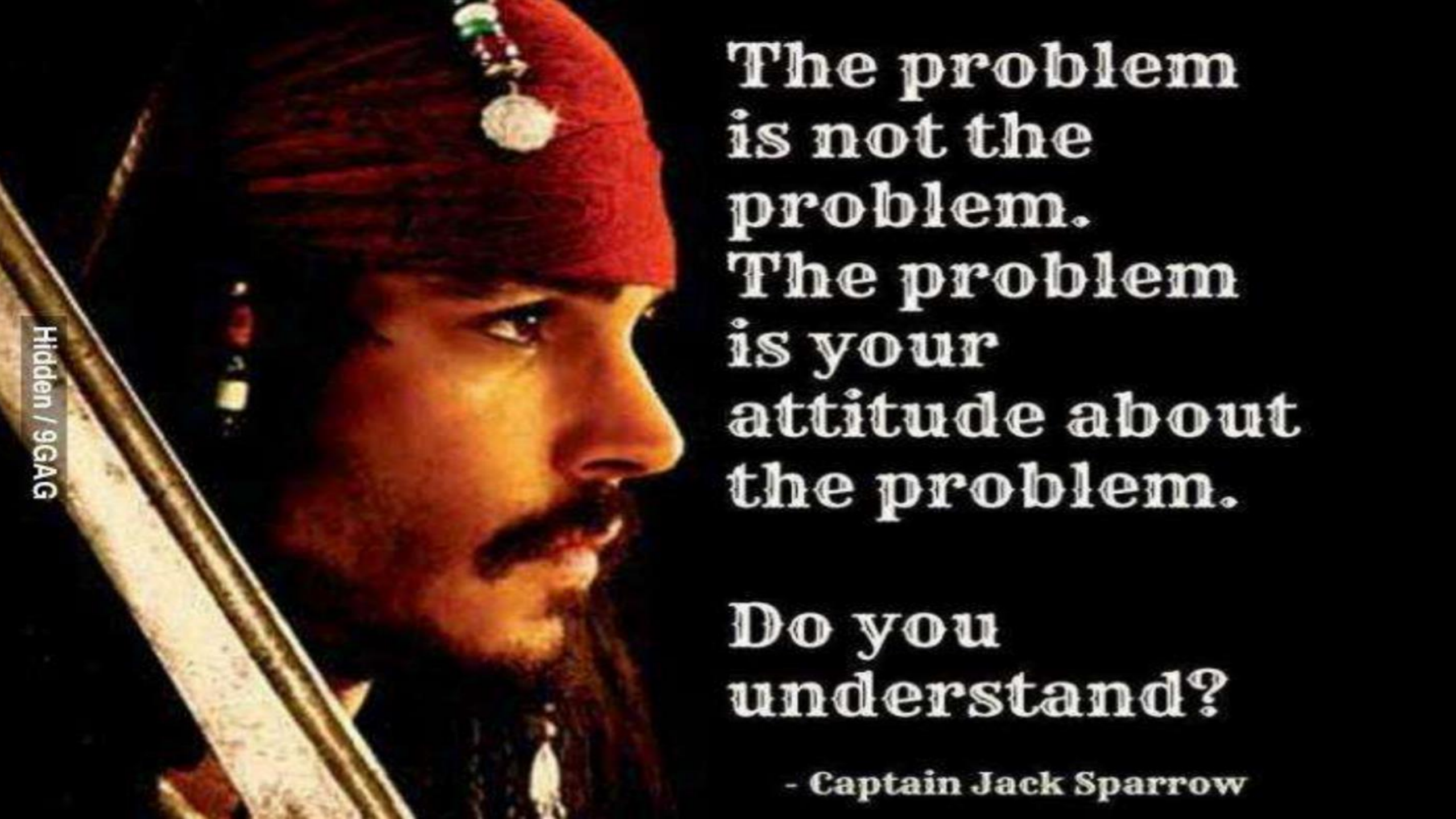
- Does the journal include more than one category of research article? If so, in what category would yours fit?
- What is the maximum length of articles? What is the maximum length of abstracts?
- Does the journal have a template for articles? If so, how can it be accessed?
- Does the journal post supplementary material online, if applicable? If so, how should this material be provided?
- What sections should the article include? What guidelines should be followed for each?

Part I – Some Preliminaries

Where to Submit the Manuscript?

5. Using Instruction to Authors – Find Answers of Following Questions

- What guidelines should be followed regarding writing style?
- How many figures and tables are allowed? What requirements does the journal have for figures and tables?
- In what format should references appear? Is there a maximum number of references?
- In what electronic format should the paper be prepared? Should figures and tables be inserted within the text, or should they appear at the end or be submitted as separate files? Is there an online submission system to use?


The problem is not the problem. The problem is your attitude about the problem.
Do you understand?
- Captain Jack Sparrow
Hidden / 9GAG