Writing a scientific paper

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Overview

A critical component of the scientific process is the publication of novel findings in scientific journals, with the objective of disseminating this information to the broader scientific community. The communication of research outcomes contributes to the collective body of knowledge within a specific discipline and, frequently, provides insights that facilitate the interpretation of experimental results by other researchers.. Your research work should be structured such that editors and readers can readily discover information. The most commonly used framework for research articles is the IMRaD format. IMRaD stands for "Introduction, Methods, Results, and Discussion". Additional journal criteria include an abstract, keywords, acknowledgements, and references. This approach allows scientists to present their stories in a organized way. Many authors find it easier to write the IMRaD portions in a different order. In the following link, you might find an online resource that may help you write a professional paper: https://awuc.misis.ru/how-to-write-a-research-paper-a-to-z-of-academic-writing/

Section of paper	Scientific process
Title	Orienting readers
Abstract	Providing a brief overview of the results
Introduction	Present the issue that has been addressed
Preliminary	Background information on the topic
Main results	Report the findings of the study
Acknowledgements	dedicated to expressing gratitude
References	Citing previous work we have relied on

Table 1: Structure and order of a scientific paper

Characteristics and tips of a good research paper

Title:

Introdusing an appropriate **title** for a research paper entails achieving some principal terms, as described in the following instructions:

- Make sure your research title describes the topic, the method, the sample, and the results of your study.
- Use critical key terms in the title for boosting the visibility of your paper.
- Ensure that your title consists of 5 to 15 words in total.

Abstract:

A research paper's **abstract** is a brief summary, usually contained within a single paragraph (between 200 and 300 words), that presents critical components including the research question or aim, the experimental design and methods applied, key findings along with important results or trends, and a concise overview of interpretations and conclusions. It is essential for the abstract to clearly define the study's purpose, describe the methodology, report significant results, and emphasize the implications derived from the findings.

Keywords

Keywords in a research paper are specific terms or phrases that capture the central topics and focus of the study.

Strategy:

- Begin by collecting complete sentences or key phrases from each section of your paper.
- Organize these elements in a logical order that effectively communicates the main concepts.
- Following this, the draft should be revised in order to ensure clarity and the smooth flow of ideas.

Introduction and Review of Literature:

The Introduction section plays a crucial role in research papers. It starts by setting the context through a review of key research literature, summarizing our current knowledge of the problem being investigated. It then clearly states the study's purpose, whether that's through a hypothesis, a question, or a specific problem. Additionally, it provides a brief explanation of the reasoning behind the study, the approach taken, and the potential results that could arise.

Structure:

- Begin by presenting general aspects of the topic before focusing on more specific details that provide context.
- Establish the context by delivering a brief and objective assessment of the relevant literature that has been published on the topic.
- Conclude with your statement of purpose and rationale.
- A helpful approach is to outline the Introduction in reverse; start with your specific purpose and identify the scientific context for your questions.

Methods:

The Methods Section provides a comprehensive overview of the research methodology employed. It specifies the outlines the data collection methods, lists the tolls used, and describes the analytical techniques that were applied in the study. The primary objective is to offer sufficient detail for other researchers to replicate the study if they so desire. This section does not include any results; it strictly focuses on the procedures for data gathering and analysis.

Construction

- Present the notions and propositions that are referenced in the analysis.
- Outline the steps and methodologies utilized in your study with enough precision that other scientists can replicate your research and evaluate the validity of your findings.
- Present your scientific findings in a clear and concise manner.

Results:

This part explains exactly what was found and the results of the study. The information given in the methods section offers necessary background information for understanding these findings and does not need to be repeated. The author may consider providing a subtitle for each study, along with theorems that clarify the purpose of the corresponding analysis. This additional information serves to extend the argument made in the Introduction, highlighting the significance of the study to the reader. The Introduction is more general, while this section is more focused on specific details.

Guide lines

- Confirm that the results are aligned with the methods section, address the information requested, and identify any issues that may have affected the results.
- It is essential that results are presented in a reproducible form, while avoiding unnecessary detail and ensuring effective analysis.
- As well as showing where the data comes from, the author must include a story that explains the figures and tables, as well as the research behind them.

Discussion:

The purpose of the Discussion section is to analyze your results in the context of existing knowledge about the research subject. It should clarify how your findings lead to a new perspective on the issue. This section must relate back to the Introduction through the questions or hypotheses you introduced and the literature you discussed, , but it should not just repeat or rearrange the content of the Introduction. Instead, it should demonstrate how your study has progressed our knowledge from the point where the Introduction concluded.

Acknowledgment:

In the context of your experiment, if you received any significant assistance in conceptualising, designing, or conducting the work, or if you received materials from an individual who has kindly provided them, it is essential to acknowledge their contribution. Authors invariably recognise the role of external reviewers in the evaluation of their drafts and express gratitude for any financial support received for their research projects.

Literature Cited:

The Literature Cited section features a list of **references** arranged in alphabetical order based on the last name of the first author, including only those works that have been cited throughout your paper.

Instructions

- It is imperative that you do not plagiarise and that you always cite each source you use.
- It is important to note that reading a large number of articles has been shown to have a positive impact on one's ability to write scientific papers in a professional way.

References

- Hoogenboom BJ, Manske RC. How to write a scientific article. Int J Sports Phys Ther. 2012 Oct;7(5):512-7. PMID: 23091783; PMCID: PMC3474301.