ПР13. Принципы составления и написания научной статьи. Анализ отрывков из научных статей по различным темам. Введение и отработка новой лексики, клише.

ПР13. Writing a research paper. Analysis of extracts from scientific articles on various topics. Introduction and development of new vocabulary, cliche.

Read and translate the text. Learn basic concepts and definitions.

AN EXPERIMENTAL RESEARCH PAPER

An experimental research paper is a paper written by a scientist to present the objectives, methods, results, and conclusions of the study he/she has performed. The paper is usually published in a professional scientific journal and often needs to be peer reviewed. It has much in common with other types of scientific writing, such as a monograph, a thesis or dissertation.

The term "experimental research" used here is referred to any kind of study in which a scientist states a problem, moves a hypothesis as a possible way to solve the problem, collects, processes and interprets research data which will either support or reject the hypothesis.

A paper which describes experimental research differs from a review paper in one major way: it is not limited to the description of the state of knowledge in a given topic area; here the author is expected to create an entirely new work based on his own experimental findings, their interpretation and evaluation.

The organizational format for all experimental research papers is generally the same, regardless of the field of study in which the scientist is working. A typical experimental research paper contains the following sections in the order they are listed:

- **Preliminary sections:**

Title
Abstract
Keywords
Nomenclature

- **Major sections:**

Introduction
Methods and Materials
Results and Discussion
Conclusion

- **Supporting sections:**

Acknowledgements
References
Appendices

ПР14. Принципы составления и написания научной статьи. Анализ различных частей научной статьи и их особенностей.

ПР14. Writing a research paper. Analysis of various sections of a scientific article.

Read and translate the text. Learn basic concepts and definitions.

ABSTRACT

An abstract is a brief overview of the whole paper in which basic ideas developed in research are summarized. Although the abstract is placed at the beginning of the paper, after the

title and before the introduction, it should be written last. You need to have completed all other sections before you can select and summarize the essential information from those sections.

The abstract helps readers decide whether or not the paper is relevant to their own research interests and therefore worth reading. Hence, it should be clear, concise, specific, objective and complete.

Now that the use of on-line publication databases is prevalent, writing a really good abstract has become even more important than it was a decade ago. Providing an abstract in English makes your contribution much more accessible to international scientists in the same field.

Despite the fact that an abstract is quite brief, it must do almost as much work as the multi-page paper that follows it. This means that it should in most cases include the following sections:

- motivation/background;
- the purpose of the study;
- the procedure/methodology used;
- the main results/findings obtained;
- the conclusions reached/any recommendations if applicable.

Each section is typically a single sentence, although there is room for creativity. In particular, the parts may be merged or spread among a set of sentences.

INTRODUCTION

An introduction is the first main section of the research paper. It is a very important section because here a scientist needs to justify his research and to emphasize his contribution. The introduction should capture readers' interest, making them want to read the rest of the paper.

An introduction can be one of the most difficult sections to write because it is not always easy for the author to decide where to start and how much to include at the beginning.

It is a good idea to start with what readers expect: a clear explanation of the problem mentioned in the abstract, description of the context from which the research originated and the contribution of other scientists working in the field.

An introduction acts as a bridge that transports readers from general field or context of research to the specific experiment by describing an inaccuracy or insufficiency in previous research which motivates the present experiment.

The introduction is typically divided into 5 stages:

- general field of research in which the problem is set;
- aspects of the problem already studied by other researchers;
- indicating a gap;
- stating the purpose of the research;
- specifying objectives/ methods/ activities.

Scientists do not always arrange these stages in the order described above. Sometimes they interrupt one stage with another, and then return to the previous section. However, the general strategy of structuring the introduction presented above is common and advisable for a researcher-beginner to follow.

MATERIALS AND METHODS

After the Introduction, the second major section of the experimental research paper is Materials and Methods. This combined title indicates that researchers generally describe these two aspects together when they write up their research.

The purpose of the Materials and Methods section is to describe in detail how the study/experiment was carried out and also to clarify the rationale for the procedure. In science, it's not sufficient merely to design and carry out an experiment. Ultimately, others must be able to verify your findings, so your experiment must be reproducible, to the extent that other researchers can follow the same procedure and obtain the same results.

In the Materials and Methods section, you can write *that* you recorded the results, or *how* you recorded the results (e.g., in a table), but you shouldn't write *what* the results were — not yet. Here, you're merely stating exactly how you went about testing your hypothesis.

In the following example from the field of Powder Technology, notice the elements that have been included under Materials and Methods.

RESULTS AND DISCUSSION

The Results and Discussion section of the scientific paper is the part in which scientists present the findings of their study and comment on them.

The Results and Discussion section is the most intellectually important part of your paper. Results are sometimes presented separately from the discussion and sometimes combined in a single Results and Discussion section. In general, keeping Results and Discussion section combined is more common and appropriate because results make little sense to most readers without interpretation. Combining the results and discussion section allows you to discuss results of a particular test or method immediately after presenting them.

The Results and Discussion section of the report presents the findings of the study in tables, figures and in a written text. Tables and figures (graphs, diagrams) present the complete findings in numerical terms, while the accompanying text helps the reader to focus on the most important aspects of the results and to interpret them.

The body of the Results and Discussion section is a **text-based presentation** of the key findings which includes references to each of the Tables and Figures. The text should guide the reader through your results stressing the key results which provide the answers to the question(s) investigated. A major function of the text is to provide clarifying information. You must refer to each Table and/or Figure individually and in sequence, and clearly indicate for the reader the key results that each conveys. Key results depend on your questions, they might include obvious trends, important differences, similarities, correlations, maximums, minimums, etc.

To sum up, **the text of the Results and Discussion section** typically:

- gives the reader any information to understand the results;
- locates the figure(s) or table(s) where the results can be found;
- highlights the important findings;
- comments on the results.

CONCLUSION

Conclusion is the second most important part of the research paper. This is where you sum it all up. This is the punch line and it needs to be good**!**

Whereas the "Results and Discussion" section has discussed the results individually, the "Conclusion" section discusses the results in the context of the entire experiment. The conclusion is a statement made after looking at the hypothesis, and the data, and determining what would be an appropriate explanation for the outcome of the experiment. The conclusion will include your results, any relationships that you have discovered. In your conclusion you will explain how accurate your results are and explain any discrepancies. This is where you make your audience believe that you understand.

This section of the report has two parts:

▪ It summarizes the main findings and results. This part is also for busy readers who don't have time to read all of your findings, and for readers who want to read an overview of the findings before deciding whether to read the findings in detail.

▪ It draws a main conclusion and links to the recommendations (sometimes present)