

Section 1. Research Writing Basics

Unit 2. IMRD Format

Today within the framework of Section 1 we are going to look into IMRD format structure.

Unit 2 of our course will cover the role of standards in academic writing, IMRD format, IMRD components and their functions.

It is generally accepted that a typical organizational pattern for structuring a research paper should follow a certain standard.

But why should there exist a certain standard? Well, for a number of reasons ...

First, the core blocks are chosen to reflect priorities of a specific discipline. Thus, papers in social sciences usually include a separate theory chapter, while technological or engineering science will give more emphasis to experiment description. A common standard allows us to assess the text according to specific criteria. For example, all international scientific journals should validate that articles are reliable, based on certain trustworthy methods and thus include a clear description of methodology.

Second, by organizing texts into core blocks a unified pattern gives a logical flow to the content.

Third, it makes journal manuscripts predictable and easy to read. In a way, it provides a “map” so that readers can quickly find content of interest in any manuscript.

IMRD format has been adopted by a steadily increasing number of academic journals since the first half of the 20th century. It has come to dominate academic writing in the sciences and in the hard sciences specifically such as chemistry, physics, engineering and biomedicine.

IMRD creates a logical flow reflecting the scientific process to readers where certain information can be found. It comprises the core of the research paper:

- the research question and its significance
- the methodology
- the main findings with their implications
- it facilitates reading

IMRD is an acronym of formatting, an abbreviation made up of four letters – *I M R D*. The letters stand for **I**ntroduction, **M**ethods and **m**aterials, **R**esults, and **D**iscussion.

Note that these four sections should always go in this very order, following the logic of the scientific process. IMRD indicates a pattern or format rather than a complete list of headings or components of research papers. We will cover all other major elements in our next video.

The four sections of the research paper have four different purposes or functions. Let's analyze them by formulating questions that they are supposed to answer.

Introduction answers the question - *Why did you conduct the study?* Or more specifically - *What was the research question, the tested hypothesis or the purpose of the research?*

The main aim of the Introduction is to provide the rationale for the paper, moving from general discussion of the topic to a particular gap in research or hypothesis being investigated. A secondary purpose is to *attract interest in the topic* and hence to *attract readers*. The introduction usually includes a literature review, sometimes it may even merit having its own section.

The next part of the research paper is **Methods and materials**. The Methods section describes, in various degrees of detail, methodology, materials, and procedures. The key question here is – *How did you conduct the study?*

The purpose of this section is to present in a simple and direct manner what has been done, how, when, and how the data were analyzed and presented. Methodology should provide all the information needed to allow another researcher to judge the study or actually repeat the experiment.

In the **Results section**, you report what you found in the study. Thus, it describes the findings, accompanied by variable amounts of commentary. The objective of the section is to show the detailed results of the study in natural order, broken into appropriate subsections.

This part of the paper presents new knowledge; therefore, it is the core of the article. New facts and statistics are presented in the form of tables, charts, graphs, and figures, which are an integral part of a well-written scientific paper.

It is often said that the Results section of a research paper should simply report the data that has been collected; with all evaluation and commentary left until Discussion.

The **Discussion section** explains what these results mean and what the implications are. Discussion offers an increasingly generalized account of what has been learned in the study, usually referring back to statements made in the Introduction. This section suggests what new knowledge the research provides to the field. It also discusses implications of the study, highlights limitations and presents opportunities for future research.

The section pulls everything together and shows the importance and value of the work. Therefore it is the most innovative and difficult part of the paper to write.

Let's have a look at the so-called **wineglass model for IMRAD structure**. The scheme of a "wine glass model" has two characteristics.

The first one is "*top-bottom symmetric shape*", and the second one is "*changing width*" – that is the top is wide and it narrows towards the middle, and then widens again as it goes down toward the bottom.

The first one, "**top-bottom symmetric shape**", represents the symmetry of the story development. This means that the same subject introduced in Introduction will be reconsidered in Discussion. The hypothesis posed will be either confirmed or disproved.

The second one, "**the change of the width**" shows information flow logic moving from the general in the introduction – which starts with the general field of study and an extensive literature review - to the more specific in methods and results - and finally expanding back in the discussion section to explain the outcomes and to put them in a broader perspective. This is what constitutes the essence of IMRD format.

To sum up, today we have looked into the role of standards in academic writing and described IMRD as the most commonly used manuscript format by journals and academic bodies, which comprises the core of the research paper. IMRD is an abbreviation to show that the format includes Introduction, Methods, Results and Discussion. Each with its own function and research questions. IMRD structure follows the general-specific-general logic.

In our next unit I will guide you through other components of the research paper, creating a comprehensive picture of the research article. Thank you for attention and see you soon!