

Scientific Writing: The IMRaD Format

This handout was created to accompany the Writing in the Sciences video series.

The IMRaD format contains the following sections, in order:

- Introduction
- Methods and Materials
- Results (and)
- Discussion

Each of these sections serves a specific purpose in aiding the organization and structure of scientific papers.

Introduction

- Establish context for the research performed by giving some general information about the research topic and highlighting the specific issue or question the research is meant to address.
- Provide definitions and/or brief explanations for any terms or concepts that may not be common knowledge for your target audience.
- Always cite and create a reference page entry for any information that is borrowed from another source.
- End this section by stating the objective(s) for the research and present the research hypothesis.

Methods and Materials

- Write this section first. It is often the easiest to complete and can be written immediately after the research is performed to preserve the most relevant details.
- Provide a clear and detailed description of the experimental procedure. If the reader has the same knowledge of course material as you, they should be able to replicate the experiment using only your instructions.
- Do not number the steps or present them in a bulleted list. Instead, describe the research process. Though the requirements for your paper may vary, most outlets for scientific writing recommend the use of passive voice and advise writers to avoid using any personal pronouns in this section.

Results

- Open with text summarizing the research questions, aims, or hypotheses. Present the findings in the same order to establish the connection between your goals and discoveries.
- Include graphs, tables, and figures that are clearly labeled (and cited, if necessary) to show relationships between variables and emphasize emerging trends.
- Guide the reader through your findings in writing, highlighting the data that is most impactful.

Discussion

- Analyze and interpret the results of your experiment or study. Focus on the ways in which your results address your research question(s) or further your objective(s).
- Describe any potential sources of error (if applicable) and the potential affect they may have.
- Incorporate (and cite) outside information to aid the explanation of your results and underscore the impact of your findings. Summarize the most important outcomes of your research.

Note: The Results and Discussion sections can be written independently, but some publications and professors require them to be combined into a single section. If they are combined, simply provide interpretation and analysis as you present the results.