

Lab Report – IMRaD Style - Quick Guide

This style is commonly used for lab reports in the sciences, engineering, and the computer sciences. The purpose is to describe the results of an experiment you have performed and what you found.

The IMRaD name refers to the four main paper sections which are: Introduction, Methods, Results, and Discussion.

<u>Main Section</u>	<u>Purpose</u>
Introduction	Provide background and reason for the study. Finish by stating your aims and hypotheses.
Methods	Explain the study design, materials and analyses used. What was done and Why.
Results and Discussion	Explain what was found. Includes text, tables, and figures. Summarise and discuss your major findings. Compare / contrast your findings to other's studies, discuss, and discuss implications

How to Write the Sections of the Report:

Title

Tell the reader the topic of the report in one concise statement.

Abstract

For lab reports an abstract is generally not included. Check if your lecturer would like you to include one or not. Provide a brief overall synopsis of your report (usually about 250 words). Start with 1-2 sentences on the introductory reason for your work, then summarise the key methods and results, followed by the implications of your findings. Most of the abstract is about your key results. The abstract should crystallise your take home message.

Introduction & Aims

Write in present tense. Explain why you are doing the study. Introduce any key background information including theories, or other studies that are important to your topic. Present arguments for why this study is needed by explaining what is already known on the topic and what the gaps in knowledge still are. These gaps will justify why your particular aims are relevant and timely. *Tell the reader what your study is going to be about and why it is relevant (i.e. because you will address something that is not yet known).* Define any key terms or definitions for the reader. Be specific and clear.

Your Aims is usually the last paragraph of the introduction. State clearly and simply the overall goal of your study. Then provide the specific questions and hypotheses that you will test.

Methods

Write in past tense, as you are explaining what occurred. Tell the reader exactly *what* you did and briefly, *why* you used that method. Ideally, another scientist reading your paper should be able to replicate your study from the methods section. Include information about the population you studied, the sampling and analytical methods, and the statistical analyses used.

Results

Write in past tense. Present what you found in detail and explain the patterns observed. Include written text, and also tables and figures. Table and figures should collate raw data in a concise, informative manner. Do not list raw data. Do not explain the results here, only present and DESCRIBE them. Follow correct formatting when labelling tables and figures; table titles go above the table and figure captions go beneath the figure. Make reference to your tables and figures in the text body BEFORE the table or figure is presented. Include the results of your statistical analyses. Maintain use of good paragraph and sentence structure.

Discussion & Conclusion

Write in present, past, and future tense as appropriate. Start with an interpretation of the results. What do they mean? Describe the key findings from your results and interpretation in relation to your aims. Discuss whether your interpretations support or refute your hypothesis. In the proceeding paragraphs, discuss the reasons for your findings, especially the main findings. Compare and contrast your findings with other studies (e.g. those mentioned in your introduction). Present the strengths and weaknesses of your study including limitations. Discuss the implications of your work (i.e. what does it mean for the field of science & real world) Suggest further research opportunities. Make a final summary and conclusion.

Helpful Tip: It is usually easiest to write the Methods and Results sections first, followed by the Discussion and Introduction. Title & Abstract should be written last.

Use the checklist below to edit your work.

Lab Report – IMRaD Style – Check List

Section	Purpose	Verb Tense	Include in this Section
Title	Short accurate description of the main outcome or implication of the experiment	Present	<input type="checkbox"/> One short sentence that clearly states the experiment or the main result of the report <input type="checkbox"/> Use keywords drawn from the body of the report
Abstract	A synopsis of the report	Present and Past	<input type="checkbox"/> A brief but clear snapshot description of the report: its purpose, main finding, and implications
Introduction	Provides rationale for the study Places the research in context States specific objectives of the research	Present – when referring to established knowledge in the literature Past – when stating what was done and what was found	<input type="checkbox"/> Nature and scope of problem studied <input type="checkbox"/> Justification for the study <input type="checkbox"/> Gaps in knowledge identified <input type="checkbox"/> Short review of relevant literature <input type="checkbox"/> The overall aim of your study <input type="checkbox"/> Specific objectives & hypotheses
Methods	Describes what was done step by step Justifies / explains why particular methods were used Describes how data is analysed (i.e. statistics)	Simple past - refers to work done	<input type="checkbox"/> Describe location of study and nature of the population (e.g. study site and species) <input type="checkbox"/> Description of procedures (what was done) following the same order as the specific objectives <input type="checkbox"/> Explains and justifies what statistical analyses are conducted
Results	Describe the outcomes of your research Presents the data, the facts (what you found, calculated, discovered, observed) Outline the key findings	Simple past - refers to what was found, observed.	<input type="checkbox"/> The results found <input type="checkbox"/> Your observations during experiments/field work <input type="checkbox"/> Results of any calculations you performed <input type="checkbox"/> Do not include any discussion of results in this section, only descriptions
Discussion	Summarises the key findings and presents a take home message Discusses the possible reasons for the findings Puts your results in context of previous research Suggests future research	Present – when referring to results in this study Past – when referring to other research conducted Future – when referring to possible future studies	<input type="checkbox"/> Interpretation of the results: trends, relationships, generalizations shown by the results <input type="checkbox"/> Use the findings to address the aims of the study; do they support or refute the hypothesis? <input type="checkbox"/> Discusses any major exceptions (outlying data) and why it occurred / what it means <input type="checkbox"/> How your results agree or disagree with other studies (and why) <input type="checkbox"/> Implications of your work to the understanding of the broad topic <input type="checkbox"/> Suggests what research is needed next (as a follow up on your results)
Conclusions	Clearly state your overall finding/s and their implications	Present - emphasis on what should now be accepted as established knowledge	<input type="checkbox"/> Refer back to your Aims; use keywords from the Aims and Introduction <input type="checkbox"/> Implications: outline the significance of your results and applications arising from them