TECHNICAL REPORT CONTENT

Surafel S.   2023

SCIENTIFIC ARTICLES

- Scientific and technical articles and essays are mainly published in journals, magazines and newspapers.

- Scientific articles are typically written in a formal and objective style, using technical terminology specific to the field of study.

- scientific articles typically refer to papers published in scientific journals, specifically focusing on research conducted in the natural and physical sciences, life sciences, engineering, and related fields.

- These articles undergo a peer-review process, where experts in the field review the paper's content, methodology, and validity before it is accepted for publication.

Thinking about your audience
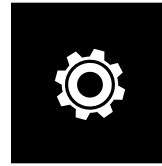
How scientific articles are written depends on who the readers are likely to be.

The writer must know what kind of people he or she is writing for.

The structure of a scientific article

**Structurally they can be broken down into these three parts:**

- The introduction
- The main body

- The conclusion

RESEARCH PAPERS

- Research papers are generally written for scientists working in the same field.

- A research paper is a broader term that encompasses various types of scholarly papers, including scientific articles.

- Research papers can be found in different disciplines, such as social sciences, humanities, or natural sciences.

- They can take different forms, such as theoretical papers, review papers, case studies, or experimental studies.
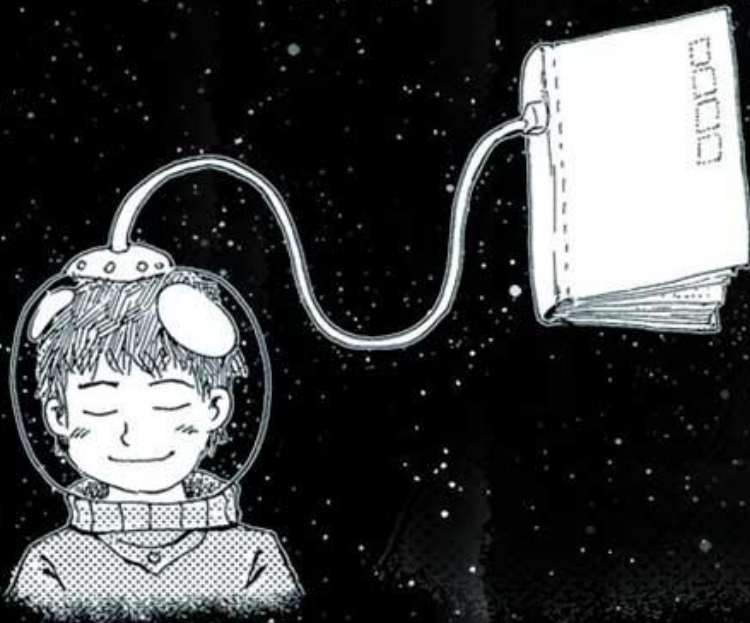
The structure of a research paper
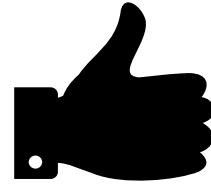
- Title
- Abstract
- Introduction
- Methods and Materials
- Results
- Discussion
- Conclusion
- References

A research paper has a more closely defined structure than an article or essay.

There are normally 8 sections in a research paper or scientific report, and these tend to follow each other in a fixed sequence.

Obviously these may vary, depending on the nature of the research done. Each element is further described and explained in Chapter 2 Composition.

PROPOSALS

✕ Proposals may well be the least popular form of writing for researchers but they are necessary.

✕ The purpose of a proposal is to ask for funding in order to make research possible.

✕ As there is only a limited amount of money in the world for research, you need to make the case for your particular research as effectively as you can.

✕ The purpose of a research proposal is to convince the intended audience, such as funding agencies, academic institutions, or research supervisors, that the proposed research is valuable, feasible, and worthy of support.

Purpose of a proposal

Convince the intended audience, such as funding agencies, academic institutions, or research supervisors, that the proposed research is valuable, feasible, and worthy of support.

A proposal must demonstrate that your research project is worth the time, effort and money to accomplish it.

It must make the need for money and time easily understandable and it must propose an appropriate recipient for the funding.

- A proposal persuades.
- A proposal requests.
- A proposal promises that the project will be completed.
- A proposal states the researcher's commitment to doing the work.
- A proposal presents a detailed plan to accomplish the research.
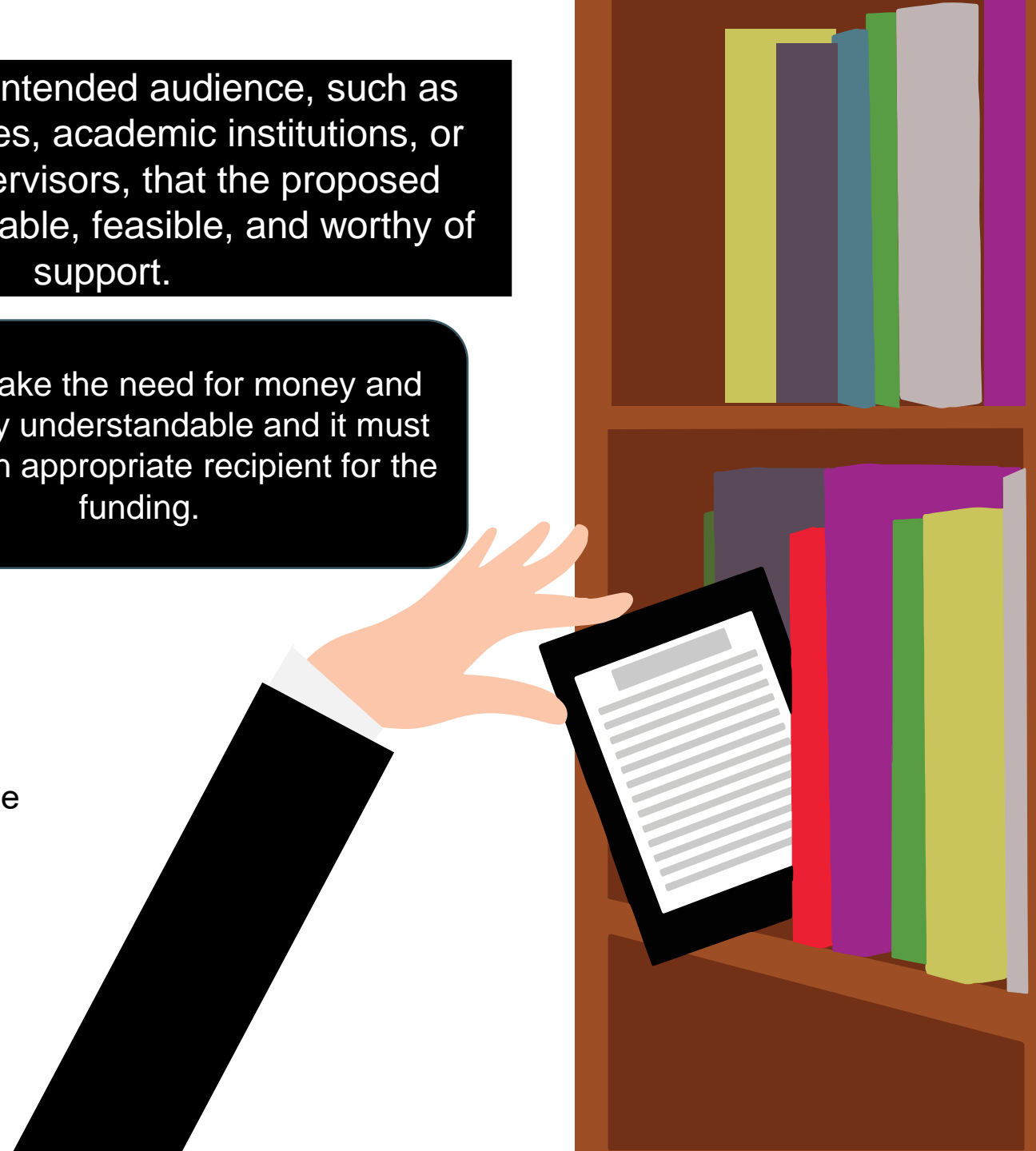
Components of a proposal
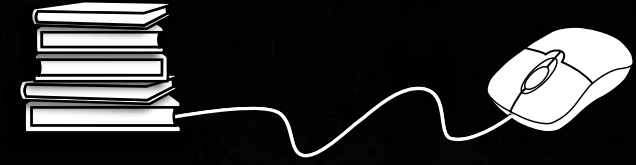
Although there is variation according to the organization you are applying to, a proposal will probably consist of these elements.

- A cover letter
- A title page
- A table of contents
- A summary
- An introduction
- A needs assessment
- Objectives
- Methods
- Pre-evaluation
- Long-term financial plans
- Budget
- Personnel
- Appendices

Technical Report Contents

📌 A good technical report presents data and analysis on a specified topic in a clear, highly-organized, and effective manner.

📌 Before you begin writing, define your message and audience, and make an outline.

📌 *Depending upon its length and purpose, a technical report may include the following components:*

- Cover Page
- Title Page
- Disclaimer
- Abstract
- Acknowledgements
- Table of Contents Page
- List of Figures and Tables
- List of Symbols and Definitions
- Introduction
  - Background
  - Objectives
  - Problem Statement
  - Literature review
- Body
  - Methodology
  - Analysis and Result
- Conclusions
- Recommendations
- References
- Appendices
- Letter of Transmittal

"Never let the fear of striking out stop you from playing the game." — Babe Ruth

Core of the Report

Introduction components: —

- Motivation
- Objectives
- Scope
- Limitation
- Content
- Organization

INTRODUCTION

This report:-

a) Discusses...
b) Investigates...
c) Illustrates...

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Introduction Section.

- The introduction to a technical report lays out the main problem or issue your paper addresses, and how you go about addressing it in the report.

- It should indicate to the reader why the issue at hand is important, and clearly establish the objectives for your report.

- In most cases, the introduction will likely be 1-3 paragraphs in length.

- The end of the introduction should clearly state what the report "does." It might do so by way of a direct statement ("This report analyzes…"), or by providing a series of questions (which may in some cases be bulleted or numbered) to be addressed.

"You don't have to be great to start, but you have to start to be great." – Zig Ziglar

Introduction Section.

🔖 The end of the introduction should clearly state what the report "does." It might do so by way of a direct statement ("This report analyzes…"), or by providing a series of questions (which may in some cases be bulleted or numbered) to be addressed.

🔖 This section gives the reader the necessary background information and leads straight into the report itself. A typical introduction can include the following content:

    Main aim/s, objective/s and scope (the parameters) of the report

    Identify the importance of the current project for scientific knowledge or commercial operations

    An overview of the report's sections

    Method(s) of approach

    Indications of scope and limitations of the study

    Outline of material presented in rest of report.

    Problem statement

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Core of the Report

Background components: ——— "Set against the background of..."

BACKGROUND

- history behind the problem
- previous works and attempts to solve the problem

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Background

- Provide background information and/or a literature review in the next section.

- Right after the intro, delve into the basic circumstances surrounding the topic at hand—a quick history of the problem and its relevance today, for instance. If it has been a topic of sustained debate within your field, you might also walk readers through important examples of past work on the subject.

- Essentially, you want readers who may be new to the subject matter to feel like they have at least a rudimentary grasp of it after reading this section.

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Core of the Report

Methodology components: ———

• description of the methodological framework used in the project

TECHNICAL CONTENT AND DESCRIPTION

"The technical content of the report will focus on the..."

"Never let the fear of striking out stop you from playing the game." — Babe Ruth

The Main body Section.

- In this section, you basically tell your reader what it is you actually did to tackle the problem or issue at hand. Tell them what type of testing or analysis you did, using what methods and equipment, and any other relevant details.

- If, for instance, your report is focused on a particular experiment, be specific on the way it was conceived, set up, and conducted.

- This is sometimes called a "methods" section, since you are describing the methods used to conduct your research.

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Core of the Report

Data components: text, tables, and figures ——

DATA AND DISCUSSION OF DATA

"The data obtained are..."

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Data Presentation and Discussion

- In this section, Present your data and describe what it all means.

- You've now reached the heart of a technical report, in which you clearly lay out and contextualize the data you've gathered. In most cases, you'll need to provide numerous figures and tables to present the actual data. Don't rely exclusively on them, though—use text to put the findings into a context that is appropriate for your intended audience.

  - *It can be hard to determine how much data to present. Giving too little can significantly weaken your analysis and the overall report. Giving too much, however, can drown the reader in a sea of tables and figures. Make sure you provide all essential data, and err on the side of providing a bit too much unless otherwise instructed.*

  - *Present your data in a logical order, so that each table or figure leads into the next one.*

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Core of the Report

Conclusion components:
- summary of the major findings you have arrived

CONCLUSION

"The data shows that…"

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Conclusion

🖈 In this section, Round out the report with a conclusion that bookends your introduction.

🖈 In a technical report, your introduction should raise the "big" questions and your conclusion should provide your answers. If, for instance, you listed several specific questions in your intro, answer them specifically in the conclusion. Otherwise, use it to pull together your findings into a clear, convincing statement.

Be as bold in your conclusions as your data and analysis permits you to be. Don't use terms like "might," "perhaps," "could," and so forth—write something like, "The data shows that…" However, don't draw conclusions that aren't supported by your data.

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Support Component of the Report

title ——— HOW TO WRITE A TECHNICAL REPORT

your name ———
by
Alan Smithee

purpose ———
A report submitted in partial fulfillment
of the requirements for

course name ———
ME 000 Some Course

department ———
date ———
Department of Mechanical Engineering
Fictitious Institute of Technology
01 January 9999

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Title

🖈 Create a simple title page at the beginning of your report.

🖈 The title page obviously needs to provide the title of the report and your name, and often includes details like the date and the purpose for the report's submission. Check for any title page layout guidelines for your discipline, department, employer, etc

🖈 Usual elements of title page in a technical report are:

     🗝 *Title*
     🗝 *Name and position of writer*
     🗝 *Name and position of principle reader*
     🗝 *Date of submission*

🖈 A good title must be informative. It. answers two basic questions:

     🗝 *What is the subject of the report*
     🗝 *What type of report is it? E.g. sea pollution - control devices*

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Support Component of the Report

300 words ——————

brief rundown of what the report covers ——————

any conclusions or recommendations you make ——————

GUNS ON TEXAS CAMPUSES   2

Abstract

The paper reviews recent attempts by Texas legislators to pass laws that would allow licensedgun carriers to bring firearms onto college campuses. Dozens of guns bills have been proposed in recentyears, but in the most recent session advocates got closer than ever to loosening gun restrictions. In the first section of the text, the author describes the gun advocacy of Sen. Birdwell, who filed his guns bill in regular session. Early attempts to pass his law failed. However, shortly after the regular session ended, Gov. Perry called for a special legislative session, primarily for redistricting. Dozens of bills have been filed by legislators, who hope they can receive consideration under special session rules. This text reviews each piece of proposed legislation. Additionally, the text explores the legality of these guns bill. The text focuses on the constitutionality of Birdwell's bill, which would prohibit colleges from enforcing "any rule, regulation, or other provision or take any other action ... prohibiting or placing restrictions on the storage or transportation of a firearm or ammunition in a locked, privately owned or leased motor vehicle by a person, including a student enrolled at that institution, who holds a license to carry a concealed handgun ..." (SB 1907). The final section describes how various organizations and individuals are reacting to the proposed legislation.

wiki How to Write a Technical Report

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Abstract/Executive Summary

- In this section, Provide a condensed overview or a brief technical summary of the report.

- The goal of a technical report abstract is to boil down the essentials of the report into about 300 words. You need to provide a very quick rundown of what the report covers and any conclusions or recommendations you make in it.
  - *Write the abstract after you've written the actual report. You want it to be a condensed description of what you have written, not of what you intend to write.*
  - *Check to see if there is a specific word limit for your abstract. Even if there isn't, 300 words is a good word limit to aim for.*

- Basic types of abstract are descriptive and informative abstracts.
  - *The descriptive abstract sometime called topical or table of contents abstract. It does not provide the import results, conclusion or recommendations. It lists the topic covered giving equal coverage to each.*
  - *The informative abstract states the problems the scope and methods, and the major results, conclusion or recommendations.*

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Abstract/Executive Summary

🔖 Executive summaries get their name due to the fact that they're targeted toward high-ranking executives who presumably won't have time to read the whole report. The executive report should be longer and more detailed than the abstract, but still be only about 10% of the length of the main report.

   🗝 *The executive summary should focus on your findings, conclusions, and/or recommendations, and allow the report itself to present the data—although highlights of the data should be provided.*

   🗝 *Depending on your situation, you may need to write an abstract, an executive summary, or both..*

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Support Component of the Report

present relevant tables, graphs, data in a easy-to-understand-way

Figures and Tables

	Country	Population
1	China	1,354,040,000
2	India	1,210,569,573
3	United States	316,192,000
4	Indonesia	237,641,326
5	Brazil	193,946,886
6	Pakistan	183,592,000
7	Nigeria	173,615,000
8	Bangladesh	152,518,015
9	Russia	143,400,000
10	Japan	127,320,000

Population by Country

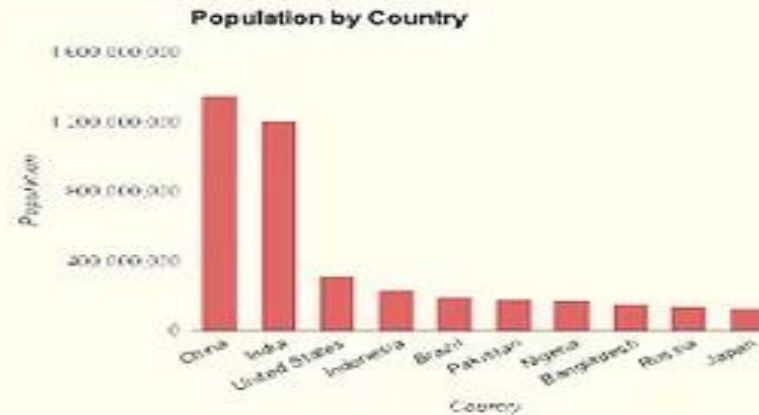*"Never let the fear of striking out stop you from playing the game." — Babe Ruth*

Illustration and Their List

- In this section, Draw up a table of contents, list of tables, and list of figures.

- The table of contents should break down the entire report section-by-section, so readers can quickly get a feel for the entire report and find any particular section. Technical reports are data-driven and invariably have many tables and figures, so provide lists of each that quickly identify them and let readers know where to locate them.

  - *Check for any formatting guidelines for these sections. If the format is left up to you, keep things simple and straightforward.*

- The table of contents in the technical report structure enables different readers to turn to specific pages to find the information they want

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Support Component of the Report

mention those who directly helped facilitate the creation of the report ——

ACKNOWLEDGEMENTS

"The author would like to acknowledge…"

"Never let the fear of striking out stop you from playing the game." — Babe Ruth

Acknowledgement

- In this section, Follow the main body of the report with an acknowledgments section.

- While acknowledgements sections in books or other types of research papers often thank friends and family, in technical reports they typically focus on mentioning those who directly helped facilitate the creation of the report. Basically, any individual or group that supported your work in a professional capacity (including financially, such as through grants) should be acknowledged in this section.

  - *This section typically runs 1-2 paragraphs, and follows a fairly simple "The author would like to thank…" format..*

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Support Component of the Report

Works Cited

Bellamy, D. 1983. Bellamy's new world. London, England:

The British Broadcasting Company. 192 p.

Cotton, C. 1996. Ethnobotany: principles and applications.

West Sussex, England: John Wiley and Sons Ltd. 424 p.

Erowid. 2007. Psychoactive Cacti Vault.

http://www.erowid.org/plants/cacti/cacti.shtml.

May 10, 2008.

Hylander, C. 1947. The world of plant life. New York,

New York: The MacMillan Company. 722 p.

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Citations/ Reference

- In this section, Include citations in the references section, using a consistent format..

- Create a citation for every source you quote from or refer to in the main body of the report. If you are not given a specific citation format to follow (for instance, APA or MLA format), choose one and follow it consistently throughout this section and the entire report.

  - *In some cases, you may also be expected to provide a listing of works you have consulted but not specifically cited in the work. Check with the relevant department, organization, individual, etc., if you're not sure.*

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Support Component of the Report

provide useful but not essential information —

Use a consistent, easy-to-navigate format —

"Never let the fear of striking out stop you from playing the game." — Babe Ruth

Appendices

🖈 In this section, Use appendices to provide useful but not essential information.

🖈 If, for instance, you have a great deal of raw data that isn't in itself essential to the report, but which is enlightening nevertheless, include it in one or more appendices. Never put anything you consider essential to the report in an appendix—find a place for it in the main body of the work.

🔑 *Use a consistent, easy-to-navigate format when creating appendices. They aren't meant to be dumping grounds for random snippets of data or information.*

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Letter of Transmittal

- The components of a report are not written in the same order in which they appear e.g. the letter of transmittal is the first thing the reader sees, but it is probably the last to be created.

- It introduces the purpose and content of the report to the principle reader. It gives you an opportunity to emphasize whatever you think, your reader will find particularly in the attached material.

- It enables you to point out any errors or omission in the material.

- Transmittal letter contains the following element.
  - *A statement of title and purpose of report.*
  - *A statement of who authorized the project and when*
  - *A statement of method used in the project or of the principal results, conclusion and recommendations.*
  - *An acknowledgement of any assistance you received in preparing the material.*

"I think it's possible to ordinary people to choose to be extraordinary." — Elon Musk

The glossary and list of symbols

- A glossary is an alphabetic list of definitions.

- It is useful if you are addressing a multiple audience that includes readers who will not be familiar with the technical vocabulary used in the report.

- An asterisk or any other notation can be used along the word to tell the audience that the word is defined in glossary. It is generally placed at the end of the report just before the appendix.
- Though if the glossary is a brief one, so can be placed right after the table of contents.

- A list of symbols is structured like glossary, but rather than defining words and phrases, it defines the symbols and abbreviations used in the report. Like glossary, the list of symbols may be placed before the appendices or after the table of content.

Glossary

Notation	Description	Symbol	Page List
ac	nunc		1
accumsan	eleifend		1
adipiscing	elit		1
aenean	faucibus		1
amet	consectetuer		1
arcu	libero		1
auctor	semper		1
augue	eu neque		1
bibendum	ultrices		1
consectetuer	id		1
curabitur	gravida		1
diam	duis		1
dolor	sit		1
donec	vehicula		1
duis	nibh		1
eget	risus		1
elit	vestibulum		1
est	iaculis		1
et	malesuada		1
eu	tellus		1

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Literature Review

- A glossary is an alphabetic list of definitions.

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END OF THE CHAPTER

Thank you