

Research Methodology

How to Write a Research Report

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Overview

- How to write a research report
- How to write proposal
- How to write thesis
- Some tools
- MS Office Word

Research Report

- Documentation
- Technical report
- Paper
- Thesis

Research Report

- At university, reports are read by lecturers and tutors in order to assess your mastery of the subjects and your ability to apply your knowledge to a practical task
- In the workplace, they will be read by managers, clients, and the construction engineers responsible for building from your designs

Research Report

- To share research results with the other researchers
- To obtain some form of degree
- To get views for improvement
- To get recognition
- For appraisal purposes

Research Report

- An initial documentation for writing a technical paper for a journal or a conference
- For internal verification/discussions or as a preliminary documentation for a bigger research

Research Report

- Title page
- Summary
- Table of Contents
- Introduction
- Middle sections with numbered headings
- Conclusions
- References
- Appendices

Research Report

- Title page
 - The title of the report
 - The authors' names and ID numbers
 - The course name and number, the department, and university
 - The date of submission

Research Report

- Summary, a brief overview of the substance of the report
 - States the topic of the report
 - Outlines your approach to the task if applicable
 - Gives the most important findings of your research or investigation, or the key aspects of your design
 - States the main outcomes or conclusions

Research Report

- Summary (Abstract) does not,
 - Provide general background information
 - Explain why you are doing the research, investigation or design
 - Refer to later diagrams or references

Research Report

- Table of content (TOC)
- Sections and subsections of the report and their corresponding page numbers
 - Number the sections by the decimal point numbering system
 - Number all the preliminary pages in lower-case Roman numerals
 - You don't have to place the number on the title page

Research Report

- Number all the remaining pages of your report with Arabic numerals. Thus the report begins on page 1 with your introduction (Section 1).
- Provide a title to describe the contents of each appendix (Note: one *appendix*, two or more *appendices*).
- Don't just call them Appendix 1 or Appendix 2

TOC An Example

Contents

	Summary	ii
1.0	Introduction	1
2.0	Design 1: 33m Steel I-girder bridge	2
2.1	Superstructure	2
2.2	Abutments	3
2.3	Construction method	3
3.0	Design 2: 25m Super T-girder bridge	4
3.1	Superstructure	4
3.2	Abutments	5
3.3	Construction method	6
4.0	Comparison of designs	7
4.1	Economics	7
4.1.2	Construction costs	7
4.1.1	Long-term maintenance	8
4.2	Safety	8
4.3	Aesthetics	9
5.0	Conclusions and recommendations	9
6.0	References	10
	Appendices:	
	Appendix 1 Design 1 scale drawings	
	Appendix 2 Design 2 scale drawings	

Research Report

- Introduction
 - The background to the topic of your report to set your work in its broad context
 - A clear statement of the purpose of the report, usually to present the results of your research, investigation, or design
 - A clear statement of the aims of the project

Research Report

- Technical background necessary to understand the report; e.g. theory or assumptions
- A brief outline of the structure of the report if appropriate (this would not be necessary in a short report)

Research Report

- Body of the report
 - Presents the information from your research, both real world and theoretical, or your design
 - Organizes information logically under appropriate headings
 - Conveys information in the most effective way for communication
 - Uses figures and tables
 - Can use bulleted or numbered lists
 - Can use formatting to break up large slabs of text

Research Report

- Review of Related Literature
- Statement of the Problem
- Statement of Hypotheses of Research Questions
- Limitations
- Definition of Terms
- Methodology/Procedures for Collection and Treatment of Data
- Presentation of Data
- Analysis of Data

Research Report

- Conclusion/ Effective ending to your report
- Should relate to the aims of the work as stated in the Introduction
 - States whether you have achieved your aims
 - Gives a brief summary of the key findings or information in your report
 - Highlights the major outcomes of your investigation and their significance

Research Report

- References have two parts
 - Citations in the text of the report
 - A list of references in the final section
- You incorporate information from other sources;
 - factual material
 - graphs and tables of data
 - pictures and diagrams
- You quote word-for-word from another work

Research Report

- Appendices
- Contain material that is too detailed to include in the main report
 - Raw data or detailed drawings
- Each appendix must be given a number (or letter) and title
- Each appendix must be referred to by number (or letter) at the relevant point in the text

Research/Project Proposal

- Introduction
 - The problem statement
 - A rationale for the research
 - Statement of the research objectives
 - Hypothesis (expected findings)
 - Definitions of terms
 - Summary including a restatement of the problem

Research/Project Proposal

- A (brief) review of the relevant literature
 - The importance of the question being asked
 - The current status of the topic
 - The relationship between literature and problem statement
 - Summary

Research/Project Proposal

- Method
 - Participants (including a description and selection procedures)
 - Research design
 - Data collection plans
 - Operational definition of all variables
 - Reliability and validity of instruments
 - Results of pilot studies
 - Proposed analysis of the data
 - Results of the data

Research/Project Proposal

- Implications and limitations
- References
- Appendices
 - Copies of instruments that will be used
 - Results of pilot studies (actual data)
 - Human experimentation approval
 - Participant permission form
 - Time line

Thesis

- Abstract
- Declaration
- Acknowledgments
- Table of Contents
- List of Symbols, Tables and Figures
- Chapter 1: Introduction
 - Background
 - Objectives of Thesis
 - Layout of Thesis

Thesis

- Chapter 2: Theory on the Research
- Chapter 3: Proposed Methodology
- Chapter 4: Implementation
- Chapter 5: Experimental Results and Discussions
- Chapter 6: Conclusions and Further Work
- References
- Appendices

Thesis

- University templates
- Effective use of editing tools
 - WhiteSmoke Writer
 - Microsoft Word
 - Google Docs
 - Office Live
 - Adobe Acrobat Professional

Criteria for Judging a Research Study

- The Review of Previous Research
 - How closely is the literature reviewed in the study related to previous literature?
 - Is the review recent?
 - Are there any outstanding references you know of that were left out?

Judging a Research Study

- The Problem and Purpose
 - Can you understand the statement of the problems?
 - Is the purpose of the study clearly stated?
 - Does the purpose seem to be tied to the literature that is reviewed?
 - Is the objective of the study clearly stated?
 - Is there a conceptual rationale to which the hypotheses are grounded?
 - Is there a rationale for why the study is an important one to do?

Judging a Research Study

- The Hypothesis
 - Are the research hypotheses clearly stated?
 - Are the research hypotheses explicitly stated?
 - Do the hypotheses state a clear association between variables?
 - Are the hypotheses grounded in theory or in a review and presentation of relevant literature?
 - Are the hypotheses testable?

Judging a Research Study

- The Method
 - Are both the independent and dependent variables clearly defined?
 - Are the definition and description of the variables complete?
 - Is it clear how the study was conducted?

Judging a Research Study

- The Sample
 - Was the sample selected in such a way that you think it is representative of the population?
 - Is it clear where the sample comes from and how it was selected?
 - How similar are the subjects in the study to those that have been used in other, similar studies?

Judging a Research Study

- Results and Discussion
 - Does the author relate the results to the review of literature?
 - Are the results related to the hypothesis?
 - Is the discussion of the results consistent with results?
 - Does the discussion provide closure to the initial hypothesis that the author presents?

Judging a Research Study

- References
 - Is the list of references current?
 - Are they consistent in their format?
 - Are the references complete?
 - Does the list of references reflect some of the most important reference sources in the field?
 - Does each reference cited in the body of the paper appear in the reference list?

Judging a Research Study

- General Comments

- Is it clearly written and understandable?
- Is the language biased (nonsexist and relatively culture free)?
- What are the strengths and weaknesses of the research?
- What are the primary implications of the research?
- What would you do to improve the research?

MS Office Word

- Editing
- Styles
- Footnote/Header/Footer
- Numbered Items
- References
- Cross references
- Figure and table caption
- Equation

MS Office Word

- Automatic Table of Content
- Hyperlinks
- Page/Section Break
- Tables/Diagrams
- Macros
- Comment/Revision
- <http://office.microsoft.com/en-001/training>

Any Question?

THANKS FOR YOUR ATTENTION