

TECHNICAL WRITING



INTRODUCTION

Technical writing: is a form of technical communication used in a variety of technical and occupational fields, such as, finance, consumer electronics, and biotechnology, Computer hardware and software, engineering, chemistry, aeronautics and astronautics, robotics which is entirely different from subjective kind of writing such as fiction and poem.

The Society for Technical Communication (STC) defines technical writing as a broad field including any form of communication that exhibits one or more of the following characteristics: (1) communicating about technical or specialized topics, such as computer applications, medical procedures, or environmental regulations; (2) communicating through technology, such as web pages, help files, or social media sites; or (3) providing instructions about how to do something, regardless of the task's technical nature.

Technical writing involves selecting a topic, gathering and structuring material, taking notes, documenting sources, and preparing the manuscripts with proper presentation of ideas.

Writing a scientific and technical paper depend upon our needs to decide which topic or specific idea we would like to explore. Selecting an appropriate topic is not a simple task. There are various subjects and fields that attract us and our interest. This also happens that we may feel the need to revise our choice, modify our approach or change the topic completely after we have begun the research. At this stage we may identify some of the various modes of documenting a research and development work as follows:

- Thesis for a master's or doctorate degree of a University

- Research papers for publication in journals or conference proceedings’.
- Papers and posters for presentation at conferences/seminars/symposia.(According to Webster dictionary a conference is a meeting of two or more persons for giving and discussing information; and a symposium is a formal meeting at which several specialists deliver short addresses on a topic or related topics)
- Review papers for journals’, trade jouranals, and organization news letter.
- Research monographs
- Progress reports of projects
- Manual for transfer of technology
- Internal unclassified and classified technical reports/memoranda
- Patents related issues.

11.2 OBJECTIVES OF TECHNICAL WRITING:

- i. To improve the skill to organize and present facts.
- ii. To increase the ability to use facts.
- iii. To learn to distinguish between facts and opinions.
- iv. To improve skills in writing different types of scientific texts
- v. To introduce user on particular issue or Application.

CHARACTERISTICS OF TECHNICAL WRITING

A scientific paper is a written text describing original results. It is an organized presentation with highly stylized distinctive & clearly evident components. The distinguishing characteristics piece of writing is as follows:-

1. It is a factual Science is factual in nature. Therefore, a scientific piece of writing is a presentation of facts in a systematic form.
2. It has accuracy & truthfulness The scientific writing is not based on a guess of anticipation. The scientific thoroughly checks the finding prior to giving his ideas a written shape. He reveals the whole truth irrespective of its consequences.

3. It is natural The principal motive of the author of a scientific paper is to inform. A scientific writing is not a product of a selfish purpose, attaining an ambition, an attitude to sell a product, or any prejudice.
4. It is systematic & logically developed the scientific method is rigidly controlled method. Every step of it is planned. Hence, a scientific writing is also planned & controlled.
5. It does not intend to appeal to our emotions: - The appeal of a scientific paper is to the reason & the understanding of ours. It does not appeal to the feelings. Each word of a scientific writing stands for identifiable things in the material world. It follows the laws of inductive reasoning. It avoids high level abstractions. While generalizing, it makes use of the laws of inductive reasoning.
6. It does not directly persuade the reader: - A good scientific piece of writing may induce the reader to make up or change his or her mind but it tries to obtain it by logical reasoning & not by argumentation. As a scientific piece of writing is concerned with facts, with the general laws that may be derived from the study of facts & with the application of general laws that may be derived from the study of facts & with the general laws to specific, scientific problems, it does not persuade the reader.
7. It does not include up supported opinions: - An opinion, without appropriate supporting facts, has no place in the method of any scientific investigation. However, it may be considered as a working hypothesis.
8. It is an argumentative: -An any good piece of scientific writing frequently draws inferences & reaches general conclusions but the conclusions are based not on argument but strictly on facts.
9. It lacks exaggerations: - Exaggerations distort the presentation of the facts. And the distorted facts defeat the very purpose of a writer of scientific material. Since the material of scientific writing consists of facts & facts only. It is evident that will never attempt at defeating his purpose .



THE HOLISTIC GUIDE OF TECHNICAL WRITING

1. Accuracy - must be tactful in the recording of data, statement of calculating mathematical figures.
2. Brevity - it's easier to grasp the main idea of the report written if you have a brief and consolidated report.
3. Confidence - a writer has to be decisive or sure of what is he writing about should not be in dilemma because it has no scope for this.
4. Dignity - ring of authority - all grammatical constructions must be complete, no flowery words. - Ideas/information must be well-organized, simplified, summarized & expressed in straightforward manner. It is entirely different from fiction writing.
5. Emphasis - stressing the major points & subordinating them.
6. Facility - devices used by the writer must be mentioned in the Research Methodology.
 - 6.1. Pacing - technical/unfamiliar information should be presented from small to large quantity.
 - 6.2. Sequence - familiar to unfamiliar; simple to complex. It means statement should go to concrete to abstract.
 - 6.3. Arrangement - significant details should be stressed & balanced to show their proper relationship.
 - 6.4. Continuity - thought should be clearly established, illustrated, or stated and there must have proper relationship in overall thought process.

7. Grammatical Correctness – This reflects the communicative competence of the writer.
8. Honesty - if the writer borrowed some statements, ideas, or quotations, he has to acknowledge them either in footnotes, end-notes, or cite the author or sources.

END PRODUCT OF TECHNICAL WRITING:

End product of Technical writing means the outcome of technical writing. Generally speaking end products can be categorized into three types, depending on the style of writing, the level of knowledge transferred, and the target audience:

1. End-user assistance documents help a user understand a software or hardware product. This includes user manuals for computer programs, household products, medical equipment, mobile phones, and other consumer electronics all will come in the end product of technical writing.
2. Traditional technical documentation communicates to a specialized audience. Such documentation includes maintenance guides, repair manuals, engineering specifications, research papers, reference works, annual reports, and articles for technical journals.
3. Marketing communication such as product catalogs, brochures, advertisements, introductory pages for web sites, and press releases are sometimes created by technical writers.

Written Presentation of Technical Writing, Project Report or Technical Research Paper

Technical writing needs proper training of writing and it has a fixed format. This format came into picture after a long discussion and motive of it is to omit subjectivity of writer. We can see format. The objective of this format is to standardize the format of the project report and to lay guidelines to conduct the project including methodology. This is a kind of training for applying theoretical concepts, tools & techniques to a live situation/problem and writing a Technical Report.

Before writing any technical paper one need to work on the following things in detail.

Scope of the Project

It is partly responsibility of the student to find a relevant topic for his/her project. The topic is to be decided in consultation with the guide allotted to the student.

PROJECT PROPOSAL

The project proposal must comprise the following aspects:

1. Title of the Project: Project Title should be meaningful and should convey the broad aspects that will be covered in the body and the scope of the project. This must be justifiable to time.

2. Organisation/Company: One must mention the name of organisation/company and the functional area one intend to do his project. Here one need to briefly explain the nature of the organisation and its business but it has been observed that amateur researcher focus more on Company only.

3. Objectives & Scope: Explain the objectives and the scope of the project along with functional area that will be covered in the study.

4. Methodology:

(a) Explain the methodology for data collection.

(b) Explain the techniques proposed to be used for data analysis.

5. Tools: Explain the software tools e.g. SPSS/MS Excel or any other that you propose to use in the project.

METHODOLOGY OF PROJECT WORK

The methodology for carrying out the project is given in the following paragraphs. Each student is to compile his/her study in four chapters as detailed below:

Chapter-I: Introduction

This chapter is to include the following aspects:

Profile Organisation/Company: Briefly explain the nature of the organisation and its business. It should include type of industry & business in which the company is operating, its vision & mission, geographical & functional area of operation, size of organisation & its

structure, turnover, market share & position of the company in the industry, product range, present leadership, strengths & weaknesses, if any.

Theoretical Description A brief theoretical description of concepts, tools and techniques used in project along with *definition of key words* and formulae etc. should be included.

Objectives of Study It should be pragmatic and consistent with the title of the study and achievable during the course of study within the prescribed schedule. Students can develop the objectives in consultation with their respective guides. The objectives must start with action oriented verbs. A sample of objectives is given below as example:

- “(a) To study the growth of sales of RO Water Purifiers.
- (b) To compare the market share of branded and local manufacturers of RO Water Purifier.”

Scope of Study: The scope of study should clearly mention the activities that are actually performed in the study. It should include the period of study, the functional area and volume of work carried out in the study. With reference to above objectives, the scope of study could be as follows (note this is suggestive and not exhaustive):

- “(a) To collect and analyse the sales data of RO Water Purifiers in Delhi region of last five years. For this purpose secondary data from the published sources and the dealers is collected.
- (b) To carry out market survey of customer perception for the use of RO Water Purifier. For this purpose the geographical area selected is Dwarka locality. Data is collected through a questionnaire that is attached as Appendix A.”

Chapter-II: Methodology

The methodology is to be explained in two parts viz.,

- (a) **Methodology used for Data Collection:** The project should be based on primary data. For data collection, a questionnaire must be prepared and it has to be

made part of the project report. The questionnaire should be consistent with the objectives and the scope of the study and duly vetted by the respective guide. The questionnaire should be designed in a simple language so that the targeted population must understand and able to respond effectively. Sampling technique and the sample size should be selected according to the problem under study. The justification for selecting particular sampling technique must be given. If in case of any secondary data, proper references of sources of data must be compiled and mentioned against each data used in the study in the following manner (with reference to above example):

“(i) The sales data of Forbes & Kent brands of RO Water Purifier is collected from their Annual Financial Statements for the period 2013--2014.”

(b)Methodology used for Data Analysis: In this part researcher should explain the concepts, tools and techniques used for data analysis. The rational and justification for using a particular tool and technique should be explained. For example if a researcher uses Standard Deviation as a statistical tool, he should explain the concept of Standard Deviation and its relevance to the study along with its formula.

Chapter-III: Data Analysis & Interpretation

Raw data (primary or secondary) collected must be reduced to standard formats such as tables, charts, graphs, diagrams etc and is to be presented in this chapter. The tool for data presentation should be suitably selected so that interpretation and inferences could be drawn easily and become self explanatory. Proper titles, legends, scales, source (s) etc must be mentioned along with each diagram.

In this chapter, researcher are required to apply established theoretical concepts, tools and techniques (discussed in Chapter-II) to the data presented and draw inferences. Students are required to discuss rationale and logic for drawing inferences. For each inference, proper linkages are to be established with the data analysed in this chapter. Wherever, calculations are to be carried out, it must be provided before drawing any inference. The inferences are to be presented in narrative form from each data set along with any limitation (s) due to data insufficiency, if any.

Chapter-IV: Conclusions

This Chapter should comprise the following:

(a)Results of the Study: These are to be presented and supported by facts & figures in narrative form and be culled out from the Chapter-III. The sequence of the results must be consistent with the objectives of the study mentioned in Chapter-I. Also, mention the achievement of objectives or otherwise.

(b)Limitations: The limitations could be mentioned in terms of data insufficiency, time & expertise constraints etc.

(c)Suggestions & Scope for further Study: Any scope for extension of the study to new geographical areas, segments, time with larger data, is to be mentioned under this heading.

FORMAT OF THE PROJECT REPORT

Format

1. The final report should be written and compiled in the following the sequence:

- (a) Title Page
- (b) Certificate (s)
- (c) Acknowledgements
- (d) Executive Summary
- (e) Contents
- (f) List of Tables
- (g) List of Figures
- (h) List of Symbols
- (i) List of Abbreviations
- (j) Body of the Project Report (As per Appendix B)
- (k) References/Bibliography
- (l) Appendices

Acknowledgements

In the “Acknowledgements” page, the writer recognises his indebtedness for guidance and assistance by the faculty guide and any other member (s). Courtesy demands that he/she

also recognises specific contributions by other persons or institutions such as libraries and research foundations. Acknowledgements should be expressed simply, tastefully, and tactfully duly signed above the name.

Executive Summary

5. Executive Summary is a brief or condensed summary of the project for higher-level management positions. It should be about 3-4 pages in length. It should comprise company profile, objectives & scope of the project, methodology and tools used, results, limitations, and directions for future development, if any.

Body of the Project Report: Guidelines for Project Report/Dissertation Writing

7. The guidelines for writing the Project Report (methodology) are detailed in preceding pages. Following aspects must be adhered to:

(a) Page Size: Good quality white A4 size executive bond paper should be used for typing and duplication.

(b) Chapter Numbering: The chapters are to be numbered as Chapter-1, Chapter-2 etc. The heading/title of the chapter is to appear below the chapter number in uppercase.

(c) Page Specifications:

- (i) Left Margin : 1.25 inch
- (ii) Right Margin : 1.25 inch
- (iii) Top Margin : 1 inch
- (iv) Bottom Margin : 1 inch

(d) Page Numbers: All text pages starting from Body of the Project Report should be numbered at the bottom center of the pages.

(e) Normal Body Text:

(i) Font Size: 12, Times New Roman, Double Spacing, Single Side Writing.

(ii) Paragraphs Heading Font Size: 12, Times New Roman.

(iii) Page/Title Font Size: 14

(f) Structure of Final Report: A project report should be covered between 50 to 60 typed pages in double space about 10,000 words (excluding Appendices and Bibliography) on A4 size paper with 12 font size. But variation is permissible if topic demands.

(g) Table and Figure Number: Table and figure numbers are to be written at the bottom of the table/ figure

(h) Binding & Color Code of the Report: Generally each firm or Institution explain in advance about binding.

References/Bibliography

Secondary sources should be duly acknowledged. When accessing online sources, care should be taken to mention the entire link, and not merely the website, in addition to date of access. Examples are given below:

1. Carney, D. L., & Cochran, J. I., (1985), "The 5ESS Switching System: Architectural Overview", *AT&T Technical Journal*, vol. 64, no. 6, July-August, pp. 1339-1356.

2. Stevens, A., (1992), *C++ Database Development*, MIS Press, New York, p. 34.

3. In Encyclopedia Britannica. from <http://search.eb.com>, accessed on *(date)* and *(time)*.

4. Give full link of the webpage, (example www.google.com is not accepted).

Appendices

9. The appendices are to be attached at the end of the report and to be numbered as Appendix-A, Appendix-B etc. right justified at the top of the page. Below the word Appendix write in parenthesis “Refer Para No__”. The para number should be the number in the body of text where the reference of appendix is given. An appendix may have annexure (s). The annexures, if any, are to be attached immediately after the said appendix. The annexures are to be numbered as Annexure-I, Annexure-II etc.

Title of The Project Report

(Font size = 18)

(Name of the organization, if any)

*Submitted in partial fulfillment of the requirements
for the award of the degree of*

Bachelor of Computers Administration (BCA)

To

Name of the University, Delhi

Guide:

(Guide Name)
name)

Submitted by:

(Student

Roll No.:

Batch (2013-2014)

Certificate

I, Mr./Ms. _____, Roll No. _____ certify that the Project Report/Dissertation (BBA/BCA) entitled “ _____ ” is done by me and it is an authentic work carried out by me at _____ (Name of the organisation or of the Institute). The matter embodied in this project work has not been submitted earlier for the award of any degree or diploma to the best of my knowledge and belief.

Signature of the Student

Date:

Certified that the Project Report/Dissertation (BBA/BCA) entitled “ _____ ”

done by Mr./Ms. _____, Roll No. _____, is

completed under my guidance.

Signature of the Guide

Date:

Name of the Guide:

Designation:

Address: ABC

, New Delhi-110058

Countersigned

Director/Project Coordinator

FORMAT FOR CONTENTS & LIST OF TABLES/FIGURES/ SYMBOLS

CONTENTS

S No	Topic	Page No
1	Certificate (s)	-
2	Acknowledgements	-
3	Executive Summary	-
4	List of Tables	-
5	List of Figures	-
6	List of Symbols	-
7	List of Abbreviations	-
8	Chapter-1: Introduction	
9	Chapter-2: Methodology	
10	Chapter-3: Data Analysis & Interpretation	
11	Chapter-4: Summary and Conclusions	
12	References/Bibliography	
13	Appendices	

FORMAT FOR LIST OF TABLES/FIGURES/ SYMBOLS/ABBREVIATIONS

LIST OF TABLES

Table No	Title	Page No
1	Number of Employees in Organisation ABC	

2		
---	--	--

LIST OF FIGURES

Figure No	Title	Page No
1	Sales Figures of RO Water Purifier 2013-2014	
2		

LILIST OF SYMBOLS

S No	Symbol	Nomenclature & Meaning
1	Σ	Sigma (Summation)
2	@	At the rate

LISLIST OF ABBREVIATIONS

S No	Abbreviated Name	Full Name
1	CRM	Customer Relationship Management
2	EPS	Earning Per Share