



DEVC 104 - COMMUNICATION RESEARCH

Week 2: Foundations of Technical Writing

What is Technical Writing?

- It is a specialized form of communication used by many of today's industrial and scientific organizations to clearly and accurately convey complex information to a user.
- Most technical writing relies on simplified grammar, supported by easy-to-understand visual communication to clearly and accurately explain complex information.

Technical writing is designed to:

- **inform** by anticipating and answering audience questions;
- **instruct** the audience to perform a task or follow a procedure, and
- **persuade** the audience via explanations, analysis, and solutions.

Remember: Technical writing is an audience-centered means of communication that provides a reader with clear and easy access to information.

Puritan Plain Style

- It is a writing style that was used by American Puritans, especially during the 1600s.
- Puritan Plain Style contains three elements: short words, references to everyday objects, and direct/straightforward statements.

CHARACTERISTICS OF TECHNICAL WRITING

- Communicating about **technical or specialized topics**, such as computer applications, medical procedures, or environmental regulations.
- Communicating by **using technology**, such as web pages, help files, or social media sites.
- **Providing instructions** about how to do something, regardless of how technical the task is or even if the technology is used to create or distribute that communication.

Academic Writing Versus Technical Writing

- The academic writer's purpose may be to write an essay, a story, a research paper, etc. Such assignments are often designed so that students can "write to learn" and show mastery of information covered in class.
- Additionally, in academic writing context, student-writers join a conversation that is occurring on a particular topic.

- **Technical communication**, however, is intended for another purpose. These documents convey information to audiences who may or may not have prior knowledge of the material discussed. Technical communicators must, therefore, **determine the needs of their audience** and design documents that convey information in an accessible and appropriate manner.

STRATEGIES TO ACHIEVE TECHNICAL WRITING TASKS

- Study of books, articles, reports, websites related to the product.
- Product specifications: what the product is supposed to do, how it is designed.
- Interviews with subject matter experts: the product specialists, developers, engineers.
- Live demonstrations of the product.
- Familiarization with similar, competing products.
- Experimenting with working models of the product.
- Most importantly, subject matter experts' review of technical writers' work for technical accuracy and completeness.

GENERAL TIPS ABOUT TECHNICAL WRITING

- Remember that technical writing is not just about computers or engineering. The term should be considered more broadly than that.
- Audience is crucial. Before creating any technical document, be certain you understand your audience's identity and needs.
- Format your technical documents differently than you might format an academic writing assignment. Consider cultural and ethical concerns and complications as you develop your documents.

What Are Common Examples of Technical Writing?

- Research Paper
- User Manual
- Software Installation Guides
- Standard Operating Procedures (SOP)
- API Documentation
- Service Level Agreements (SLA)
- Press Release
- Case Studies Company Documents
- Requests for Proposals
- Annual Reports
- Business Plans



Academic Writing (Sample)

- Dissertations
- Literature Review
- Abstracts
- Research articles
- Essay
- Annotated bibliography
- Movie Analysis

Features of Technical Writing

Technical writing focuses on clarity, precision, and accuracy to ensure safety and efficiency in the entire process. Some key features include:

- **Clarity and Conciseness** The writing should be clear and easy to understand, avoiding unnecessary complexity. It aims to convey instructions, procedures, or information without ambiguity.
- **Accuracy** The information provided must be correct, particularly when referring to safety procedures, ethics compliance, and data privacy.
- **Use of Standardized Terminology** Communication technical writing often uses standardized industry terminology (e.g., terms from the areas of communication practice).
 - Health Communication
 - Science Communication
 - Risk and Disaster, Environmental, etc.

Components of Technical Writing

The components of technical writing are essential elements that help ensure the information is clear, concise, and useful for the intended audience. Here are the main components:

- **Clear Purpose** Every technical document has a specific purpose, whether it's to explain, instruct, or inform. Identifying and addressing the purpose of the document is the first step in effective technical writing.
- **Audience Awareness** Understanding the audience's technical knowledge level is crucial. The language, complexity, and detail should be tailored to suit the readers, whether they are experts, novices, or mixed-level readers.
- **References and Citations** Technical documents often refer to external sources, standards, or regulations. Including proper citations and references ensures credibility and allows readers to verify or further explore the information.
- **Review and Revision** Technical writing often goes through multiple drafts. Editing for clarity, conciseness, and accuracy is a vital part of the

process to ensure the final document is of high quality.

10 laws of good report writing

1. produce the report for your reader(s)
2. keep the report as short as possible
3. organise information for the convenience of the reader
4. include accurate references
5. ensure your writing is accurate, concise and straightforward
6. include diagrams with the right labels in the right place for your reader
7. make sure your summary gives the whole picture in brief
8. check the report for technical errors, typing errors and inconsistency
9. consider design as well as content
10. produce the report for your reader(s)

Key Features of Good Technical Report

a. Correct

- The report should be free of errors in grammar, spelling, and punctuation, ensuring a professional and credible presentation.
- If a report contains grammatical errors, the reader will doubt the accuracy of the information in the report. Technical writing is meant to convey information and to persuade the audience

b. Appropriate for Intended audience

- Tech writing must be appropriate for its intended audience. This audience can be a general audience, business people, or a specialized group of engineers and scientists.
- If the writing style and vocabulary does not fit the audience, tech writing will either be met with derision and criticism, or will fly off over the heads of a puzzled audience.

c. Concise

- Tech writing must be as brief as possible. If the writer can express something in 2 words, she should not use 3 words instead. This is not creative writing. All kinds of editorial asides or anthropomorphic similes and metaphors should be avoided. Technical writing can be shortened 10-20% by eliminating unnecessary phrases and choosing short words and sentences.

d. Comprehensive

- When writing technically, all the information should be provided, its **background** must be described and clear description of any **process**, or **method** of carrying out a specific work,



should also be given. It also includes **results, conclusions** and **recommendations**.

e. Logical and Sequential

- Technical writing information cannot contradict itself. All information, all steps need to make sense with respect to one another.
- Sample: If you need to open a lid in order to reach a button, you need to tell the reader to open the lid first and then to press the button. In the above case, do not instruct the user to press the button and then open the lid.

f. Action Oriented

- You are writing a document to help users take action. Therefore, use action verbs whenever possible, especially in the beginning of procedural steps.
- Sample
 - Original: "Cable A and Cable Z need to be connected now."
 - Better: "Connect Cable A to Cable Z."

g. Organized

- Technical documents are organized in the ideal "**tree view**" fashion. The material is organized in layers, from **general to the specific**. The document starts with the general aspects of a system and drills down to more specific details later on.

Week 3: Parts of the Research Manuscript (Chapter I-Introduction)

What is Research?

- **Research** is a systematic process of **collecting, analyzing, and interpreting** information to increase understanding of a phenomenon, solve problems, or generate new knowledge. It follows a **structured approach**, using various methods to ensure reliability and validity.
- **Research** has become a very familiar term these days. It is all around us, often presented in ways that we would not recognize as research. Quite frequently, we encounter information that is based on some experiment or study. Research is essential in **expanding knowledge, improving decision-making, and addressing societal challenges**.

Purpose of Research

1. **Exploration** – Investigating a new or less understood topic.
2. **Description** – Providing detailed information about a subject.
3. **Explanation** – Identifying causes, relationships, and effects.
4. **Prediction** – Forecasting future trends based on data.
5. **Application** – Solving real-world problems through applied research.

Elements of Research

- **Research Problem** – The central issue or question being investigated.
- **Review of Literature** – A summary of previous studies related to the topic.
- **Research Objectives** – The goals the study aims to achieve.
- **Methodology** – The process and techniques used for data collection and analysis.
- **Data Collection** – Gathering information through surveys, experiments, interviews, or other methods.
- **Analysis and Interpretation** – Examining data to draw conclusions.
- **Findings and Conclusion** – The results of the study and their implications.

Research Title

The research title is a concise and descriptive statement that reflects the main focus of the study. A good research title should:

- Clearly state the topic and scope of the study.



- Include key variables (independent and dependent).
- Be specific and concise while avoiding unnecessary words.

Dependent and Independent Variables

- **Independent Variable (IV):** The factor that is manipulated or changed to observe its effect on another variable. It is the presumed cause in the study.
- **Dependent Variable (DV):** The outcome or effect being measured in response to changes in the independent variable. It is the presumed effect.

Sample of Dependent and Independent Variables

- **Study Topic:** The effect of social media marketing on consumer purchasing behavior.
- **Independent Variable:** Social media marketing strategies (e.g., advertisements, influencer marketing, brand promotions).
- **Dependent Variable:** Consumer purchasing behavior (e.g., purchase decision, brand loyalty, buying frequency).

Background of the Study

This section introduces the research topic by providing relevant information on its context, history, and importance. It highlights gaps in existing knowledge and explains why the study is necessary.

Rationale of the Study

The rationale explains the justification for conducting the research. It answers why the topic is worth studying, its relevance to society, and how it contributes to knowledge or practice in a specific field.

Statement of the Problem

This section clearly defines the specific issue or challenge that the study aims to address. It includes a **main research problem** and may be broken down into **sub-problems or research questions** to provide a clear direction for the study.

Significance of the Study

This part outlines the **potential benefits** of the study for various stakeholders, such as researchers, students, educators, policymakers, businesses, or society in general. It explains **how the study contributes** to existing literature, practical applications, or decision-making.

Scope, Limitations, and Delimitation

- **Scope** defines the boundaries of the study, including the specific area, subjects, time frame, and variables covered.
- **Limitations** refer to potential weaknesses or constraints that the researcher cannot control, such as sample size, time constraints, or data availability.
- **Delimitations** are the boundaries set by the researcher, such as choosing a specific population, excluding certain factors, or focusing on particular aspects of the topic.



Week 4-5: Parts of Research Manuscript (Chapter 2-Review of Related Literature)

Parts of Chapter II

- Conceptual Literature
- Research Literature
- Theoretical Framework
- Conceptual Framework
- Definition of Terms (Conceptual and Operational Definition)

Conceptual Literature

- Conceptual literature focuses on **ideas, concepts, models, and explanations** that help clarify the major variables of the study.
- Concepts such as communication, message, medium, audience, feedback, framing, credibility, and engagement are commonly discussed in this section. These concepts do not necessarily present data but provide a shared understanding of how communication processes operate.

Research Literature

- Research literature, also known as **empirical literature**, consists of previous studies that have systematically investigated variables similar to those in the present research. This section demonstrates how the current study is grounded in existing findings and identifies gaps that warrant further investigation.

WHAT MAY BE INCLUDED IN THE RRL?

1. Background information about the problem and related concepts.
2. Theories that explain the existence of the problem and the possible connection between certain factors and the problem
3. Data that confirms the existence and seriousness of the problem.
4. General and specific findings of studies related to the problem.
5. Recommendations for further study given in related studies.

THREE BASIC TYPES OF LITERATURE SOURCES

Primary sources:

- Latest Data, Letters/Correspondence, Diaries, Memoirs, Autobiographies, Official or Research Reports, Patents and Designs, and Empirical Research Articles.

Secondary sources:

- Academic journal articles, conference proceedings, books, and documentaries

Tertiary sources:

- Encyclopedias, dictionaries, handbooks, atlas

PATTERNS OF CITATION

1. Summary - the citation in this case is a shortened version of the original text that is expressed in your own language.

2. Paraphrase - this is the antithesis of the first one because, here, instead of shortening the form of the text, you explain what the text means to you using your own words.

3. Short Direct Quotation - only a part of the author's sentence, the whole sentence, or several sentences, not exceeding 40 words, is what you can quote or repeat in writing through this citation patterns. Since this makes you copy the exact words of the writer, it is necessary that you give the number of the page where the readers can find the copied words.

4. Long Direct Quotation (Extract) - named in many ways, this citation pattern makes you copy the author's exact words, numbering from 40 to 100 words. Under APA (American Psychological Association), the limit is eight lines.

SAMPLE PATTERNS OF CITATION

Summary Citation

- Studies reveal that fatigue, long working hours, and limited rest remain the leading causes of maritime accidents worldwide (Santos, 2021).

Paraphrase Citation

- Santos (2021) explained that fatigue among seafarers develops mainly because of irregular sleep schedules and heavy workloads.

Short Direct Citation

- According to Garcia (2020), "the lack of rest hours significantly impairs a seafarer's decision-making ability during critical operations" (p. 45).
- Delos Reyes (2019) found that "poor communication between multinational crews remains a major contributing factor in shipboard accidents" (p. 112)
- According to Lopez and Tan (2021), "the effectiveness of safety drills depends largely on



the leadership style of ship officers” (p. 87).

Long Direct Citation

- Garcia (2020) emphasized the risks associated with seafarer fatigue: Prolonged working hours, inadequate rest, and irregular sleep patterns lead to impaired alertness and decision-making. These conditions compromise not only the safety of the seafarer but also the overall safety of the ship and its cargo. Addressing fatigue management, therefore, is essential to reducing maritime accidents. (p. 47)

Citing Sources in RRL

You can cite sources at the start, middle, or end of a paragraph, depending on emphasis.

Citing at the Start

Emphasizes the author(s).

Format: Author (Year) + statement

- According to Santos (2020), seafarers’ mental health is greatly influenced by extended isolation during long voyages.

Citing at the Middle

Integrates the source into your discussion.

Format: statement + (Author, Year) + continuation

- The stress of long working hours has been noted to affect crew performance (Delos Reyes, 2019), which in turn impacts maritime safety operations.

Citing at the End of a Paragraph

Emphasizes the information, not the author.

Format: statement + (Author, Year).

- Crew fatigue remains a major factor in maritime accidents (Garcia, 2018).

HOW TO USE ET.AL.

Start: Cruz et al. (2021) emphasized that proper vessel maintenance reduces operational risks.

Middle: Recent studies highlight that piracy threats have increased in certain shipping lanes (Lopez et al., 2020), affecting crew morale.

End: Effective leadership styles enhance maritime teamwork and safety (Tan et al., 2019).

Research Literature

- **Foreign Studies** provide international perspectives and theoretical support for the present research.

- **Local Studies** contextualize communication phenomena within the Philippine setting or a similar local environment.

Synthesis of Research Literature

- The reviewed foreign and local studies consistently demonstrate that message construction and audience interpretation are closely interconnected. However, most existing research focuses on political or marketing communication, while fewer studies examine these variables in educational, organizational, or sector-specific contexts.
- This gap justifies the conduct of the present study, which aims to contribute context-specific insights to the field of communication research.

Theoretical Framework

- The theoretical framework presents the communication theories that guide the study. It explains how these theories relate to the variables and how they inform the analysis and interpretation of findings.
- This study is anchored on Framing Theory and Uses and Gratifications Theory. Framing Theory explains how communicators organize messages in ways that influence audience perception by highlighting certain meanings over others. According to Entman, frames define problems, assign causality, and suggest moral evaluations.

Conceptual Framework

- The conceptual framework illustrates the relationship between the independent variables, dependent variables, and other relevant factors in the study. It is derived from the theoretical framework and reviewed literature.
- Most common conceptual framework is Input-Process-Output.

Definition of Terms

- This section defines key terms used in the study to ensure clarity and consistency. Each term is presented with both a conceptual definition (theoretical meaning) and an operational definition (how the term is used or measured in the study).

Communication

- **Conceptual Definition:** Communication is the symbolic process of creating, transmitting, and interpreting meaning among individuals or groups.



- **Operational Definition:** In this study, communication refers to the exchange of messages through selected media platforms as measured by respondents' reported frequency of interaction.

Message Framing

- **Conceptual Definition:** Message framing is the process of emphasizing certain aspects of information to influence audience interpretation.
- **Operational Definition:** Message framing in this study is measured through respondents' perception of how issues are presented, using a Likert-scale questionnaire.

Week 6-7: Parts of Research Manuscript (Chapter 3-Research Methodology)

Parts of Chapter III

- Research Design
- Respondents of the Study-Quantitative, Participants of the Study-Qualitative
- Data Gathering Instrument
- Data Gathering Procedure
- Statistical Treatment-Quantitative, Data Analysis-Qualitative
- Ethical Consideration

Research Methodology

- This chapter describes the methods and procedures employed in conducting the study. It discusses the research design, respondents or participants of the study, data gathering instruments, data gathering procedures, methods of data analysis, statistical treatment, and ethical considerations. These components ensure the systematic, valid, and ethical conduct of the communication research.

Research Design

- The research design outlines the **overall strategy** used to answer the research questions and achieve the objectives of the study. In communication research, **the design depends** on whether the study seeks to measure variables **quantitatively**, explore meanings **qualitatively**, or **combine both** approaches.

Research Design

Quantitative Research Design

- **Descriptive** → describes characteristics of a population (e.g. surveys).
- **Correlational** → examines relationships between variables.
- **Experimental** → manipulates variables to test cause-and-effect.
- **Quasi-experimental** → tests cause-effect but without full randomization.

Qualitative Research Design

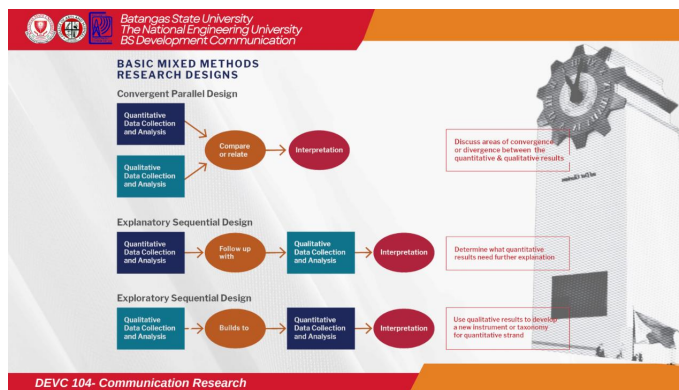
- **Case Study** → in-depth analysis of a single case (organization, event, accident).
- **Phenomenology** → explores lived experiences of participants.
- **Grounded Theory** → develops theory from collected data.
- **Ethnography** → studies culture or group behavior in natural settings.



- **Narrative Research** → collects and interprets personal stories.

Mixed-Method Research Design

- **Convergent Parallel** → Collects quantitative & qualitative data simultaneously, then compares results.
- **Explanatory Sequential** → Starts with quantitative, then follows up with qualitative to explain findings.
- **Exploratory Sequential** → Starts with qualitative, then uses quantitative to test or generalize.



Respondents of the Study

This section describes the population, sample size, sampling technique, and inclusion criteria for quantitative respondents.

Participants of the Study

For qualitative research, the term participants is used instead of respondents, emphasizing their active role in meaning-making.

Sampling Techniques

Process of selecting a number of individuals from a population, such that the individuals selected represent the large group from which they were selected.

Probability Sampling every member of the population gets a fair chance of selection which is not in the case with non-probability you can generalize your result expensive and time-consuming

1. Simple Random

- a sample of n subjects in such a way at every possible sample of the same size has the same chance of being chosen.
- Fishbowl or Randomizer can be used to identify samples.

2. Systematic Sampling

- The 1st element is randomly selected and then every nth element of the population is selected.
- Researchers must assign a number, starting point, and direction.

3. Stratified Proportionate Sampling

- The population is divided into homogenous groups (strata), and then a sample is randomly drawn from each strata.
- Population and sample size must be identified.
- Formula: $F/P * \text{Sample Size}$

4. Cluster Sampling

- Where the population is divided into clusters (natural groups), and then some clusters are randomly selected.
- Data is collected from all members of the chosen clusters (single-stage) or from random samples within them (multi-stage).

Non- Probability Sampling a sampling technique where not all members of the population have a chance (or an equal chance) of being selected. Instead, the selection is based on subjective judgment, convenience, or other non-random criteria.

Convenience Sampling

- members of the population are chosen based on their relative ease of access.

Purposive Sampling

- the samples are selected based purely on researcher's target respondents

Snowball Sampling

- asking your subjects to nominate another person with the same trait as your next subject.

Purposive Sampling

- based on actual number of samples that will represent the whole population.

Data Gathering Instrument

The data gathering instruments refer to the tools used to collect information from respondents or participants.

- For Quantitative Research- a researcher-made questionnaire
- For Qualitative Research- an interview-guide question
- For Mixed-Method Research- survey with interview-guide



CVAS METHOD

(Construction, Validation, Administration, and Scoring)

REMINDER BEFORE PILOT TEST

Data Gathering Instrument (Survey questionnaire or Interview Guide Questions must be VALIDATED)

Pilot testing is a small-scale preliminary study conducted before the main research to evaluate the feasibility, clarity, and effectiveness of the research instruments (e.g., questionnaires, interview guides, surveys).

RELIABILITY TEST

- **Reliability testing** measures the consistency or stability of the research instrument — whether it yields similar results under consistent conditions.
- **Cronbach's alpha** is a statistical coefficient that measures the internal consistency or reliability of a set of survey items, indicating the extent to which they measure the same underlying construct or characteristic

No	Coefficient of Cronbach's Alpha	Reliability Level
1	More than 0.90	Excellent
2	0.80-0.89	Good
3	0.70-0.79	Acceptable
4	0.6-.69	Questionable
5	0.5-0.59	Poor
6	Less than 0.59	Unacceptable

Data Gathering Procedure

This section outlines the step-by-step process of data collection.

Sample Discussion:

- Prior to data collection, permission was obtained from the concerned institutions. The quantitative questionnaires were distributed either online or in printed form, and respondents were given sufficient time to complete them. For the qualitative phase, in-depth interviews were scheduled at the participants' convenience and conducted either face-to-face or via online platforms. All interviews were audio-recorded with consent and transcribed verbatim for analysis.

Statistical Treatment of Data

- Statistical treatment explains how quantitative data were processed and analyzed.
- Qualitative data analysis focuses on interpreting meanings rather than numerical relationships.

QUANTITATIVE DATA ANALYSIS

- Quantitative research uses numerical data and applies statistical techniques to analyze relationships, differences, and trends.
- Data analysis in quantitative research has two types: **Descriptive** and **Inferential** statistics

Descriptive Statistics – Summarizing data (mean, median, standard deviation, frequency, percentages).

Inferential Statistics – Testing hypotheses using statistical tools.

- Correlation (relationship between variables)
- T-test/ANOVA (differences between groups)
- Association (association bet. categorical variables)

T-test

T-test - used to compare the means of two groups.

- If $p \leq 0.05$, the difference in group means is statistically significant.
- If $p > 0.05$, no significant difference in group means.
 - Example: Comparing test scores between male and female students.
 - Sample Result: $p = 0.024 < 0.05$, there is a significant difference between male and female cadets' scores.

Analysis of Variance

ANOVA - compares the means of 3 or more groups.

- If $p \leq 0.05$, at least one group mean is significantly different.
- If $p > 0.05$, no significant difference.
 - Example: Do cadets' average simulation scores differ by year level (1st-4th)?
 - $p = 0.003 < 0.05$, there is a significant difference in simulation scores across year levels.

Chi-Square Test

Chi-Square- test checks the association between two categorical variables.

- If $p \leq 0.05$, variables are significantly associated.
- If $p > 0.05$, no significant association.
 - Example: Is there an association between cadets' year level (1st-4th year) and their preferred study method



- $p = 0.027 < 0.05$, year level and study method are significantly associated.

Pearson's r

Pearson's r- measures the strength and direction of a linear relationship between two continuous (numerical) variables.

- Range: -1.00 to $+1.00$
- $+1.00$ → Perfect positive correlation (as one increases, the other increases).
- -1.00 → Perfect negative correlation (as one increases, the other decreases).
- 0 → No correlation.

Value of r	Strength of Relationship
0.00 – 0.19	Very weak / negligible
0.20 – 0.39	Weak
0.40 – 0.59	Moderate
0.60 – 0.79	Strong
0.80 – 1.00	Very strong

- Example: Is there a relationship between hours of simulation training and cadets' performance scores?
- The correlation coefficient ($r = 0.68$) shows a strong positive relationship between hours of training and exam performance.

Research Ethics

Research ethics are a set of principles and standards that guide researchers to ensure their study is conducted responsibly, honestly, and with respect for participants.

- **Informed Consent** - participants are fully informed about the study's purpose, procedures, risks, and their rights before participation.
- **Confidentiality and Anonymity** - Participant identities and data must be protected.
- **Voluntary Participation** - Participants must not be forced or coerced.
- **Integrity and Honesty** - Data must not be fabricated, falsified, or plagiarized
- **Respect for Persons** - Respect autonomy, culture, and rights of all participants.