Technical Communication: An Introduction

Importance of Technical Communication
Qualities of Technical Communication
Memoranda and their Features

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Technical communication: what is it?
A definition

The technical report is an act of communication by a professional in an organizational system to transfer information necessary for the system to continue to function.

Therefore, technical communication is not

Poetic     Lyric
Fictional   Indirect
Metaphorical
A little history

Rosetta Stone, 196 BC

http://en.wikipedia.org/wiki/
Image:Rosetta_Stone_BW.jpeg
Heinrich Schliemann

http://www.mysteria3000.de/wp/das-testament-des-heinrich-schliemann/

Sir Arthur Evans

http://web.ics.purdue.edu/~rauhn/BAaegaeantext.htm
Mycenaean Civilization: 1600 to 1100 BC

Fresco of Mycenaean woman, 1300 BC

Silver rhyton, 1600 century BC, from Mycenae
http://en.wikipedia.org/wiki/Mycenaean_period#Palaces
Mycenaean Civilization: 1600 to 1100 BC

Fresco of lyre player from palace at Pylos

http://www.hartzler.org/cc307/mycenaean/images/60.jpg

Gold seal ring

http://www.hartzler.org/cc307/mycenaean/images/44.jpg
Throne Room at Knossos

http://myfavoriteart.wordpress.com/my-favorite-pre-classical-works/
Mycenaean Civilization: 1600 to 1100 BC

http://www.trojanhorseantiques.com/trojan_horse_mythology.htm
Some Linear B texts

http://www.94510.org/files/Linear_B_tablet.jpg

http://proteus.brown.edu/greekpast/4690
Michael Ventris

http://home.att.net/~a.a.major/ventris.jpg

John Chadwick

http://www.classics.cam.ac.uk/cms_misc/images/faculty/chadwick2.jpg
What is on the Linear B tablets?

- Inventories of products
- Lists of tenants and slaves
- Descriptions of property, real and personal
- Inventories and descriptions of weapons, armor and vehicles such as chariots
- Dispositions of soldiers and sailors to protect the coastlines
Back to the Rosetta Stone: What was on it?

Orders from the pharaoh about the remission of taxes and the maintenance of temples

Rosetta Stone, 196 BC
So, it would appear that bureaucrats and accountants invented writing.

What conclusion can we draw?

Practical writing appeared at the dawn of history, and it will persist to the end.
Subjects most needed for engineering careers in industry:

Ranked from Thirty-Eight to One

Subjects most needed

38 Materials Engineering
37 Human Engineering
36 Electromagnets
35 Thermodynamics
34 Physics of Fluids
33 Numerical Analysis
32 Information and Control Systems
Subjects most needed: top four

1 Management practices
2 Technical writing
3 Probability and statistics
4 Public speaking
Any guesses about how much money technical writers make?
A little research on the Net shows that technical writers are paid about

- $95,000 in California
- $69,000 in Seattle
- $70,000 in Boston
- $60,000 Atlanta
- $80,000 in San Jose

Sources:
http://www.school-for-champions.com/techwriting/salary.htm
The Scream (1893), Edvard Munch
www.ibiblio.org/wm/paint/auth/munch/

You may find this news distressing.
Two main purposes of technical communication:

Informing

Persuading

*What might be documents of each type?*
Technical documents might include:

- Lab reports
- Project reports
- Research papers
- Feasibility studies
- Grant proposals
- Software Documentation
- Progress reports
- Resumes
- Instructions

And many others
Characteristics of technical writing

- Usefulness
- Understandability
- Concreteness
Time for a little bad clip art
Hayakawa’s Ladder of Abstraction

Ladder of Abstraction

Pure Abstraction

Pure Concrete
S. I. Hayakawa’s Ladder of Abstraction

- Highly abstract at the top
- Less abstract in the middle
- Almost concrete at the bottom
Hayakawa’s Ladder of Abstraction

Human Being

Californian

Californian
College professor

S. I. Hayakawa

www.nndb.com/people/345/000082099/
And www.virtualsen.com/
Let’s take a side-jaunt…
Welsh Corgi

http://www.dogbreedinfo.com/pembrokekorgi.htm
Frilled Lizard

http://animals.nationalgeographic.com/animals/reptiles/frilled-lizard/
Sheep

Let’s consider “quadruped”...
Let’s consider “quadruped”…

Welsh Corgi
http://www.dogbreedinfo.com/pembrokecorgi.htm

Frilled Lizard
http://animals.nationalgeographic.com/animals/reptiles/frilled-lizard/

Sheep
So, which sentence conveys more information?

On the way to work this morning, I saw a quadruped running through the neighborhood.

On the way to work this morning, I saw a sheep running through the neighborhood.
Hayakawa’s Ladder and verbs

- Move
- Advance
- Ambulate
- Run
- Walk
Character of technical communication

- Technical writing conveys technical information.

- Technical writing is designed to convey technical information efficiently.
Characteristics of *good* technical writing

- **Clarity:** it must be easily understandable.
- **Accuracy:** it must state things accurately.
- **Support:** assertions and conclusions must be supported by evidence or good authority and proper logic.
- **Good Documentation:** sources must be given and cited usefully.
Technical communication: grammar and style

Technical writing must be grammatically correct.

Technical writing must be executed in a clear style.
Technical communication: grammar and style

Technical writing must be grammatically and syntactically correct.

Why?

Technical writing must be executed in a clear style.

Why?
So, if you don’t know grammar…

You must learn it. Educated people will expect it of you, even if you were not taught it in school.

Get a “College Handbook” or “University Handbook” such as the *Harbrace College Handbook*. 
What happens if...

You ignore the rules?
Some Newspaper Headlines

■ Wives Kill Most Spouses in Chicago
   - (Florida Times-Union, 8 September 1977)

■ Legalized Outhouses Aired by Legislature.
   - (Hartford Connecticut Courant, 10 March 1973)

■ Carter Plans Swell Deficit
   - (Houston, Texas Tribune, 17 March 1977)

■ Jumping Bean Prices Affect Poor
   - (Eugene, Oregon Register-Guard, 27 February 1975)

■ Caribbean Islands Drift to Left
   - (Cleveland Plain Dealer, 26 July 1976)

■ Kids Make Nutritious Snacks

http://lene.solbakken.net/lene/humor/newspapers.html
Why are these headlines funny?

In other words, what is wrong with them?

*Remember: even subtle mistakes can be a source of unintentional humor.*
So, remember

Language follows rules.

Follow the rules or be misunderstood.

Context is important and must be made clear
There are different sorts of rules

Grammatical Rules

Syntactical Rules

Logical Rules

Violation of any of these can cause problems
So, technical communication is governed by basic principles

These principles are not difficult to learn

They will help you
- Decide how to write
- What to write
- How to organize what you write

*In other words, these rules are your friends; they will make your work easier*
Conclusions about grammar and syntax

- It is a measure of intellectual competence.
- Observing the rules of grammar and syntax results in clearer thought and expression.
- Failure to observe the rules results in unclear expression.
Something to remember:

If you cannot tell people what they need to know about your work, then your work hardly matters.
The easiest proof is experience

- Once working you will find that you must do a great deal of technical communication.
- The more you rise, the more of it you will do.
- If you cannot do it, you will not rise easily.

*In other words, I don’t have to convince you; reality will convince you in about three years.*
Three points to recall

Technical communication is not subjective: it involves language, which follows rules.

There are principles for the drawing up of technical documents.

Work that cannot be communicated is wasted.
Importance of technical communication

- It is important
- The better you are at it the higher you’ll rise
- The higher you rise, the more of it you’ll do
Memoranda
Audience

What is it?
Mixed audience

What is it?
You write a memo for your supervisor.

Who actually might read it?
Each sort of reader will have a different interest in the document

- A project engineer, a lawyer and an accountant are unlikely to read a report for the same purpose.
- The engineer, lawyer and accountant know and don’t know different things.

*So, what do you do?*
Let’s look back:

The high school essay
Let’s look back: the high school essay

1 Introduction

2 Body
   Paragraph 1
   Paragraph 2
   Paragraph 3

3 Conclusion
What if we put things in a different order?

1 Introduction
3 Conclusion
2 Body
In a technical memorandum, we call the three sections something different:

- Foreword
- Summary
- Discussion

-- You’ll notice that the foreword and summary are sort of overview of the memo as a whole.
The foreword states

- The problem which is the subject of the report
- Your job with regard to that problem
- The purpose of the report
The summary presents

■ The main actions you took
■ The main findings of your project
■ The implications of your findings
■ Any recommendations you may have
The discussion

Gives all the important details

Gives proofs and arguments

*The discussion is for specialist readers*
So, a memo consists of

- **Overview**
  - Foreword
  - Summary
- **Discussion**
The foreword consists of three things

- Problem statement
- Task statement
  - Criteria
  - Constraints
- Purpose statement
What is a criterion?

- A standard on which a judgement or decision may be based.

  - *Webster’s Ninth New Collegiate Dictionary*
In other words, the criteria presented to you indicate what it is you have to do to accomplish the job.

“Re-write the company’s current software manuals so that they may be understood by users with a twelfth grade education.”

“Design a propulsion method for an unmanned spacecraft that will require no more than 150 pounds of propellant for a journey to Mars.”
What is a constraint?

- A constraining condition, agency, or force.

  – *Webster’s Ninth New Collegiate Dictionary*
In other words, a limit you work under.

Examples:

■ “Your budget for re-writing the computer manuals is $3600.”

■ “You may detail one summer intern to help you with the re-writing of the computer manuals.”
So, the foreword answers three questions

■ What’s the trouble?
■ What am I supposed to do about it?
■ What’s this report for?
The summary answers these questions

■ What actions were taken?
■ What were the findings or results of these actions?
■ What do they mean?
■ What, if anything ought to be done?
A memo has a heading containing

- The names of those receiving it
- The name of the writer
- A subject line
- The date
To: Dr. Les Olsen
   Manager, Facilities
   Wolverine Electronics

From: M. A. Gilbert
      Project Engineer
      Wolverine Electronics

Date: 12 September 2006

Subject: Proposed lighting for Terre Haute facility

Example Header
To: Dr. Les Olsen
   Manager, Facilities

From: M. A. Gilbert
   Project Engineer

Date: 12 September 2013

Subject: Proposed lighting for Terre Haute facility

Dist: Bob Brown, Manager, Wolverine/Terre Haute
Memoranda

- Are often written for a mixed audience
- Have overviews made up of forewords and summaries
- Have headings
Three main elements of memos

- Heading
- Overview
  - Foreword
  - Summary
- Discussion (Sometimes called “Details”)


It is “Foreword” and not “Forward” (wrong word)

“Foreward” (not even a word)

The Scream (1893), Edvard Munch
www.ibiblio.org/wm/paint/auth/munch/
A little more detail. . .

- Foreword
  - Problem statement (often two sentences)
  - Task statement (your task or job)
    - Any Criteria
    - Any Constraints
  - statement of document purpose

- Summary
  - Actions taken
  - Findings
  - Implications
  - Conclusions
  - Recommendations (if needed)

- Discussion
Lets look at some overviews adapted from

Foreword
Slowdowns and necessary repairs in the incineration area of the Sewage Treatment Plant cost $2 million last year alone. These problems may have occurred because of inaccurate data on the amount of sludge cake being produced and delivered to individual furnaces. Thus, Dennis Moore, the Chief Project Engineer, requested that I investigate our data on sludge cake production and suggest improvements in monitoring it if those are necessary. The purpose of this report is to document the unreliability of our present monitoring technique and to recommend a better one.

Adapted from Olsen and Huckin, p. 107.
Foreword

In your letter of July 7, 1989, you asked me to suggest a treatment process for the wastewater from your new citrus processing plant. You stated that any treatment process selected should

1. Exhibit performance effectiveness under average and adverse flow conditions

2. Exhibit cost superiority in terms of initial cost and yearly spending

Consequently, I have compared several treatment alternatives using the data you have supplied and your criteria as a basis for comparison. The purpose of this report is to recommend a process for economically and efficiently treating processing wastes.

Adapted from Olsen and Huckin, p. 238
Summary

An aerated lagoon is the cheapest method for treating citrus processing wastes. Several treatment processes were considered in the selection. These include the activated sludge process, the anaerobic lagoon, and the aerated lagoon. The advantages of the aerated lagoon over the other treatment processes are as follows:

1. The aerated lagoon is the only alternative which could meet the federal pollutions standards under adverse flow conditions. It exhibits significantly better performance under all conditions through more consistent BOD reduction and higher organic loading potential.

2. The aerated lagoon affords significantly lower initial and yearly costs due to its ease of construction, operation, and maintenance. Per lagoon, the estimated initial cost is only $114,000 and the annual operating cost $22,800, approximately half as expensive as the more economical of the other two options.

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So, where are the elements in the foreword?

- Problem
- Task
- Purpose
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Recall the elements of a summary

- Actions taken
- Findings and conclusions (implications)
- Recommendations (if applicable)
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Summation: the memo

Header

Overview
  Foreword
  Problem statement (often two sentences)
  Task Statement (your task or job)
  Document Purpose statement (the purpose of the report)

Summary
  Actions taken
  Findings
  Implications
  Conclusions
  Recommendations (if needed)

Discussion (or “Details”)