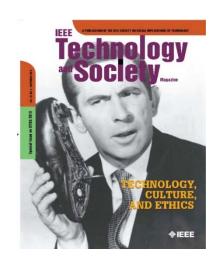
Fall 2021 VE496 Lecture notes Week 5

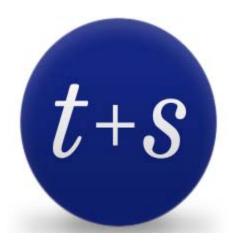


The Society on Social Implications of Technology (SSIT) of the Institute of Electrical and Electronics Engineers (IEEE)

https://technologyandsociety.org/

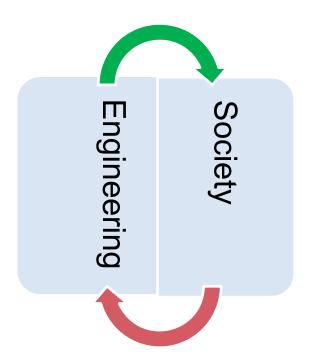
- How does technology impact the world?
- How does the application of technology improve the world?



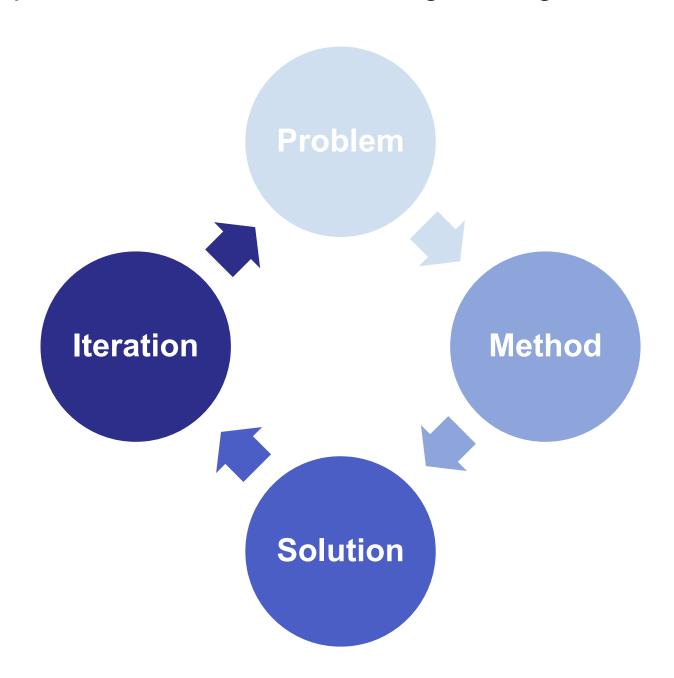


Purpose of Your Presentation:

- To explain the relation between engineering and society:
 - a. how technologies impact society
 - b. how society influences engineering practice



To explain the relation between engineering and society



Contextual skills

The *circumstances* that form the setting for an event, statement, or idea

The parts of something written or spoken that immediately precede and follow a word or passage and clarify its meaning

A literature review is important because it:

- 1. Justifying your own research. IR allows you to demonstrate what makes your own research valuable. It should serves as a jumping-off point for the rest of your own research.
- 2. Demonstrating your expertise. A well done IR shows that you are able to synthesize and logically present the insights gained. The final product establishes you as a trustworthy authority on your topic.
- 3. Joining the conversation. By producing a literature review, you're engaging with all of the prior scholars who examined your topic and continuing a cycle that moves the field forward.

A literature review may be presented as:

- a portion of a larger research project
- a standalone paper

Academic research

More abstract than applied

For example:

"What would be the effect on the trade balance between the US and China if China lowered the value of its currency by 10%?"

"At what age do babies learn to focus on people's eyes?"

Focusing on the underlying principles of a phenomenon.

Workplace research:

your goal is to find information to help you answer a *practical* question:

For example:

"Should we replace our sales staff's notebook computers with tablets?"

"What would be the advantages and disadvantages to our company of adopting a European-style privacy policy for customer information?"

Workplace research:

- focus on improving a situation at a particular organization.
- call for considerable primary research requiring you to learn about your own organization's processes and how the people in your organization would respond to certain ideas or changes
- address the needs of customers or other stakeholders.

Academic research Workplace research

Primary & secondary research methods

Same goal: to help you answer questions.

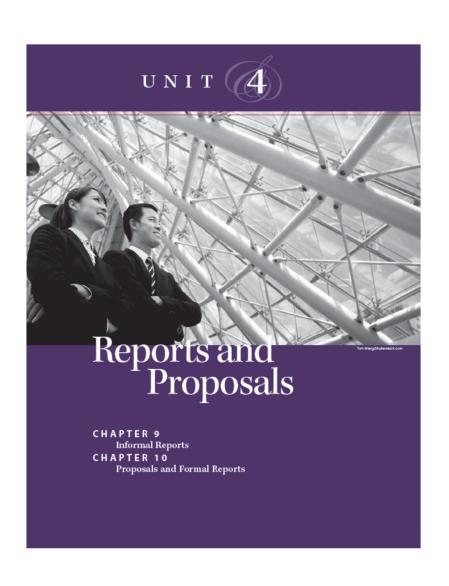
Choosing Appropriate Research Methods for Workplace research:

In-class questions

Which topics below will require primary search methods (collecting data directly)? Such as what?

- 1. How do greenhouse gases contribute to global warming?
- 2. What changes will outsourcing cause in the computer support industry over the next 10 to 20 years?
- 3. Which vendors are available to upgrade and maintain our company's website?
- 4. Which portable GPS system is the lightest?
- 5. Would this scanner produce the quality of scan that we need and interface well with our computer equipment?

Reading for Week 2, 3, 4, 5



Proposals & Reports



Proposals

Offer structured persuasion for internal or external audience

Informational Reports

Offer available data, facts, without analysis or recommendation

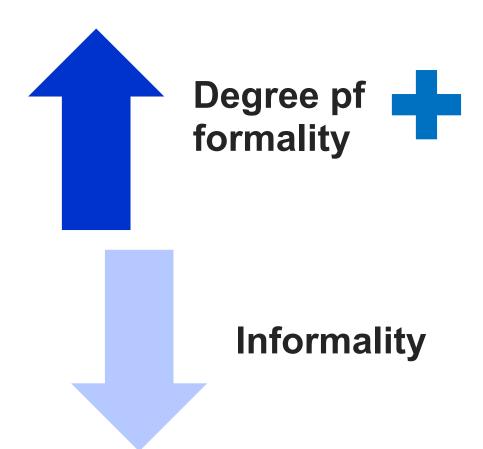
Analytical reports

Offer both info & analysis, and they can also include recommendation

What is a report?

A variety of reports:

- A document that contains researched information and numerical data
- Presentation slides or Excel sheets printed out
- Formal reports contain a title page, a table of contents, a list of illustrations, appendix, etc.
- Informal reports may be letters or memos distributed by email



"Front matters"

"Back matters"

Capstone Final

report

Cover page

Abstract or executive summary

Table of contents

Introduction

Concept generation

Concept selection

Concept description

Parameter analysis

Final design

Manufacturing plan

Test results

Discussion

Recommendations

Conclusions

Acknowledgment

References

Appendix

Front matter

Diagrams, graphs, figures in **the body of report** to support text

Back matter

Technical communication puts

much more emphasis on

managing information and

taking action

than most other forms of writing.

3 levels of reports

- 1. Information report
 - creating order and seeing patterns
- 2. Analytical report
 - orderly info + analysis
- 3. Recommendation report
 - orderly info+ analysis + recommendation

3 levels of reports



Using basic organizational patterns:

- 1. Chronological
- 2. Spatial
- 3. General to specific
- 4. More important to the least important
- 5. Comparison and Contrast
- 6. Classification or partition
- 7. Problem-method-solution
- 8. Cause and effect

Chronological

Explain events that occurred or might occur, or tasks the reader is to carry out in sequence.

Example:

You describe the process you used to diagnose the problem with the accounting software.

In a job résumé, you describe your jobs before your ones.

Spatial

You choose an organizing principle such as:

- top-to-bottom
- Left-to-right
- east to-west
- inside-to-outside

Example:

You describe the JI building....

You organize information by region, city, state, country, or other geographic unit.

General to specific

You present general information first, then specific information.

Understanding the big picture helps readers understand the details. Don't just see the trees and miss the "forest."

Example:

You explain the major changes in international travel (global background) and describe the specific travel restrictions by region (local details).

More importance to least important

Start with most important issue, then the next-most-important issue, and so on. Don't create suspense.

Example:

When you launch a new product, you discuss.....

Comparison and Contrast

Present similarities and differences (or advantages and disadvantages) between two or more items.

Example:

You discuss the strengths and weaknesses of three graduate programs or prospective employers you are interested in.

Classification or partition

Assign items to logical categories, or discuss the elements that make up a single item

Example:

You group the motors your company manufactures according to the fuel they burn: gasoline or diesel. Or you explain the operation of each major component of one of your motors.

Problem-method-solution

Discuss a problem you encountered, the steps you took to address the problem, and the outcome or solution

Example:

In describing how your company is responding to a new competitor, you discuss the problem (the recent loss in sales), the methods (how you plan to examine your product line and business practices), and the solution (which changes will help your company remain competitive).

Cause and effect

Discuss the factors that led to (or will lead to) to certain consequences.

Example:

You discuss factors that you think contributed to a recent decline in sales for Product X. Or you explain how you think changes to an existing Product Y will affect its sales.

Using basic organizational patterns:

- 1. Chronological
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- 8. Cause and effect

Types of Analytical Reports:

Reports to assess opportunities.

Every business opportunity carries some degree of risk and also requires a variety of decisions and actions

You can use analytical reports to assess the risks involved.

For instance,

- Market analysis reports are used to judge the likelihood of success for new products or sales.
- Due diligence reports examine the financial aspects of a proposed decision, such as acquiring another company.

• Reports to solve problems.

Managers often ask for *troubleshooting reports* when they need to understand why something isn't working properly and what needs to be done to fix it.

Failure analysis report, studies events that happened in the past, with the hope of learning how to avoid similar failures in the future (also known as the **post mortem** report).

Reports to support decisions.

Feasibility reports are called for when managers need to explore the ramifications of a decision they're about to make, e.g., switching materials used in a manufacturing process.

Justification reports explain a decision that has already been made.

- Market analysis reports
- Due diligence reports
- troubleshooting reports
- Failure analysis report
- Feasibility reports
- Justification reports

Recommendation reports:

- Reports to provide recommendations.
 - Workplace research papers carried out to clarify short-, mid-, and long- term business development interests.
 - Often prepared by internal employees and external consultants.

3 levels of reports



Purpose statement answers the question of why a report exists.

also called the report's objective, aim, or goal.

It is often written in the form of an infinitive phrase ("to....")

To investigate...

To explore...

To understand...

To compare...

To determine...

Etc.

Writing a Purpose Statement:

It is often written in the form of:

- 1. a research question
- 2. infinitive phrase ("to.....")

Example:

If your **problem** is that Company X wants to know why sales are declining, your purpose statement may be:

- "What are the causes of decreasing sales at X?"
- "to determine the causes of decreasing sales at X"

Thank you!

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