

ENG201 FINALTERM HANDOUTS
(LECTURE 23 TO 45)
Business and Technical English

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Final Term Syllabus

Lecture 23 to 45

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Handouts 201

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LESSON 23

PLANNING LONG REPORTS

Outline

- Steps in Planning a Report
 - a. Define the outline and purpose
 - b. Outline the issue for investigation
 - c. Prepare a work plan
 - d. Conduct research
 - e. Analyze and interpret data, draw conclusions and develop recommendations
- Defining the Questions
 - a. Developing the Statement of Purpose
 - b. Outlining and organizing of reports
- Informational Reports
 - o In order of Importance
 - o Sequentially
 - o Chronology
 - o Spatially
 - o Geography
 - o Categorically
- Analytical Reports
- Writing Outline: The Rules of Division
- Preparing a Preliminary Outline
 - o Alphanumeric System
 - o Decimal System
- Preparing a Work Plan
- Conduct Research
- Collecting Primary Data
 - o Documents
 - o Observations
- Surveys Analyze and interpret data, draw conclusions and develop recommendations

Steps of Planning a Report

When you gather facts, you need to arrange them in a suitable format. Before putting a single word on the page, follow the following series of steps that form the foundations of any report:

- a. Define the outline and purpose
- b. Outline the issue for investigation
- c. Prepare a work plan
- d. Conduct research
- e. Analyze and interpret data, draw conclusions and develop recommendations

Defining the Questions

The person, who authorizes the report, defines the questions. Such as:

- What needs to be determined?
- Why is this issue important?

- Who is involved in the situation?
- Where is the trouble actually located?
- How did the situation originate?

a. Developing the Statement of Purpose

A purpose statement is a declarative sentence which summarizes the specific topic and goals of a document. It is typically included in the introduction to give the reader an accurate and concrete understanding what the document will cover and what he/she can gain from reading it. An effective statement of purpose should be:

- Specific and precise - not general, broad or obscure
- Concise - one or two sentences
- Clear - not vague, ambiguous or confusing
- Goal-oriented - stated in terms of desired outcomes

For informational report, you might phrase the statement of purpose by saying:

Purpose: To summarize the extent of substance abuse among plant employees.

However for your analytical report, your statement of purpose might be:

Purpose: To analyze the effects of employee substance abuse on productivity and product quality, and recommend ways to counteract these effects.

b. Outlining and Organizing of Report

Informational Reports

These reports offer data, facts, feedback, and other types of information, without analysis of situation or recommendation. In these types of reports, reporting of facts may be factored by sub-topics:

o In order of Importance

If you are reviewing five product lines, you might organize your study in the increasing order of the amount of revenue, they generate.

o Sequentially

If you are studying a process, present your information step by step - 1, 2, 3.

o Chronology

When investigating a chain of events, organize the study according to the event that happens first.

o Spatially

If you are studying a physical object, study it left to right, top to bottom, inside to outside.

o Geography

If the location is important, factor your study geographically.

o Categorically

If you are asked to review several distinct aspects of a subject, you need to look at one category at a time, for example sales, profit, or investment.

Analytical Reports

These reports offer both information and analysis, and they can also purpose recommendations.

For example, an analytical report on “Why are we having trouble in hiring secretaries?” will look into following aspects:

- Salaries are too low
- What do we pay our secretaries?
- How important is pay in influencing secretaries’ job choices?

The said topic can be broken into following parts to start analytical procedure:

- Our location is poor
- Decreased trend of opting profession of secretary

The Rules of Division

You can divide the topic into at least two parts. Choose a significant and useful basis or guiding principle for the division. When dividing a whole into its parts; restrict yourself to one basis at a time and make sure that each group is separate and distinct. Be thorough when listing all the components of a whole.

Preparing a preliminary Outline

The Preliminary Outline is the first step of planning reports. It is basically a plan for organizing the elements of a report.

Following are different ways to create and to present a preliminary outline:

o Alphanumeric System

It contains letters, numbers, punctuation marks, and mathematical and other conventional symbols. e.g.

- I. _____
 - A. _____
 - B. _____
 - 1. _____
 - 2. _____
 - C. _____
- II. _____
 - A. _____
 - 1. _____
 - a. _____
 - b. _____
 - 2. _____
 - B. _____

o Decimal System

Decimal system is a way of writing numbers. Any number, from huge quantities to tiny fractions, can be written in the decimal system using only the ten basic symbols 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0. The value of any of these symbols depends on the place it occupies in the number. The decimal system is also known as a place-value system.

- 1.0. _____
 - 1.1. _____
 - 1.2. _____
 - 1.21. _____

- 1.22. _____
- 1.3. _____
- 2.0. _____
- 2.1. _____
- 2.11. _____
- 2.111. _____
- 2.112. _____
- 2.12. _____
- 2.2. _____

c. Preparing a Work Plan

Work plan for report writing is also very important. It can be prepared by the discussion of the sequence of tasks to be accomplished (including the sources of information, required experiments, restrictions of time etc.) and description of the end result that are interpreted from investigation, review of the project assignments, schedules, and resources management.

d. Conduct Research

Collecting Primary Data

The ways to collect primary data are:

o Documents

Documentary evidence and historical records are sources of primary data.

o Observations

Observation applies your five senses and your judgment to investigation. It involves taking organized notes about occurrences in the world. Observations provide your insight about specific people, events, or locales and are useful when you want to learn more about an event without the biased viewpoint.

o Surveys

Often the best way to obtain primary data is to ask people who have relevant experience and opinions. A formal survey is a way of finding out what a cross-section of people think about something. A formal survey requires a number of important decisions.

e. Analyze and interpret data, draw conclusions and develop recommendations

The last step involved in planning a report, is to interpret your investigation and research; and describe the end results and recommendation.

LESSON 24

WRITING LONG REPORTS

Outline

- Report Production
- Composing a Formal Report
 1. Prefatory parts
 2. Body of report
 3. Supplementary parts
- Prefatory Parts
 - a. Title fly
 - b. Title page
- Body of Report
 - a. Introduction
 - b. Text
 - c. Terminal section
- Supplementary Parts
 - a. Appendix
 - b. Bibliography
 - c. Glossary
 - d. Index

Report Production

Planning formal reports and proposals, conducting the necessary research, organizing the ideas, developing visual aids, and drafting the text are demanding and time consuming tasks. After careful editing and rewriting, you still need to produce a polished version.

Composing a formal Report

A professional report conveys the impression that the subject is important. A formal report has many formalities, embellishments, and requirements, which must be completed. A formal report may be divided in three major divisions:

1. Prefatory parts
2. Body of report
3. Supplementary parts

1. Prefatory parts

- a) Title fly
- b) Title page
- c) Letter of authorization
- d) Letter of transmittal
- e) Table of contents
- f) Preface

a. Title fly

The title fly is a plane sheet with only the title of the report on it.

b. Title page:

The title page includes four blocks of information:

- The title of the report
- The name, title and address of the person that authorized the report
- The name, title and address of the person that prepared the report
- The date on which the report was submitted

2. Body of report

- a)** Introduction
- b)** Text
- c)** Terminal section

a. Introduction

A report's introduction summarizes the contents by describing the purpose of the report and giving an overview of the main ideas expressed within it.

The introduction to a report serves a number of important functions:

- Authorization
- Problem/purpose
- Scope
- Background
- Sources and methods
- Definitions
- Limitations
- Report organization

b. Text

The text contains the actual details of the report. It is the main and crucial part of the body. This part consists of major sections or chapters that analyze and interpret the material, gathered as a result of your investigation. The content, organization, language, style, and visual aid should be trimmed to the type of the reader.

c. Terminal Section

Terminal section of the body of the report may comprise one or all of the following elements:

- Summary
- Conclusions
- Recommendations

Summary

This section summarizes the findings of the investigation.

Conclusions

It interprets facts explained. It does not give the writer's personal opinion. The opinion should be unbiased and, should not base on personal likes and dislikes.

Recommendations

This section suggests a plan of action based on findings and conclusions.

3. Supplementary Parts

- e. Appendix
- f. Bibliography
- g. Glossary
- h. Index

a. Appendix

In the appendix you may include tables, pictorials, graphs, charts or some additional information.

b. Bibliography

It refers to the sources from where the data have been collected. The sources may be books, newspapers, magazines and government publications or its statistical departments.

c. Glossary

A glossary is an alphabetic listing of special terms and words with their meaning and definitions. It is useful for both technical and non-technical readers.

d. Index

It includes the list of topics, their divisions and subdivisions with their location in the report. The order of the items listed in the index is alphabetical.

Note

Visual Aids

When illustrating the text of any report, you face the problem of choosing any specific form that best suits your message. Moreover, good business ethics demand you to choose a form of visual aid that will not mislead your audience.

- Tables
- Line and Surface Charts

LESSON 25

GENERAL REPORTS

Outline

- Report-Writing Situations
- How Readers want to use the Information you Provide
- The Questions Readers Ask most Often
- General Superstructure for Reports
 - a. Introduction
 - b. Method of obtaining facts
 - c. Facts
 - d. Discussion
 - e. Conclusions
 - f. Recommendations

Report-writing situations

Report-writing situations may vary such as:

- A one-hundred-page report on a seventh-month project to test a special method of venting high-speed engines for using in space vehicles.
- A twelve-page report, based on library research, to determine which long-distance telephone company provides the most reliable service.
- A two-paragraph report, based upon a manufacturing engineer's visit to a new plant that is about to be put into service.
- A two-hundred-page report, addressed to the general public, concerning the environmental impact of mining certain portions of public land in Baluchistan.

So, the length of report varies according to the situation and the project. There are no definite criteria for it. The length of a report can be from only two paragraphs to two hundred pages.

How readers want to use the information you provide

Your readers may want to use your information to solve:

- **An organizational problem:** Where typical goals are to increase efficiency and profit.
- **A social problem:** Where typical goals are to improve the general health and welfare of groups of people.
- **A personal problem:** Where typical goals are to satisfy individual preferences and values.

The questions that readers ask most often

- What will we gain from your report?
- Are your facts reliable?
- What do you know that is useful to us?
- How do you interpret those facts from our point of view?
- How are those facts significant to us?
- What do you think we should do?

General superstructure of reports

The general superstructure of reports contains six elements, one for each of the six basic questions.

- a. Introduction
- b. Method of obtaining facts
- c. Facts
- d. Discussion
- e. Conclusions
- f. Recommendations

a. Introduction

In the introduction of a report, you answer your readers' question, "What will we gain by reading your report?" In longer reports, your explanation of the relevance of your report to your readers may take many pages, in which you tell things such as:

- What is the problem that your report will help to solve?
- What activities, you performed, towards solving that problem?
- How your audience can apply your information in their own efforts towards solving the problem?

b. Method of Obtaining Facts

It also suggests to your readers, how they can gain additional information on the same subject. For example, if you obtained your information through reading, you direct your readers to those sources and, if you obtained your information through an experiment, survey or other special technique, your account of your method may help others design similar projects.

c. Facts

Your facts are the individual pieces of information that underlie and support your conclusions and recommendations. If your report for example, Ayesha's, is based upon interviews, your facts are the things that people told you. If your report is based upon laboratory, field, or library research, your facts are the verifiable pieces of information that you gathered.

d. Discussion

Taken alone, facts mean nothing. Therefore, an essential element of every report, you prepare will be a discussion in which you interpret your facts in a way that is significant to your readers. It is important to remember that your readers count on you not only to select facts that are relevant to them, but also to discuss those facts in a way that is meaningful to them.

e. Conclusions

Like interpretations, conclusions are general statements, based on your facts. However, conclusions don't simply focus on interpreting the facts but also on answering the readers' question. i.e. "How are those facts significant to us?"

f. Recommendations

Just as conclusions grow out of interpretations of the facts, recommendations grow out of conclusions. They answer the reader's question, "If your conclusions are valid, what should we

do?” Depending on many factors, including the number and complexity of the things you are suggesting, you may state your recommendations in a single sentence or in many pages.

A note about summaries

Many longer reports share another feature i.e. They are preceded by a separate summary of the report overall. Such summaries are often called ‘Executive Summaries’ because they usually are addressed to decision-makers.

LESSON 26

EMPIRICAL RESEARCH REPORT

Outline

- Defining Empirical Research Report
- The Questions Readers Ask Most
- Superstructure for Empirical Research Reports
 - a. Introduction
 - b. Objectives of research
 - c. Methods
 - d. Results
 - e. Discussion
 - f. Conclusions
 - g. Recommendation

Defining Empirical Research Report

An empirical research is a research that reports the results of a study and uses data derived from actual observation or experimentation. Such research is used to answer a question or test a hypothesis.

You will be able to use the superstructure for empirical research reports most successfully, if you understand the purpose of research, discussed in them. When you are writing about empirical research, you will be writing to people who will make decisions, based on the results of your reports.

Example

Ayesha's experiment will be used by engineers, who design engines for employees. The results of Anam's survey will be used by state agency in charge of outdoor recreation as it decides, what sort of facilities, it must provide to meet the needs of older citizens.

A smaller amount of empirical research has a different purpose: to extend general human knowledge. The researchers set out to learn how fish remember, what the molten core of earth is like, etc. The research is carried out for the sake of humanity and is published in Science Journals etc.

In some situations these two aims of research overlap. Some organizations sponsor basic research, usually in the hope that what is learned can later be turned into practical use. Likewise some practical research turns up results that are of interest to those, who desire to learn more about the world in general.

The Questions Readers Ask Most

Whether it aims to support practical decisions, extend human knowledge, or achieve some combination of the two purposes, almost all empirical research are customarily reported in the same superstructure. That's because readers of all types have the same seven general questions about it.

The seven Questions

1. Why is the research important to us?

Readers, concerned with solving specific practical problems, want to know what problems your research will help address. Readers, concerned with extending human knowledge, want to know how you think; your research will contribute to what humans should know.

2. What were you trying to find out?

A key part of an empirical research project is the careful formulation of the research questions that the project will try to answer. Readers want to know what those questions are, so they can determine whether they are significant questions.

3. Was your research method sound?

Your method has to be appropriate to your research and it has to be intellectually sound.

If the research method is not appropriate or intellectually sound, your readers will not rely on your results, conclusions and recommendations.

4. What results did your research produce?

Naturally, your readers will want to find out, what results you obtained.

5. How do you interpret those results?

Your readers will want to interpret those results in ways that are meaningful to them.

6. What is the significance of those results?

What answers do those results imply for your research questions, and how do your results relate to the problems.

7. What do you think we should do?

Readers, concerned with practical problems, want to know what you advise them to do.

Readers, concerned with extending human knowledge, want to know what you think, your results imply for future research.

Superstructure for Empirical research Reports

To answer the readers' typical questions about empirical research reports, writers use a superstructure that has the following elements:

- a. Introduction
- b. Objectives of research
- c. Methods
- d. Results
- e. Discussion
- f. Conclusions
- g. Recommendation

.

Report Element	Reader's Questions
Introduction	Why is your research important to us?
Objectives of Research	What were you trying to find out?
Method	Was your research method sound?
Results	What results did your research produce?
Discussion	How do you interpret your research?
Conclusion	What is the significance of those results?
Recommendation	What do you think we should do?

a. Introduction

In the introduction to an empirical report, you should seek to answer the readers' question i.e. "Why is the research important to us?" Typically, writers answer this question in two steps:

- They announce the topic of their research
- Explain the importance of the topic to their readers

Announcing the topic

You can often announce the topic of your research simply by writing the topic as the key phrase in the opening sentence of your report.

Example

For the past eighteen months, the Satellite Products Laboratory has been developing a system that will permit companies with large, nationwide fleets of trucks to communicate directly with their drivers at any time through a satellite link.

Example

Here is the first sentence from a report on the way people develop friendly relations. Social Psychologists know very little about the way, real friendships develop in their natural settings.

Explaining the importance of research

To explain the importance of research to your readers, you can use either or both of the following methods:

- State the relevance of your research to your organization's goals.
- Review the previously published literature on the subject.

Relevance to Organization Goals

In reports, written to readers in organization, (whether it's your own or a client's), you can explain the relevance of your research by relating it to some organizational goal or problem.

Sometimes the importance of research will be so obvious to your readers that merely naming your topic will be sufficient.

At other times, you will need to discuss at length the relevance of your research to the organization. In the first paragraph of the satellite report, for instance, the writers mention the potential market for the satellite communication system, they are developing.

Literature Reviews

First, present the main pieces of knowledge, communicated in the literature. Then, identify some significant gap in this knowledge—the very gap your own research will fill. In this way, you establish the special contribution that your research will make.

A second way to establish the importance of your research is to review the existing knowledge on your subject. Writers usually do this by reviewing the previously published literature. Generally, you can arrange a literature review in two parts.

Example

Literature Reviews

A great deal of research in social psychology has focused on variables influencing an individual's attraction to another at an initial encounter, usually in laboratory settings (Bergscheid and Walster, 1978; Bryne, 1971; Huston and Levinger, 1978), yet very little data exists on the processes by which individuals in the real world move beyond initial attraction to develop a friendship; even less data is known about the way developing friendships are maintained and how they evolve over time (Huston and Burgess, 1979; Levinger, 1980). The writer tells what is known on his topic. The writer identifies the gaps in knowledge that his research will fill.

The writer continues this discussion of previous research for three paragraphs. Each follows the same pattern: it identifies an area of research, tells what is known about that area, and identifies gaps in the knowledge that will be filled by the research that the writer has conducted.

These paragraphs serve an important additional function, also performed by many literature reviews. They introduce the established facts and theories that are relevant to the writer's work and necessary to the understanding of the report.

Writers almost always include literature reviews in the reports they write for professional journals. In contrast, they often omit reviews when writing to readers inside an organization. That's because such reviews are often unnecessary when addressing organizational readers. Organizational readers judge the importance of a report in terms of its relevance to the organization's goals and problems, not in terms of its relation to the general pool of human knowledge. For example, the typical readers of the truck-and-satellite communication report were interested in the report because they wanted to learn how well their company's system would work.

To them, a general survey of the literature on satellite communication would have seemed irrelevant—and perhaps even annoying. A second reason that writers often omit literature reviews when addressing readers in organizations is that such reviews rarely help such readers understand the reports. That's because the research projects undertaken within organizations usually focus so sharply on a particular, local question that published literature on the subject is beside the point. For example, a review of previously published literature on satellite communications would not have helped readers understand the truck-and-satellite report.

Sometimes, of course, literature reviews do appear in reports written to organizational readers. Often, they say something like this: “In a published article, one of our competitors claims to have saved large amounts of money by trying a new technique. The purpose of the research described in this report is to determine whether or not we could enjoy similar results.” Of course, the final standard for judging whether you should include a literature review in your report is your understanding of your purpose and readers. In some way or another, however, the introduction to all your empirical research reports should answer your readers’ question, “Why is this research important to us?”

b. Objectives of the Research

Every empirical research project has carefully constructed objectives. These objectives define the focus of your project, influence the choice of research method, and shape the way you interpret your results. Thus, readers of empirical research reports want and need to know what the objectives are.

The following example from the satellite report shows one way you can tell your readers about your objectives:

In particular, we wanted to test whether we could achieve accurate data transmissions and good-quality voice transmissions in the variety of terrains, typically encountered in long-haul trucking. We wanted also to see what factors might affect the quality of transmissions.

When reporting on research that involves the use of statistics, you can usually state your objectives by stating the hypotheses you tested. Where appropriate, you can explain these hypotheses in terms of existing theory, again citing previous publications on the subject.

The following passage shows how the writer, who studied friendship, explains some of his hypotheses. Notice how the author begins with a statement of the overall goal of the research.

The goal of the study was to identify characteristic of behavioral and attitudinal changes that occurred within interpersonal relationships as they progressed from initial acquaintance to close friendship. With regard to relationships benefits and costs, it was predicted that both benefits and costs would increase as the friendship developed.

The ratings of both the costs and benefits would be positively correlated with the ratings of friendship intensity. In addition, the types of benefits, listed by the subjects, were expected to change as the friendships developed.

c. Method

When reading the reports of your empirical research, people will look for precise details concerning your method. Those details serve three purposes. They let the readers assess the soundness of your research design and appropriateness for problems you are investigating. Second, the details enable your readers to determine the limitations that your method might place upon the conclusions you draw. Third, the description of your method provides information that will help your readers repeat your experiment, if they wish to verify your results or conduct similar research of their own. The kind of information, you provide about your method, depends upon the nature of your research

Example

At the beginning of their first term at the university, college freshmen selected two individuals, whom they had just met and, completed a series of questionnaires regarding their relationships with those two individuals at 3-week intervals through the school term.

In the remaining of the paragraph, the writers explain the questionnaires, asked the freshmen to tell about things such as: their attitudes towards each of the other two individuals. However, the paragraph is a small amount of the researcher's account of his method, actual research being a document of 1200 words.

The writers of the satellite report likewise provided detailed information about their procedures. He provides three paragraphs and two tables explaining their equipment, two paragraphs and one map describing the eleven stage region covered by the trucks.

How can you decide which method is to include? The most obvious way is to follow the general reporting practices of your fields.

List every aspect of your procedure that you made, when planning your research. Identify every aspect of your research what your readers might ask about. Ask yourself what aspects of your procedure might limit the conclusions that you can draw from your results. Identify every procedure that other researchers would need to understand in order to design a similar study.

d. Results

The results of empirical research are the data you obtain. Although your results are the heart of your empirical research project, they may take up a very small portion of it. Generally, results are presented in one of two ways:

- Tables
- Graphs

The satellite report uses two tables. The report on friendship uses four tables and eleven graphs.

Sentences: When placed in sentences, results are often woven into a discussion that combines data and interpretation.

e. Discussion

Sometimes writers briefly present all their results in one section and then discuss them in a separate section. Sometimes they combine the two in a single, integrated section. Whichever method you use, your discussion must link your interpretative comments with the specific results, you are interpreting.

f. Conclusions

Besides interpreting the results of your research, you need to explain what your results mean to in terms of original research questions and the general problem you set to investigate. Your explanations of these matters are conclusions.

g. Recommendations

The readers of some empirical research reports want to know what the writers think we should do. This is especially true in cases where the research is directed at solving a practical problem. Consequently research reports include a section on recommendations.

LESSON 27

FEASIBILITY REPORTS

Outline

- Typical Writing Situation
- The Questions Readers Ask Most Often
- Superstructure for Feasibility Reports
 - a. Introduction
 - b. Criteria
 - o Two ways of presenting criteria
 - o Importance of presenting criteria early
 - o Sources of your criteria
 - o Four common types of criteria
 - c. Method Of Obtaining Facts
 - d. Overview of Alternatives
 - e. Evaluation
 - f. Conclusions
 - g. Recommendations

Typical Writing Situation

All feasibility reports share one essential characteristic i.e. they are written to help decision-makers to choose between two or more courses of action. Even when a feasibility report seems to focus primarily on one course of action, the readers are always considering a second course: to leave things the way they are. An example of leaving things the way they are, is to continue to use metal parts rather than plastic parts in the sailboats. In many situations, however, readers will already have decided that some change is necessary and will be choosing between two or more alternatives to the status quo.

The Questions Readers Ask Most Often

As they think about the choice they must make, decision-makers ask many questions. From situation to situation, these basic questions remain the same. That's why it becomes possible for one to use the similar superstructure of feasibility report for variety of situations. Decision makers ask questions such as:

- a. Why is it important for us to consider these alternatives?
- b. Are your criteria reasonable and appropriate?
- c. Are your facts reliable?
- d. What are the important features of the alternatives?
- e. How do the alternatives stack up against your criteria?
- f. What conclusions do you draw about the alternatives?
- g. What do you think we should do?

a. Why is it important for us to consider these alternatives?

Decision-makers ask this question because they want to know why they have to make any choice in the first place. Your readers may need a detailed explanation of a problem to realize the importance of considering alternative courses of action. On the other hand, if the readers are

familiar with the problem, they may see the importance of considering the alternatives, if you simply remind them of the situation.

b. Are your criteria reasonable and appropriate?

To help your readers choose between the alternative courses of action, you must evaluate the alternatives in terms of specific criteria. At work, people want these criteria to reflect the needs and aims of their organization.

c. Are your facts reliable?

Decision-makers want to be sure that your facts are reliable before they take any action, based on those facts.

d. What are the important features of the alternatives?

Readers want you to present an overview that highlights the key features of each alternative so that, they can understand your detailed discussion of the alternatives.

e. How do the alternatives stack up against your criteria?

The heart of a feasibility study is your evaluation of the alternatives in terms of your criteria. Your readers want to know the results.

f. What conclusions do you draw about the alternatives?

Based upon your detailed evaluation of the alternatives, you will reach some general conclusion about the merits of each alternative. Decision-makers need to know your conclusions because these overall judgments form the basis for decision-making.

g. What do you think we should do?

In the end, your readers must choose one of the alternative courses of action. Because of your expertise on the subject, they want you to help them by telling, what you recommend.

Superstructure for Feasibility Reports

To answer your readers' questions about your feasibility studies, you can use a superstructure that has the following seven elements:

- a.** Introduction
- b.** Criteria
- c.** Method of obtaining facts
- d.** Overview of alternatives
- e.** Evaluation
- f.** Conclusions
- g.** Recommendations

You may combine the elements in many different ways, depending on your situation. For instance, you may integrate your conclusions into your evaluation, or you may omit a separate discussion of criteria, if they need no special explanation. But it's better to include each of the seven elements, based upon your understanding of your purpose, audience, and situation.

a. Introduction

In the introduction to a feasibility report you should answer your readers' question, "Why is it important for us to consider these alternatives?" The most persuasive way to answer this question is to identify the problem, your feasibility study will help your readers solve or achieve their goal.

Be sure to identify a problem or goal that is significant from the point of view of your employer or client. Significant goals could include reducing the number of rejected parts, increasing your productivity, and so on.

Example 1: Consider, for example, the way Fawaz wrote the introduction of a feasibility report, he prepared. A process engineer in a paper mill, Fawaz was asked to evaluate the feasibility of substituting one ingredient for another in the furnishing of one of the papers, it produces. At present, we rely on the titanium dioxide in our furnishing to provide the high brightness and opacity, we desire in our paper. However, the price of titanium dioxide has been rising steadily and rapidly for several years. We now pay roughly \$1400 per ton for titanium dioxide, or about 70 cents per pound.

Problem

Some mills are now replacing some of the titanium dioxide in their furnishing with silicate extenders. Because the average price for silicate extenders is only \$500 per ton, well under half the cost titanium dioxide, the savings are very great.

Possible Solution

Introduction

To determine whether we could enjoy a similar savings for our 30-pound book paper, I have studied the physical properties, material handling requirements, and cost of two silicate extenders, Tri-Sil 606 and Zenolux 26 T.

What the writer did to investigate the possible solution

Generally, the introduction to a long feasibility report (and most short ones) should also include a preview of the main conclusions and, perhaps, the major recommendations. Fawaz included his major conclusion: I conclude that one of the silicate extenders, Zenolux 26 T, looks promising enough to be tested in a mill run.

Example 2

Consider the way Shazi wrote the introduction of a feasibility report, she prepared for the board of directors of the bank that employs her. Shazi was asked to evaluate the feasibility of opening a new branch in a particular suburban community. She begins by announcing the topic of her report:

This report discusses the feasibility of opening a branch office of Al-Shami Bank in Gulberg, Lahore. Then, after giving a sentence of background information about the source of the bank's interest in exploring this possibility, Shazi emphasized the importance of such a feasibility study: "In the past, Al-Shami bank has approached the opening of new branches with great care, which is undoubtedly a major reason why it has become the most successful small, privately owned financial institution in Gulberg." Shazi also included her major conclusions: "Overall, Gulberg

offers an appealing opportunity, but would present Al-Shami Bank with some challenges, it has not faced before.” The introduction of a feasibility report is often combined with one or more of the other six elements, such as the description of the criteria, a discussion of the method of obtaining facts, or an overview of the alternatives. In addition, the opening of a feasibility report may also include various kinds of background, explanatory, and forecasting information.

b. Criteria

Criteria are the standards that you apply in a feasibility study to evaluate the alternative courses of action which you are considering. For instance, to assess the feasibility of opening the new branch office, Shazi uses many criteria such as:

- The existence of a large enough market
- A good possibility of attracting depositors away from the competition
- The likelihood that profits on the deposits at the branch will exceed the expenses of operating it.
- The reasonableness of the financial outlay required to open the office.

Two Ways of Presenting Criteria

- Devote a separate section to identify and explaining them: Writers often do this in long reports or in reports where the criteria themselves require extended explanation.
- Integrate your presentation of criteria into other elements of the report: Fawaz did this in the following sentence (from the third paragraph of his introduction).

“To determine whether we could enjoy a similar savings for our 30-pound book paper, I have studied the physical properties, material handling requirements, and cost of two silicate extenders, Tri-Sil 606 and Zenolux 26 T”.

Criteria named

For each of the general criteria named in the quoted sentence, Fawaz had some more specific criteria. For instance, at the beginning of his discussion of physical properties of the two extenders, he named the third property, he evaluated.

Importance of Presenting Criteria Early

There are three good reasons for presenting your criteria early in your report:

First, your readers could know that the validity of your conclusions depends on the criteria, you used to evaluate the alternatives, and they want to evaluate the criteria themselves. Second, your discussion of the criteria tells your readers a great deal about the scope of your study. Third, your decision of the alternative courses of action will make much more sense to your readers, if they know in advance the criteria of their evaluation.

Sources of Your Criteria

Often the person, who asks you to undertake a study, will simply tell you what criteria to apply. In other situations, your readers may expect you to identify the relevant criteria for them, based on technical knowledge that you possess.

Four Common Types of Criteria

As you develop your criteria, you may find it helpful to know that at work, criteria often address one or more of the following questions:

- Will the course of action really do what's wanted?
- Can we implement it?
- Can we afford it?
- Is it desirable?

c. Methods of Obtaining Facts

When you tell about methods of getting facts, you answer your readers' question, "Are your facts reliable?" You assure your readers that your facts form a sound basis for your decision-making. The source of your facts will depend upon the nature of your study:

- Library research
- Calls to manufacturers
- Interviews
- Meetings with other experts in your organization
- Surveys
- Laboratory research

The amount of detail, you need to provide, depends upon your readers and situation, but in each case, your goal is to say enough to satisfy your readers that your information is trustworthy. For example, Shazi used some fairly technical procedures to estimate the amount of deposits that Al-Shami Bank could expect from a new branch in Gulberg, Lahore. Description of your methods depends upon how many different techniques you used. If you used one or two techniques, you could describe each in a paragraph or section, but if you used several techniques, each pertaining to a different part of your analysis, you might mention each of them at the point at which you discuss the results obtained.

d. Overview of Alternatives

Before you begin your detailed evaluation of the alternatives, you must be sure that your readers understand what the alternatives are. Sometimes you need to devote only a few words to that task.

For example, imagine that you worked for a chain of convenience stores that has asked you to investigate the feasibility of increasing starting salaries for store managers as a way of attracting stronger applications for job openings. Surely, your readers will not require any special explanation to understand the course of action you are assessing.

However, you may sometimes need to provide extensive background information or otherwise explain the alternative to your readers.

For example, when Jahangir needed to report on a feasibility of replacing his employer's company-owned building-wide telephone system, he helped his readers to piece together the more detailed comments; he later made it in his point-by-point evaluation of the systems.

e. Evaluation

The heart of a feasibility report is the detailed evaluation of the course or courses of action, you studied. In most feasibility studies, writers organize their evaluation sections around their criteria. For example, in her study of the feasibility of opening a new branch office of a bank, Shazi devoted one section to the size of the market, another to the competition, a third to prospective income and expenses, and so on.

f. Conclusions

Your conclusions are your overall assessment of the feasibility of the courses of action, you studied. You might present your conclusions in two or three places in your report. You should certainly mention them in summary form in the beginning of your report.

g. Recommendations

It is customary to end a feasibility report by answering the decision-maker's question, "What do you think we should do?" Sometimes your recommendations will pertain directly to the course of action you studied: "Do this" or "Do not do it". You may also discover that you were unable to gather all the information, you needed to make a firm recommendation.

LESSON 28

PROGRESS REPORTS

Outline

- Progress Report
- Typical Writing Situations
- Readers' Concern with the Future
- The Questions Readers Ask Most Often
- Superstructure for Progress Reports
 - Introduction
 - Facts and Discussion
 - Answering Your Readers' Questions
 - Organizing the Discussion
 - Emphasizing Important Findings and Problems
 - Conclusions
 - Recommendations

Progress Report

The progress report states the progress made towards the goal during the reporting period, discusses significant costs and scheduling issues, and lists future objectives to be carried out. Project monitoring and accountability are the main objectives of a progress report.

Typical Writing Situations

Progress reports are prepared in two types of situations.

In the first, you tell your readers about your progress on one *particular* project. As a geologist employed by an engineering consulting firm, Lee must do this. His employer has assigned him to study the site that a large city would like to use for a civic center and a large office building. The city is worried that the site might not be geologically suited for such construction. Every two weeks, Lee must submit a progress report to his supervisor and to the city engineer. Lee's supervisor uses the progress report to be sure that Lee is conducting the study in a rapid and technically sound manner. The city engineer uses the report to see that Lee's study is proceeding according to the tight schedule planned for it. She also uses it to look for preliminary indications about the likely outcome of the study. Other work could be speeded up or halted as a result of these preliminary findings.

In the second type of situation, you prepare progress reports that tell about your work on *all* your projects. Many employers require their workers to report on their activities at regular intervals all year round, year in and year out. Jacqueline is a person who must write such progress reports (often called periodic reports). She works in the research division of a large manufacturer of consumer products, where she manages a department that is responsible for improving the formulas for the company's laundry detergents making them clean and smell better, making them less expensive to manufacture, and making them safer for the environment. At any one time, Jacqueline's staff is working on ten to twenty different projects.

As part of her regular responsibilities, Jacqueline must write a report every two weeks to summarize the progress on each of the projects. These reports have many readers, including the following people: her immediate superiors, who want to be sure that her department's work is proceeding satisfactorily; discoveries they can use in the products they are responsible for (for example, dishwashing detergents); and corporate planners, who want to anticipate changes in formulas that will require alternations in production lines, advertising, and so on. As the examples of Lee and Jacqueline indicate, progress reports can vary from one another in many ways: they may cover one project or many; they may be addressed to people inside the writer's organization or outside it. They may be used by people with a variety of reasons for reading them, such as learning things they need to know to manage and to make decisions.

Readers' Concern with the Future

Despite their diversity, however, almost all progress reports have this in common: their readers are primarily concerned with the *future*. That is, even though most of the progress reports talk primarily about what has happened in the past, their readers usually want that information so that they can plan for and act in the future. Why? Consider the responsibilities that your readers will be fulfilled by reading your progress reports. From your report, they may be trying to learn the things they need to know to manage *your* project. They will want to know, for instance, what they should do (if anything) to keep your project going smoothly or to get it back on track. The reports written by Lee and Jacqueline are used for this purpose by some of their readers. From your report, some people may also be trying to learn things they need to know to manage other projects. This is because almost all projects in an organization are interdependent with other projects.

For example, other people and departments may need the results of your project as they work on their own projects. Maybe you are conducting a marketing survey whose results they need so that they can design an advertising campaign, or maybe your company can install other equipment. If your project is going to be late, the schedules of those projects will have to be adjusted accordingly. Similarly, if your project costs more than expected, money and resources will have to be taken away from other activities to compensate. Because of such interdependencies, your readers need information about the past accomplishments and problems in your project so that they can make plans for the future. Similarly, your readers will often be interested in learning the preliminary results of your work.

Suppose, for instance, that you complete one part of a research project before you complete the others. Your audience may very well be able to use the result of that part immediately. The city engineer who reads Lee's reports about the possible building site is especially interested in making use of the information Lee provides.

The Questions Readers Ask Most Often

The readers' concern with the implications of your progress for their future work and decisions leads them to want you to answer the following questions in your progress reports. If your report describes more than one project, your readers will ask these questions about each of them.

What work does your report cover?

In order to understand anything in a progress report, readers must know what project or projects and what time period the report covers.

What is the purpose of the work?

Readers need to know the purpose of your work to see how your work relates to their responsibilities and to the other work, present and future of the organization.

Is your work progressing as planned or expected?

Your readers will want to determine if adjustments are required in the schedule, budget, or the number of people assigned to the project or projects you are working on.

What results did you produce?

The results you produce in one reporting period may influence the shape of work in future periods. Even when you are still in the midst of a project, readers will want to know about any results they can use in other projects, before you finish your overall work.

What progress do you expect during the next reporting period?

Again, your readers' interests will focus on such management concerns as schedule and budget and on the kinds of results they can expect.

How do things stand overall?

This question arises especially in long reports. Readers want to know what the overall status of your work is, something they may not be able to tell readily from all the details you provide.

What do you think we should do?

If you are experiencing or expecting problems, your readers will want your recommendations about what should be done. If you have other ideas about how the project could be improved, they too will probably be welcomed.

Superstructure for Progress Reports

To answer your reader's questions, you can use the conventional superstructure for writing progress reports, which has the following elements:

1. Introduction
2. Facts
3. Discussion
4. Conclusions
5. Recommendations

Introduction

In the introduction to a progress report, you should answer the following two questions:

1. "What work does your report cover?"
2. "What is the purpose of the work?"

You can usually answer the question, "What work does your report cover?", by opening with a sentence that tells what project or projects your report concerns and what time period it covers.

Sometimes you do not need to answer the second question “What is the purpose of the work?” because all your readers will already be quite familiar with your work’s purpose. At other times, however, it will be crucial for you to tell your work’s purpose because your readers will include people who don’t know or may have forgotten it. You are especially likely to have such readers when your written report will be widely circulated in your own organization or when you are writing to another organization that has hired your employer to do the work you describe.

You can usually explain purpose most helpfully by describing the problem that your project will help your readers solve. The following sentences show how one manager answered the readers’ first two questions: This report covers the work done on the Focus Project from July 1 through September 1. Sponsored by the U.S. Department of Energy, the aim of the Focus Project is to overcome the technical difficulties encountered in manufacturing photovoltaic cells that can be used to generate commercial amounts of electricity.

Facts and Discussion

In the discussion section of your progress report, you should answer questions from your readers:

“Is your work progressing as planned or expected?”

“What results did you produce?” and,

“What progress do you expect during the next reporting period?”

Answering Your Readers’ Questions

In many situations, the work for each reporting period is planned in advance. In such cases you can easily tell about your progress by comparing what happened with what was planned. Where there are significant discrepancies between the two, your readers will want to know the reason. The information you provide about the causes of problems will help your readers decide how to remedy them. It will also help you explain any recommendations you make later in your report. When you are discussing preliminary results that your readers might use, be sure to explain them in terms that allow your readers to see their significance. In research projects, preliminary results are often tentative. If this is the case for you, let your readers know how certain or uncertain the results are. This information will help your readers decide how to use the results.

When preparing progress reports, people often wonder how much information they should include. Generally, progress reports are brief because readers want them that way. While you need to provide your readers with specific information about your work, don’t include details except when the details will help your readers decide how to manage your project or when you believe that your readers can make some immediate use of them.

In many projects, you will learn lots of little things and you will have lots of little setbacks and triumphs along the way. Avoid talking about these matters. No matter how interesting they may be to you, they are not likely to be interesting to your readers. Stick to the information your readers can use.

Organizing the Discussion

You can organize your discussion section in many ways. One is to arrange your material around time periods;

1. What happened during the most recent time period?
2. What's expected to happen during the next time period?

You will find that this organization is especially well-suited for reports in which you discuss a single project that has distinct and separate stages, so that you work on only one task at a time. However, you can also expand this structure for reports that cover either several projects or one project in which several tasks are performed simultaneously:

- What happened during the most recent time period?
- Project A (or Task A)
- Project B
- What's expected to happen during the next time period?
- Project A
- Project B
- When, you prepare reports that cover more than one project or more than one task, you might also consider organizing around those projects or tasks:
 - Work on Project A (or Task A)
 - What happened during the last time period?
 - What's expected to happen during the next time period?
 - Work on Project B
 - What happened during the last time period?
 - What's expected to happen during the next time period?

This organization works very well in reports that are more than a few paragraphs long because it keeps all the information on each project together, making the report easy for readers to follow.

Emphasizing Important Findings and Problems

As mentioned, your findings and problems are important to your readers. Your findings are important because they may involve information that can be used right away by others. The problems you encounter are important because they may require your readers to change their plans. Because your findings and problems can be so important to your readers, be sure that you devote enough discussion to them to satisfy your readers' needs and desires for information. Also, place these devices so that they are easy to find.

Conclusions

Your conclusions are your overall views on the progress of your work. In short progress reports, there may be no need to include them, but if your report covers many projects or tasks, a conclusion may help your readers understand the general state of our progress.

Recommendations

If you have any ideas about how to improve the project or increase the value of its results, your readers will probably want you to include them. Your recommendations might be directed at overcoming problems in the future or they might be directed at refocusing or otherwise altering the period.

LESSON 29

PROPOSALS

Outline

- Proposal
- The Variety of Proposal Writing Situations
- Proposal Readers are Investors
- The Questions Readers Ask Most Often
- Strategy of the Conventional Superstructure for Proposals
- Various Lengths of proposals
- Superstructure of Proposals
 - o Introduction
 - o Problem
 - o Objectives
 - o Product
 - o Method
 - o Resources
 - o Schedule
 - o Qualification
 - o Management
 - o Costs

Proposal

A **proposal** is a special type of analytical report designed to get products, plans, or projects accepted by outside business or government clients.

The Variety of Proposal Writing Situations

You may write proposals in a wide variety of situations. Your readers may be employed in your organization, or they may be employed in other organizations. Your readers may have asked you to submit a proposal, or you may submit it to them on your own initiative. Your proposal may be in competition against others, or it may be considered on its own merits alone. Your proposal may need to be approved by various people in your organization before you submit it to your readers, or you may submit it directly yourself. You may have to follow regulations concerning the content, structure and format of your proposal, or you may be free to write your proposal entirely as you think. Once you have delivered the proposal to your readers, they may follow any of the wide variety of methods for evaluating it.

Example- Situation 1

Helen wanted a permission to undertake a special project. She thought that her employers should develop a computer system that employees could use to reserve conference rooms. She concluded that her company needed such a system as she had arrived for a meeting several times only to find out that the room was reserved. As she is employed to write computer programs, she is well qualified to write one. However, she cannot work on it without the permission of her boss. Consequently, she wrote a proposal to them.

As she wrote, she had to think about two people, her boss and her boss's boss, who had to decide without consulting other people. Because her employers had no specific guidelines, she could use any format, structure and content to write her proposal. Furthermore, she did not need anyone else's permission to write the proposal, although she would need an approval for sending a proposal to another department.

Finally, Helen did not need to worry about competition from other departments, because hers would be considered on its own merits. However, her proposal had to be persuasive enough to convince her readers that her time would be better utilized than doing her regular duties.

Example- Situation 2

The second proposal was written under much different circumstances than was Helen's. To begin with, three people wrote it. The writers were a producer, a scriptwriter and a business manager, seeking funds from a non-profit organization, and the federal government to produce television programs. The department learned that the Government was interested in making programs about the environment. To learn more about what the Government wanted, the writers obtained copies for "requests for proposals".

In their proposal, the writers addressed an audience much different from Helen's. The government receives about four proposals daily, one it can fund. To evaluate the proposals, it sends the proposals to experts in the country. The reviews of these proposals are reviewed by the staff of the Government. Those that receive the best response are funded.

Before the writers could even mail the proposal to the Government, they had to obtain the approval for it from several administrators at the station. That is because the proposal if accepted would be a contract between the station and the Government. By means of its approval process, the station assures itself that all the contacts it makes are beneficial to it.

Proposal Readers are Investors

The proposals written by Helen and the three writers from the TV station illustrate some of the differences between different proposal writing situations.

Despite these differences, however, almost all proposal writing situations have two important features in common.

- In your proposals, you ask decision-makers to invest some resources, such as time and money, so that the thing you propose can be done.
- Your readers will make their investment decisions cautiously. They will be accurately aware that their resources are limited, that if they decide to invest in the purchase of projects you propose, those resources will not be available for other uses.

The Questions Readers Ask Most Often

As cautious investors, proposal readers ask many questions about purchases, projects, and others things proposed to them. But from situation to situation the questions remain basically the same. Furthermore, the answers that people at work find persuasive and satisfying are also the same type.

Problem

Your readers will want to know why you are making the proposal and why they should be interested in it. What problems, need, or goal does your proposal address – and why is that problem, need, or goal important to them.

Solution

Your readers exactly want to know what you propose to do and how it relates to the problem you described. Therefore, they will ask “What kind of a solution will be a successful solution to this problem has to do?” They might ask “How do you propose to do these things?”

They will examine carefully your responses, trying to determine whether it is likely that your overall strategy and your specific plan will work.

Costs

What will be your proposed product or activity cost your readers and is it worth the cost to them?

Capability

If your readers pay or authorize you to perform this work, how do they know they can depend on you to deliver what you expected?

Strategy of the Conventional Superstructure for Proposals

The conventional superstructure for proposals is a framework for answering those questions one that has been found successful in repeated use in the kinds of situations you will encounter on the job. When you follow this superstructure, you provide information on the up to ten topics, which will be discussed shortly. In some cases, you will include information on all ten topics, but in others you will cover only some of them. Even in the briefest proposals, however, you will probably need to treat the following four topics:

- Introduction
- Problem
- Solution
- Costs

When you provide information on the above mentioned topics, however, you should do much more than provide data. You should also try to make persuasive points. The following tables describe the persuasive points for each of the ten superstructures.

Topic	Your reader's questions	Your persuasive points
Introduction	What is the communication about?	Briefly, I propose to do the following.
Problem	Why is the proposed project needed?	The proposed action addresses a problem that is important to you.
Objectives	What features will a solution to this problem need in order to be successful?	A successful solution must achieve the following objectives.

Topic	Your reader's questions	Your persuasive points
Product	How do you propose to do those things?	Here is what I plan to produce and how it will work effectively at achieving the objectives.
Method Resources Schedule Qualifications Management	Are you going to be able to deliver what you described here?	Yes, because I have a good plan of action; the necessary facilities, equipment etc...
Costs	What will it cost?	The cost is reasonable.

As you write, you need to see the relationships among the ten topics. Think of them as a sequence in which you lead your readers through the following progression of thoughts. The readers learn generally what you want to do (**Introduction**). The readers are persuaded that there is a problem, need, or goal that is important to them (**Problem**). The readers are persuaded that the proposed action plan will be effective in solving the problem, meeting the need, and achieving the goal that readers now agree is important (**Objectives**).

The readers are persuaded that you are capable of planning and managing the proposed solution (**Method, resources, schedule, qualifications and management**). The readers are persuaded that the cost of the proposed action is reasonable in the light of the benefits the action will bring (**Cost**). There is no guarantee that your readers will actually read your proposal from beginning to end or concentrate on each and every word you write.

Consider how readers approach long proposals

Each volume of your proposal is evaluated by a different set of experts, specializing in their own domains. Even when readers do not read your proposal straight through, the account given above of the relationships among the parts can help you. You can write keeping in mind a tightly focused proposal in which all the parts support one another effectively.

Various Lengths of Proposals

The preceding discussion mentions proposals that are several volumes long. Such proposals can run into hundreds or even thousands of pages. On the other hand, some proposals are less than a page. How do you know how long your proposals should be? Sometimes you can be brief and

still very persuasive. Often you need to touch upon only a few of the ten items listed in the table described before.

For instance, Helen's proposal involved only one person Helen. Similarly, her proposal didn't need any management plan because her readers were already aware of her abilities as a writer of programs. She didn't have to say anything about them, except perhaps to say a few words about the experience she had in writing such programs. And because she was asking only two weeks' time to prepare the program; she didn't have to present a detailed budget report, though she needed to justify her proposal schedule.

In other situations such as writing to NASA or some other big department you need to write lengthy proposals. Those proposals will be long as you would need to address the ten topics, and your discussion of each of these topics must answer fully the questions you have. Finally, in order to decide how long a proposal should be, you must think about your readers, anticipating their questions and their reactions to what you are writing.

Superstructure for Proposals

In the remaining of the lecture, we will describe in detail each of the ten topics that form the conventional superstructure for proposals. As you go along, keep in mind that the conventional superstructure represents only a general plan. You must use your imagination and creativity to adapt it effectively to your particular situation. In addition, as you plan and write your proposal, remember that the ten topics identify the kinds of information you need to provide, not necessarily the titles of sections you will include. In brief proposals, some parts take only a sentence or a paragraph, so that several are grouped together.

For example, writers often combine their announcements of their proposal, their discussion of the problem, and their explanation of the objectives under a single heading which might be "Introduction", "Problem" or "Need". Also remember that the conventional superstructure may be used with any of the three common formats:

1. Letters
2. Memos
3. Books

While writing your proposal, you should have sufficient information about the particular format you are going to see.

Introduction

At the beginning of a proposal you want to do the same thing that you do at the beginning of something else you write on the job. Tell your readers what you are writing about. In a proposal this means announcing what you are proposing. How long and detailed should the introductory announcement be? In proposals, the introductory announcements vary considerably in length but are almost always very brief. By custom the writers reserve the full custom of what they propose until later, after they have discussed the problem that their proposal will help to solve. You may be able to introduce your proposal in a single sentence. Helen did this in her proposal, 'I request a permission to spend two weeks writing, testing and implementing a program for scheduling

conference rooms.’ When you propose something more complex than a two-week project, you may need more words to introduce it. In addition, sometimes you may need to provide background information to help your readers understand what you have in mind.

Problem

Once you have announced what you are proposing, you must persuade your readers that your proposed action will address the problem significant to them. Your description of the problem is crucial to the success of the proposal. You must not only define the problem but also make the problem seem relevant to the readers. When the readers define the problem for you, you need to do the least research. This can happen when the reader has asked you to submit the proposal. In such situation, your primary purpose in describing the problem will be to show your readers that you thoroughly understand what they want.

In some situations, you may not have the aid of explicit statements from your readers to help you formulate the problem. This is most likely to happen when you are preparing a proposal on your own initiative, without being asked by someone to submit it. In this case, you need to devote research and creativity in writing a proposal. You should also find out what sort of problem your readers will consider important.

Product

When you describe the product your proposal will produce, you explain your plan for achieving the objectives you told your readers about. To describe your product persuasively, you need to do the following three things:

- Tell your readers how you reach your objectives.
- Provide enough details to satisfy your reader.
- Explain the desirability of the product of your project.

Method

Sometimes the decision makers who act upon proposals need to be assured that you can, in fact, produce the results you promise. That happens especially in situations where you are offering something that takes special expertise – something to be customized or created only if your proposal is approved.

Resources

By discussing the facilities, equipment, and other resources to be used for your project, you assure that your readers will use the required equipment properly. If part of your proposal is to request the equipment, tell your readers what and why you need to acquire.

Schedule

People who read or listen to your proposals have several reasons for wanting to know the schedule of your plan. The most common way to present a schedule is to provide a schedule chart. The details of schedule charts will be discussed in future lectures.

Qualifications

When proposal readers are thinking of investing in your project, they want to be sure that the proposers have the experience and capability to carry out the project properly. For that reason, a discussion of the qualifications of the personnel involved with the project is a standard part of the most proposals.

Management

When you propose a project that involves more than about four people, you increase the persuasiveness of your proposal by describing the management structure of your group. That's because proposal readers know that even qualified people cannot work effectively if their activities are not coordinated.

Costs

When you propose something, you are asking the readers to invest resources, usually money and time. Naturally, you need to tell them how much the project will cost. In some proposals, you may demonstrate the reasonableness of the proposal as well by calculating the savings that will result from your project.

LESSON 30

INSTRUCTIONS

Outline

- The Variety of Instructions
- Three Important Points to Remember
- Instructions Shape Attitudes of the Readers
- Good Visual Design is Essential
 - Page Design
 - Visual Aids
- Testing of Instructions is Often Indispensable
- Conventional Superstructure for Instructions
 - Introduction
 - Subject
 - Aim
 - Intended Readers
 - Scope
 - Organization
 - Usage
 - Motivation
 - Background
 - Description of the Equipment
 - Theory of Operation
 - List of Materials and Equipment
 - Directions

The Variety of Instructions

If you were to look at a sampling of the various kinds of instructions written at work, you would see that instructions vary greatly in length and complexity. The simplest and the shortest are only a few sentences long. Consider, for example, the instructions that the state of Ohio prints on the back of the 1 x 1 -inch registrations stickers that Ohio citizens must buy and affix to their automobile license plates each year: Position sticker on clean, dry surface in lower right-hand corner of rear plate (truck tractor front plate). If the plate has a previous sticker, you should place new sticker to cover old sticker. Rub edges down firmly. Other instructions are hundreds—or even thousands of pages long. Examples of these long and highly complex instructions are those written by General Electric, Rolls Royce, and McDonnell Douglas for servicing the airplane engines they manufacture. Other examples are the manuals that IBM, Control Data, and NCR write to accompany their large mainframe computers.

This chapter describes the superstructure for instructions in a way that will enable you to use the patterns for any instructions you write at work, whether long or short.

Three Important Points to Remember

While writing instructions, you should keep in mind the following three points:

- Instructions shape attitudes of the readers.
- Good visual design is essential.
- Testing of the instructions is often indispensable.

Each of these points is discussed briefly in the following paragraphs.

Instructions Shape Attitudes of the Readers

All the communications you write at work have a double aim: to help your readers perform some task and to affect your reader's attitudes in some way. However, many writers of the instructions focus their attention so sharply on the task they want to help their readers perform that they forget about their readers' attitudes.

To write effective instructions, you must not commit this oversight. The most important attitude with which you should concern yourself is that of your reader's toward the instructions themselves. Most of the readers dislike using instructions. When faced with the work of reading, interpreting and following a set of instructions, they are often tempted to toss the instructions aside and try to do the job using common sense.

However, you and your employer will often have good reasons for wanting people to use the instructions you write. Maybe the job you are describing is dangerous if it isn't done a certain way, or maybe the product or equipment involved can be damaged. Maybe you know that failure to follow instructions will lead many readers to an unsatisfactory outcome, which they might then blame on your employer.

For these reasons, it is often very important for you to persuade your readers that they should use your instructions. In addition, as an instructional writer, you may want to shape your readers' attitudes toward your company and its products. If your readers feel that the product is reliable and that the company thoroughly backs it with complete support (including good instructions), they will be more likely to buy other products from your employer and to recommend those products to other people.

Good Visual Design is Essential

To create instructions that help your readers and also shape their attitudes in the way you want, you must pay special attention to instructions. These include visual design, including both page design and the design of the drawings, charts, flow diagrams etc.

Page Design

In instructions, you need to have a good page design for several important reasons. First, readers almost invariably, use instructions by alternating between reading and acting. They read a step and then do the step, read the next step and do that step.

By designing your pages effectively, you can help your readers easily find the instructions for the next step each time they turn their eyes back to the page. This may seem a trivial concern, but readers quickly become frustrated if they have to search through a page or paragraph to find their

required step. When readers are frustrated by a set of instructions, they may quit trying to use them.

Through good page design you can help your readers grasp quickly the connections between related blocks of material in your instructions, such as the connection between an instruction and a drawing or other visual aid that accompanies it. It is also important to remember that the appearance of instructions influences the readers to use or not to use them. If the instructions appear dense and difficult to follow or if they appear unclear and unattractive, readers may decide not even to use them.

Visual Aids

You can increase the effectiveness of most instructions by including visual aids. Well designed visual aids are much more economical than words in showing readers where the parts of the machine are located or what the result of a procedure should look like. On the other hand, visual aids that are poorly planned and prepared can be just as confusing and frustrating for readers as poorly written prose.

Testing of the Instructions is Often Indispensable

It may seem that instructions are among the easiest of all communications to write and, therefore, among those that need to be tested. After all, when you write instructions, you usually describe a procedure you know very well. Your objective is to tell the reader as clearly and directly as possible what to do. Actually instructions present a considerable challenge to the writer. You will find that it is often difficult to find the words that will tell your readers what to do in a way that they will understand quickly and clearly. Also because you know the procedure so well, it will be easy for you to accidentally leave out some critical information because you don't realize that your readers may need to be told it.

The consequences of even relatively small slips in writing even only a few directions in a set of instructions can be very great. Every step contributes to the successful completion of the task, and the difficulties the readers have with any step can prevent them from completing the task satisfactorily. Even if the readers eventually figure out how to perform all the steps, their initial confusion with one or two can greatly increase the time it takes them to complete the procedure. Furthermore, in steps that are potentially dangerous, one little mistake can create tremendous problems.

For these reasons, it is often absolutely necessary to determine for certain whether your instructions will work for your intended audience. And the only way to find this out for sure is to give a draft to the representatives of your audience and ask them to try the instructions. Gather information without interfering with the readers' activity.

Conventional Superstructure for Instructions

The conventional superstructure for instructions contains five elements:

- Introduction
- Description of the equipment (if the instructions are for running a piece of equipment)
- Theory of operations

- Lists of material and equipment
- Guide to trouble shooting

The simplest instructions contain only directions. The most complex instructions contain some or all of the other five elements, the selection depending upon the aims of the writer and the needs of the readers. Many instructions also contain elements found in longer communications such as reports and proposals.

Among these elements are cover, title page, table of contents, appendixes, list of references, glossary, list of symbols and index. Because these elements are not particular to instructions, they will not be discussed here in this lecture.

As we discussed earlier, some instructions contain only directions and no introduction. However, readers often find an introduction to be helpful – or even necessary.

In the following example, you will see how to apply that general advice when you are writing instructions. The conventional superstructure for instructions tells some or all of the following things about instructions:

- Subject
- Aim
- Intended reader
- Scope
- Organization
- Usage
- Motivation
- Background
- Directions

Subject

Writers usually announce the subject of their instructions in the first sentence. Here is the first sentence from the operating manual of a ten ton machine used at the ends of assembly lines that make automobile and truck tires. This manual tells you how to operate the Tire Uniformity optimizer. Here is the second sentence from the owner's manual for a small, lightweight, personal computer. This manual introduces you to the Apple Macintosh TM Computer. These sentences are intentionally kept simple for the sake of understanding.

Aim

From the beginning, readers want to know the answer to the question "What can we achieve by doing the things this communication instructs us to do?" With some instructions you write, the purpose or outcome of the procedure described will be obvious. For example, most people who buy computers know many of the things which can be done with them. For the reason, a statement about what computers can do, would be unnecessary in the Macintosh instructions, which in fact contain none. However, other instructions do have to answer readers' questions about the aim of instructions.

In operating instructions for pieces of equipment, for example, writers often answer the reader's questions about what the procedure will achieve by telling capabilities of the equipment, depending upon your options to use machine, it may do any or all of the following jobs.

- Test tires
- Find irregularities in tires
- Grind to correct the irregularities, if possible
- Grade tires
- Mark tires according to grade
- Sort tires by grade

Intended Readers

Many readers will ask themselves "Are these instructions written for us or for people who differ from us in interests, responsibilities, level of knowledge and so on?" Often readers will know the answer to that question without being told explicitly. In contrast, people who pick up computer manuals often wonder whether the manual will assume that they know more (or less) about computers than they do. In such situations, it is most appropriate for you to answer the question you don't need to know anything about the Macintosh or any other Computer.

Scope

Information about the scope of the instructions answers the reader's questions, "What kinds of things will we learn to do in these instructions -- and what things won't we learn?" For example, the writers of a Tire Uniformity Manual would answer that question in their third or fourth sentence. The writers of the Macintosh manual answer the same question in this way. The manual tells you how to use the mouse and keyboard to control your Macintosh

Organization

By describing the organization of the instructions, writers answer the readers' question. How is the given information given here put together? Your readers may want to know the answer so they can look for specific pieces of information. They may want to know about the overall organization simply because they can then understand the instructions more rapidly and thoroughly than they could without the instructions. The writers of the Macintosh Manual announce its organization at the same time they tell the manual's scope.

Usage

As they begin to use the set of instructions, readers often ask themselves "How can we get the information we need as quickly as possible?" Sometimes the obvious answer is to simply follow the instructions from beginning to end or to look for a certain set of steps and then to follow them. The manual for the Tire Uniformity optimizer is used in just such a straightforward way, so it contains the special advice about how readers should use it. In contrast, in some of the instructions you write, you may be able to help your readers considerably by providing the advice about how to use your communication.

Motivation

As pointed out above, when people are faced with the work of using a set of instructions, they often are tempted to toss the instructions aside and try to use the job using common sense. You can do several things to persuade your readers not to ignore your instructions.

For instance, you can use an inviting and supportive tone and an attractive appearance; such are used in Macintosh Manual.

You can tell the user directly, why it is important for him to read the manual and follow the instructions. In the examples that follow, we describe two kinds of statements that writers provide.

Examples

- ‘From the operating instructions of typewriters’
- To take advantage of the automatic features of the IBM 60 you need to take time to do the training exercises offered in this manual.
- ‘From the operating instructions of an office Photocopy Machine’
- Please read the manual thoroughly to ensure correct operation.

Background

The particular pieces of background information your readers need, vary from one instruction to the next. Two kinds of background information are important:

- A description of the equipment
- Explanation of the theory of operations

Directions

- Present the steps in a list.
- In your list give one set at a time.
- For example,
 - First drain the canister.
 - Release the latch that locks the canister’s drain cap.
 - Unscrew the cap.
- Use headings and titles to indicate the overall structure of the task.
- Use the active voice and imperative mood.
- Set the dial to seven (much simpler than “the operator then sets the dial to seven”).
- Use illustrations how to perform the steps.
- What should be the result?
- Place warnings where readers will see them before performing the steps to which they apply.
- Where alternative steps may be taken, help your readers quickly find the one they want.
- Provide enough detail for your readers to do everything they must do.

LESSON 31

USING VISUAL AIDS

Outline

- Visual Aids
- More Than Just Visual Aids
- Computers and Visual Aids
- Guidelines
- Clarify the Relationships Among Numerical Data
- Support Your Arguments
- Make Detailed Information Easy to Find
- Consider Your Readers' Tasks
- Consider Your Readers' Attitudes
- Make Your Visual Aids Simple
- Label the Important Content Clearly
- Provide Informative Titles
- Fully Integrate Your Visual Aids With Your Prose
 - Introduce Your Visual Aids in Your Prose
 - State the Conclusions You Want Your Readers to Draw
 - Make Your Visual Aids Easy to Find

Visual Aids

Visual aids can be defined as instructional aids such as posters, scale models, graphs, tables, diagrams, flow charts or videotapes, that present information visually.

Visual aids can be a great way of enhancing a presentation VISUALLY when they are used sensibly and with a clear purpose. Visual aids can add a new dimension to presentations.

More than Just Visual Aids

In some situations, visual aids can carry the entire message. For instance, if you've ever flown, you may recall reaching the pocket on the back of the seat ahead of you to pull out a sheet of instructions for leaving the plane in an emergency. Many airlines use sheets that are wordless.

Computers and Visual Aids

For instance, if you are using a program to make a line graph, you will still have to decide which variable to place on the horizontal axis and which on the vertical axis. You will still have to decide what intervals to use for your variables, and what your labels should say.

Guidelines

The first step in using visual aids effectively is to search actively for places where they can help you achieve your communication objectives.

Clarify the Relationships Among Numerical Data

On the job, you may need to describe the relationships among various pieces of data, which may be from laboratory research, surveys etc.

Visual aids can help you make those relationships immediately clear to your readers using graphs and other visual techniques.

Support Your Arguments

You can also use visual aids to present information in support of your persuasive points. For example, the manufacturer of a plastic insulating material can use visual aids like graphs to persuade greenhouse owners of the comparable effects of different kinds of plastics.

Make Detailed Information Easy to Find

For many tasks, visual aids are much easier than prose for readers to use. For example, a manufacturer of photographic film wants to inform trainees about the time period, they should leave the film in the developer solution. Since the time depends on several factors like tank size, and temperature etc., the information can be conveyed effectively using a simple table.

Consider Your Readers' Tasks

Different visual aids are suitable for different reading tasks, often the same information can be presented in many different ways. For instance, Ben has collected information on the starting salaries of people who graduated from three different departments. Which visual aid should he use?

Consider Your Readers' Attitudes

In addition to thinking about your readers' tasks, you should also look to pick the type of visual aid that most quickly and dramatically communicates the evidence that supports your persuasive point.

For instance, showing the effect of a decrease in revenue in a line graph is much more suitable than a tabular form which requires the readers to do a lot of subtracting to appreciate the extent of the decrease. Although they are very informative to people who understand the symbols and conventions used, they will only baffle others. Be especially careful to avoid making the mistake of assuming your potential readers know how to read specialized figures.

Make Your Visual Aids Simple

Avoid the temptations of cramming too much information into your visual aids. Sometimes, two or three visual aids can communicate the same information more effectively than one. Simplifying visual aids also means removing unnecessary details.

Label the Important Content Clearly

While it is important for you to eliminate unnecessary details from your visual aids, it is also critical to include labels for the important content. Labels also help people know what they are seeing when they read a figure.

Provide Informative Titles

Titles help your audience find the visual aids they are looking for and know what the visual aids contain when they find them. To help your audience understand and use your visual aids, you should make the descriptive part of your titles as brief – yet informative – as possible.

Titles typically include both a number and a description. Visual aids are numbered consecutively, either in one long sequence through the entire communication, or with a new sequence in each chapter.

According to the custom, the numbers assigned to figures are usually Arabic (1, 2, 3...) while numbers assigned to tables are either Arabic or Roman (I, II, III...)

You should note that sometimes you *don't* need to provide a title for a visual aid. That happens, for instance, when you are including a very short table in your text in a way that makes perfectly clear what it contains. Similarly, the visual aids in brochures are often untitled, though they are much rarer in reports and proposals.

Fully Integrate Your Visual Aids with Your Prose

You should integrate your visual aids with your prose so that they work together harmoniously to create a single, unified message.

Three ways to do that are:

- Introduce your visual aids in your prose.
- State the conclusions you want your readers to draw.
- Make your visual aids easy to find.

Introduce Your Visual Aids in Your Prose

Sometimes, your introduction to a visual aid will have to include information your readers or listeners need in order to understand or use the visual aid. Whatever kind of introduction you make to a visual aid, place it at the exact point where you would like your readers to focus their attention to it.

State the Conclusions You Want Your Readers to Draw

You might find it helpful to think of the sentences in which you explain a visual aid's significance as a special kind of topic sentence. Just as the topic sentence at the head of a paragraph, you can tell your audience the point to be derived from the various facts that follow.

Make your Visual Aids Easy to Find

If you place the figure farther away than that (for instance in an appendix), you can help your readers by providing the number of the page on which the figure may be found.

LESSON 32

CREATING TWELVE TYPES OF VISUAL AIDS

Outline

In this lecture, we will learn how to construct:

- Tables
- Bar graphs
- Pictographs
- Line graphs
- Pie charts
- Photographs
- Drawings
- Diagrams
- Flow charts
- Organizational charts
- Schedule charts
- Budget statements

Tables

The table is one of the most versatile and widely used visual aids. Tables are used so often because they can help writers achieve several common objectives. For example, they are an excellent tool for groups of detailed facts in a concise and readable form.

How to construct a table?

To create a table, you should systematically arrange information in rows and columns. You should adjust the basic structure as needed to create an attractive visual aid that your readers will find easy to use. For example, if your table is crowded you can separate columns (or groups of columns) with vertical lines, and to help them read across rows, you can place horizontal or leave a blank row after every five lines or so.

Note that fancier variations of the basic design may be used where attractiveness is especially important, as in advertising brochures and annual reports to stockholders.

When deciding how to display your information within the framework of your table, you have several basic decisions to make:

- How to order the rows and columns
- Which labels to use for the columns and which for the rows
- How to align entries in the columns
- Where to place special notes

Bar Graphs

Like a table, a bar graph can represent numerical quantities, which is done using rectangles called bars. The greater the quantity, the longer the bar will be.

Some uses of bar graphs are as follows:

1. To compare quantities at a glance
2. To show trends
3. To indicate the composition of a whole

How to construct a bar graph?

Begin by drawing your axis so that your graph will be roughly square. In graph, along one axis place tick marks at regular intervals to indicate quantities (\$5 million, \$10 million etc.; 50 psi, 100 psi, etc.). Plan the tick marks so that the longest bar will extend nearly to the end of its parallel axis.

How to avoid misleading your readers?

A common mistake that results in accidentally misleading the readers is to omit the zero point on the axis that shows the quantity. If you simply cannot use the entire quantity scale, indicate that fact to your readers, perhaps by using hash marks to signal a break in the quantity axis in the bars themselves.

Pictographs

Pictographs are a special kind of bar graph in which the bars are replaced by drawings that represent the thing being described. The chief advantage of the pictograph is that it uses drawings to symbolize concretely the quantities you are talking about in your graph. You will find pictographs especially useful where you want to do one or both of the following:

- Emphasize the practical consequences of the data represented.
- Make your data visually interesting and memorable.

How to create a pictograph?

The procedure for creating a pictograph is nearly identical to that for creating a bar graph. The difference is that you draw pictures instead of rectangles to represent quantities.

How to avoid misleading your readers?

Like bar graphs, pictographs can mislead the reader if they are not drawn properly. When using pictographs, you can avoid misleading your readers if you keep all of your pictures the same size and use more of them to represent greater quantities.

Line graphs

A line graph shows how one quantity changes as a function changes in another quantity. You can use line graphs in many ways, including the following:

- To show trends and cycles

When you want to show a pattern of change over time, line graphs can be very helpful – especially when compared with a table.

- To compare trends

Line graphs are also very useful for showing readers how two or more trends compare with one another.

- To show how two or more variables interact:

Line graphs are well-suited to display interactions between variables.

How to create a line graph?

In line graphs, you generally show how variation in one thing (called the *dependent variable*) is affected by variation in another thing (the *independent variable*). Line graphs almost always show the dependent variable on the vertical axis and the independent variable on the horizontal one. Time is usually treated as an independent variable so it goes on the horizontal axis.

Mark off each axis at regular intervals, using labeled tick marks. In some situations, however, your readers may find it easier to read your line graph if you extend the tick marks all the way across the graph to form a grid. If you do this, make the grid with a thinner line than you use to represent the quantities you are describing, so that your data stands out.

Pie Charts

Pie charts are unsurpassed in their ability to depict the composition of a whole. For example, to show how much each of several food sources contributes to the total amount of dietary fat consumed by the average American.

How to create a pie chart?

To create a pie chart, you draw a circle and draw lines that slice it into wedges. Each wedge occupies a portion of the circle's circumference proportional to the amount of the total pie that the wedge represents. Arrange the wedges in a way that helps your audience determine the rank order of the wedges and compare the relative sizes of particular wedges.

Photographs

With a photograph, you can show your readers exactly what they would see if they personally were to look at an object. Photographs can help you achieve a variety of communication purposes such as:

1. *To show the appearance of something the readers have never seen:* This could include a new product, or the inside of the human heart etc.
2. *To show the condition of something:* For example, result of a skin treatment etc.
3. *To help the readers recognize something:* For example, in a lab manual you might include photographs that would enable your readers to identify the imperfections they might encounter in steel sheet.
4. *To help your audience find something:* For example, you could show parts of machinery in an instructional manual.

Diagrams

A diagram is much like a drawing except that drawings accurately convey the actual appearance of things, diagrams depict subjects more abstractly.

Diagrams can convey complex information, such as the system used for industrial processing of fruits, without actually showing the actual machinery.

How to create a diagram?

- Decide exactly what you want to show.
- Create an appropriate means to represent your subject with geometric shapes, or perhaps sketches that suggest their appearance.
- Provide the explanations people need in order to understand your diagram as a separate key, in the title or as part of the diagram itself.

Flow Charts

Flow charts are an excellent means of representing the succession of events in a process or procedure. The simplest flow charts use rectangles, circles, diamonds, or other geometric shapes to represent events, and arrows to show the progress from one event to another.

How to create a flow chart?

A few conventions govern the creation of flow charts.

The labels that identify the activities are placed *inside* the boxes that represent those activities. Boxes are arranged so that activity flows from left to right, or from top to bottom, or both.

Organizational charts

An organizational chart uses rectangles and lines to represent the arrangement of people and departments in an organization. It reveals the organization's hierarchy, indicating how the smaller units are combined to create larger units. It also indicates who reports to whom and who gives direction to whom.

How to create an organizational chart?

Because of the hierarchical nature of most business organizations, organizational charts are usually pyramidal. You do not need to show every part of the organization, only those relevant to your readers. Sometimes, you may need to represent more than one kind of relationship by using different lines for the different relationships.

Schedule charts

A schedule chart identifies the major steps in a project and tells when they will be performed. They are often used in project proposals to show the proposer's plan of work.

You can also use schedule charts in progress reports to show what you have accomplished and what you have left to do.

How to create a schedule chart?

One of the principal considerations in creating a schedule chart is deciding how much detail to include, which depends on the audience's needs and expectations.

Tasks are always listed along the vertical axis, with indentation used to distinguish subtasks from major tasks.

Intervals (weeks, months) are usually marked off with vertical lines to help the readers.

Budget statements

A budget statement is a table that shows how the money will be gained or spent.

It may be very simple or very elaborate depending on your reader's needs.

On the job, you can use budget statements in the following situations:

- To explain the expenses involved with a project purchase.
- To summarize the savings to be realized by following a recommendation you are making.
- To report the costs that have been incurred by a project for which you are responsible.
- To explain the sources of revenue associated with some project or activity.

LESSON 33

WRITING SPECIFICATIONS AND ANALYSIS REPORTS

Outline

- Introduction
- Types of Specifications
 - Requirement Specifications
 - Functional Specifications
 - Design Specifications
 - Test Specifications
- Analysis Reports
- Title Page
- Abstracts
- Table of Contents
- List of Symbols
- Introduction
- Discussion
- Conclusion
- Recommendations
- Appendix

Introduction

For everyone involved in the design phase of the computer industry– hardware engineers, software engineers, technicians, and programmers – specifications are the most important document to be read or written. The situation is even worse when work has to be undone or redone because of bad specifications. Specifications can be categorized into four types:

- Requirement specifications
- Functional specifications
- Design specifications
- Test specifications

Requirement Specifications

The result of market research is requirement specifications. In it, the marketing people attempt to specify what the market is looking for, what people or companies who use computers would find useful and would like to have.

Product definition

This is as accurate a description as can be written by marketing about the desired product. It should answer the question: “What is it?”

Functions list

This is a description of what the desired product should be capable of doing. It leads to the next type of specification.

Cost

This is a ballpark estimate as to what the desired product should cost to be competitive in the marketplace. We then move onto the functional specification.

Functional Specifications

These specifications will form the basis for the highly precise design specifications.

Hardware functional specifications as a rule should contain the following:

- Functional description
- Configuration specification
- Electrical description
- Physical characteristics
- Standards
- Environmental requirements
- Diagnostic requirements
- Power requirements
- Cost target
- Maintenance cost target
- Resource requirements
- Documentation
- Risks
- Assumptions
- Unresolved issues
- Glossary

Software functional specifications usually contain the following:

- Functional description of the product
- Product features dependencies
- Physical characteristics
- Risks
- Assumptions
- Cost target
- Maintenance
- Resources
- Documentation
- Glossary

Design Specifications

Design specifications are later used as the basis for test plans and user documentation.

Hardware design specifications generally contain some version of the following components:

- Introduction
- Applicable documents
- Functional description
- External interfaces
- Detailed design
- Programming considerations
- Power requirements
- Reliability
- Diagnostic considerations
- Standards
- Environmental requirements
- Glossary

Software design specifications should contain the following:

- Introduction
- Application documents
- Functional description
- General design
- Memory requirements, performance, and restrictions
- Product requirements
- Test strategy
- Deviations from functional specifications
- Interfaces
- Glossary

Test Specifications

Test specifications contain the following:

- Introduction
- Applicable documents: these documents might describe test procedures on similar products designed and developed in the past.
- Description of unit to be tested.
- Testing method: this section provides a step-by-step description of the testing procedure.
- Precautions
- Glossary

Analysis Reports

The important thing to remember is that no report format is perfect. Company documentation standards attempt to resolve the issue by prescribing a format into which all analysis reports are poured. Report design should be flexible enough to meet a variety of writer purposes and audience needs.

Title Page

A title page should be designed with the visual order in mind. It should be balanced from top to bottom and from left to right. It should provide enough information for readers to be able to tell what the context of the report is and what the report is about.

Abstracts

Abstracts are condensations of entire reports, focusing on the main issues: what was done, what was found out, and its significance. Abstracts are self-sufficient. The procedure for many companies is to take the abstract from the analysis report, copy it a number of times, circulate it to readers, and allow readers to order the full report if they feel like they need the information.

Table of Contents

The table of contents provides an outline of analysis reports for readers who do not wish to read the entire report or flip through it looking for the section which contains what they are looking for. It should be made up of headings and subheadings of the report, word-for-word, with the accompanying page numbers.

List of Symbols

This is an optional addition to the front matter of an analysis report. Include it if you think the readers will need to have symbols defined. The same thing applies to the inclusion of a glossary.

Introduction

This is the place for the three-part purpose statement introduction. It will orient readers to the main issue of the report, to the technical issues which are important to the report, and to what the report is intended to accomplish.

Discussion

The discussion contains an analysis of the technical issues important to the report. It supports the main issue of the report by providing evidence and explanations. It should be subdivided into topics, each with a subheading.

Conclusion

This section presents the results of the analysis, the evaluation of what was presented in the discussion. Sometimes, listing the conclusion is a good way to organize them. It calls attention to the conclusion individually, but still enables writers to explain them as is necessary.

Recommendations

Recommendations are optional, not all analysis reports have them. Those reports that do have recommendations, tell the readers what to do with the information provided in the report.

Appendix

Usually this would include derivations of equations, tables of raw data, sample equations, and so forth. Whatever is placed in the appendix should be according to the audience needs.

LESSON 34

HOW TO AVOID COMMON WRITING PROBLEMS

Outline

- Writer's Block
- Lack of a Well-Defined Purpose
- Poorly Analyzed Structure
- Lack of Confidence
- Organizational Problems
- Punctuation Problems
- Readability Problems
 - Gunning's Fog Index
- Writing Style Problems
- How to Edit your Work
 - Organizational Logic
 - Mechanical Development of the Topic
 - Writer's Style
 - Quality of the Manuscript

Writer's Block

Writer's block is what we call the experience of getting stuck while writing. Although the results are the same, there are many factors of writer's block: lack of information, lack of a well-defined purpose, poor knowledge of the audience, and lack of confidence etc.

Lack of Information

If it is the result of poor research, then you will have to stop writing and collect more information. If you find yourself doing this often, you might correctly guess that you have a problem in defining your communication purpose.

Lack of a Well-Defined Purpose

A poorly defined purpose of your communication will inevitably make writing more difficult, and may block it altogether. Sometimes, you will experience this as a lack of information; often you will notice it since paragraphs, sections, or entire reports or papers shift topic in the middle. In any case of poorly defined purpose, the solution is the same. Develop a three-part purpose statement for the communication, and develop an outline of topic sentences based on the purpose statements.

Poorly Analyzed Audience

Audience analysis that is performed poorly or not at all can be the source of writer's block. At such times you find yourself staring at the video display screen wondering who is going to read your report and what on earth they want from it.

Lack of Confidence

Lack of confidence in your abilities as a writer is a common factor of writer's block, and it is usually self-fulfilling. If you do not think you can communicate effectively, you will not be able to write. Your systematic approaches of writing problems are the solution to this problem.

Organizational Problems

Organizational problems are discovered during the editing phase. Finding and fixing these problems is what makes editing important. If they are not fixed, readers experience these organizational problems as complete breakdowns in communication.

Punctuation Problems

Accurate punctuation does not ensure accurate communication, but accurate communication is tremendously enhanced by accurate punctuation. Take the following punctuation test, first without looking at the correct version which follows, to see how well you know punctuation. The test focuses on the most common punctuation problems in technical writing.

Incorrect

"Professor Bashir wrote The Future of Artificial Intelligence he has become well known as a result."

Correct

"Professor Bashir wrote "The Future of Artificial Intelligence"; he has become well known as a result."

Readability Problems

Readability is a buzz word with which most of us are familiar. Much has been said about it, and there are numerous formulas which supposedly test it. Readability is the likelihood that a project audience will be able to read and comprehend a piece of documentation.

Gunning's Fog Index

This is a simple formula aimed at locating the audience on a grade scale which is supposedly based on their reading abilities.

- Select a part of the text which is approximately 100 words long, to the nearest period. Introductions, leads, and conclusions usually exhibit slightly different communication techniques which will skew the accuracy of this test.
- Count the number of sentences in the selected text.
- Determine the average length of sentences by dividing the number of words in the text by the number of sentences.
- Count the number of words which have three or more syllables. But *do not* count words which are capitalized, words which have three syllables because prefixes or suffixes have been added, or words which are combinations of one- or two-syllable words.
- Add the number for the average sentence length to the number of three-syllable words in the text.
- Multiply this sum by 0.04.
- The result is the Fog Index. If you place it on a scale of 1-20, you will be able to have the approximate reading level required to understand the text.

Writing Style Problems

Style is a result of sentence structure. Although you might not think so, sentence structure is simple and easy to understand. There are four basic types of sentences:

Subject-verb sentences (SV)

Example:

The programmer (S) quits (V).

Subject-verb-object sentences (SVO)

Example:

The programmer (S) kicked the terminal (O).

Subject-linking verb – complement sentence (SLVC)

Example:

The programmer (S) felt (LV) sick (C).

Subject-verb-indirect object – object (SVIO)

Example:

The programmer (S) gave (V) the engineer (IO) a headache (O).

How to Edit Your Work?

This lecture will present some ways that can be helpful for writers for assessing the quality of their work and the work of others. Good editing divides the task of improving a document into a limited number of areas which are:

1. Organizational logic
2. Mechanical development of the topic
3. Writer's style
4. Quality of the manuscript

Organizational Logic

The work should have the organizational logic. Organizational logic can be achieved by arranging the events chronologically or spatially.

Mechanical Development of the Topic

Look to see if there is a transition between paragraphs, even between sentences. Transition is what links the ideas together. Transition can be accomplished in three ways:

- a) The writer might repeat an important word in two adjoining paragraphs or sentences.
- b) Structure can accomplish transition.
- c) Transitional words and phrases can be used to establish links between ideas in an obvious way, such as "Finally".

Writer's Style

If you wish to sell an idea or a product, then the style must be persuasive. If you wish to convey information only, such as in a report to superiors, then the style should appear to be passively objective.

Quality of the Manuscript

The last thing a writer needs to examine when editing a document is the quality of the manuscript. A manuscript should be visually attractive. This means that it should have proper order, that is, there should be obvious divisions and subdivisions. A manuscript should invite readership. Have you ever seen a report or paper which had writing crowded out to the edges of the paper from top to bottom and side to side? Such a manuscript looks hard to read.

The type should be clear in a manuscript, and the production should not be sloppy. A report or paper must be sufficiently detailed. Only the writer knows how much detail is sufficient. There should be enough detail, though, to satisfy the projected readers' needs for information. If the writer has paid attention to logical organization and development of the topic, the document will be detailed and as short as it has to be. After this, the document must be proofread, which should not be confused with editing. Proofreading is a quick checking for errors, while editing requires being judgmental.

LESSON 35

LANGUAGE REVIEW

Outline

- Paragraph Unity
- Paragraph Coherence
- Transitional Words and Phrases
- Common Transitional Words and Phrases
- Paragraph Development
 - Exemplification
 - Narration
 - Process
 - Description
 - Analogy
 - Cause and Effect
 - Comparison and Contrast
 - Classification and Division
 - Definition
 - Analysis
 - Enumeration

Paragraph Unity

The latest electronic innovation, still under development is called "adaptive optics." Adaptive optics is an electronic feedback mechanism capable of correcting the distorting effects of the earth's atmosphere and thus allowing much sharper images of astronomical objects. The earth's atmosphere is constantly shimmering, because of moving pockets of air and changes in temperature, and such shimmering causes passing light rays to bend one way then another. In effect, the shifting atmosphere acts as a rapidly changing lens, smearing out and defocusing images. In adaptive optics, motorized cushions are replaced behind the telescope's secondary mirror and constantly reshape the mirror's surface to counteract the defocusing effect of the atmosphere.

The cushions are given instructions by a computer, which analyzes the image of a "guide star" in the same field of view as whatever the telescope is looking at. With no atmospheric distortion, the image of a star should be a single point of light. By analyzing how the actual image of the guide star differs from a point, the computer can infer the distortion of the atmosphere and tell the cushions how to alter the mirror to bring the guide star, and all the objects near it, back into sharp focus. Corrections must be made rapidly, because the atmosphere is rapidly shifting. In practice, the computer will analyze the image of a guide star and give new instructions to the reshaping cushions every 0.01 to 0.1 seconds.

--Alan Lightman, *Ancient Light*

Topic sentence

Time became a key word in the language of physics during the seventeenth century. Isaac Newton wove the passage of time directly into his equations, as in *force = mass × acceleration*. Today, it is difficult for any physicist to examine the universe without thinking of time in much the same way as the illustrious Briton did more than 300 years ago. Most of the laws of physics continue to be written in the style of Newton; they are designed to show how things change from one moment to the next. Each event under study, such as the path of a ball thrown into the air or the thermodynamics of a melting ice cube, is broken down into a series of freeze-frames that, run like a movie, show how nature works.

Newton had placed a clock upon the mantel of the universe. This Newtonian time piece ticked and ticked, chiming like some cosmic Big Ben, in step with all the celestial inhabitants, no matter, what their speed or position. That meant that a clock situated at the edge of the universe or zipping about the cosmos at high velocities would register the same passage of time, identical minutes and identical seconds, as an earthbound clock. More important, the Newtonian clock was never affected by the events going on around it. Time was aloof and absolute, alike for all as galaxies collided; solar systems formed, and moons orbited planets. **Time led an independent existence, separate from nature itself.**

Marcia Bartusiak, "When the Universe Began, What Time Was It?" *Technology Review*

Paragraph Coherence

Weak Version

Limited investment in the housing sector makes it practically impossible to allocate sufficient resources for urban dwellers' housing needs. A high rate of urban population growth has increased the country's needs for housing. A small group of city officials has laid out a new plan to combat the crisis. A solution to the housing-shortage problem is a vital policy issue here. The housing problem has grown in the last twenty years. [Although related by topic (housing shortage), each sentence makes its own separate point with no link to the sentences before or after. The result is a group of related yet separate ideas instead of one coherent paragraph.]

Improved Version

Limited investment in the housing sector makes it practically impossible to allocate sufficient resources for urban dwellers' housing needs. **In fact, the problem has grown in the last twenty years. Because** a high rate of urban population growth has increased the country's needs for housing, a solution to the housing-shortage problem is a vital policy issue here. A small group of city officials has laid out a new plan to combat the crisis. [Each separate fact now flows into the next, creating a coherent whole.]

Samuel Nunn, "Role of Local Infrastructure Policies and Economic Development Incentives in Metropolitan Inter Jurisdictional Cooperation," *Journal of Urban Planning and Development*

Transitional Words and Phrases

Weak version

Reducing drag in an aerospace vehicle is an important design consideration with financial and operational consequences. Poorly designed rocket fuselage scan triple fuel and launch costs. Drag

increases stress on key joints. This proposed project will develop a model to reduce aerodynamic drag on the RX100.

Improved version

Reducing drag in an aerospace vehicle is an important design consideration. **For example**, poorly designed rocket fuselages can triple fuel and launch costs. **Moreover**, drag increases stress on key joints. **Therefore**, this proposed project will develop a model to reduce aerodynamic drag on the RX100.

Linking Pronouns

Weak version

In 1912, the German chemist von Laue hypothesized that in a crystal x-ray, scattering patterns are related to atomic spacing. A series of experiments demonstrated the wave nature of x-rays and the periodic arrangement of atoms. Spots on a photographic plate provided the proof for the hypothesis.

Improved version

In 1912, the German chemist von Laue hypothesized that in a crystal x-ray, scattering patterns are related to atomic spacing. **His** series of experiments demonstrated the wave nature of x-rays and the periodic arrangement of atoms. Spots on a photographic plate provided the proof for **his** hypothesis.

Repetition of Key Words

Weak version

This broadcast packet switching should be distinguished from the store-and-forward variety. To handle the demands of growth, our system can be extended using repeaters for signal regeneration, filters for traffic localization, or gateways for internet work address extension.

Improved version

This broadcast **packet** switching should be distinguished from the store-and-forward variety. To handle the demands of growth, our system can be extended using **packet** repeaters for signal regeneration, **packet** filters for traffic localization, or **packet** gateways for internet work address extension. [The main point, *packets*, is now highlighted.]

R. M. Metcalfe and D. R. Boggs, "Ethernet: Distributed Packet Switching for Local Networks" (modified)

Paragraph Development

Develop paragraphs in a variety of patterns that reflect your thinking about the material. As you write the topic sentence and its supporting sentences, look for ways to structure your thinking. Where one author advances his or her material by narrating a series of events, another undertakes a physical description and another undertakes an analysis of the topic.

Exemplification

Use exemplification in paragraphs to provide instances that clarify your topic statement.

In the following paragraph, the topic sentence is supported in examples that illustrate, support, and clarify the main point.

Example

Vitamins and minerals can be added to enrich (replace nutrients lost in processing) or fortify (add nutrients not normally present) foods to improve their nutritional quality. Breads and cereals are usually enriched with some B vitamins and iron. Common examples of fortification include the addition of vitamin D to milk, vitamin A to margarine, vitamin C to fruit drinks, calcium to orange juice, and iodide to table salt.

--P. Insel and W. Roth, *Core Concepts in Health*

Narration

Use narration to establish a series of events that tells the reader what happened. Narration follows a chronological pattern of development. It is a convincing mode of paragraph development to the extent that it tells a coherent story. This pattern or time line is usually very easy to understand.

In the following narrative, the first narrative paragraph is followed by two descriptive paragraphs. Note the use of transitional words such as thereafter, first, next, and after.

Containment and Treatment of the Love Canal Landfill Leachate Temporary Treatment Program

The carbon feasibility studies were completed in October, 1978. Immediately thereafter, the U.S. Environmental Protection Agency (EPA) "Blue Magoo" was dispatched to the site to provide on-site emergency treatment. First, wastewater generated during construction was collected, pH adjusted, clarified, sand filtered, and carbon treated. Next, treated effluent was analyzed and was found to confirm Calgon's study findings. After this process, the New York State Department of Environmental Conservation granted a discharge permit on October 27, 1978.

On October 29, 1978, the EPA Emergency Treatment System was replaced by a larger system provided by Newco Chemical Waste Systems, Inc. and Calgon Corp. . .

The two-stage adsorption system, providing ongoing treatment at the Love Canal site, is a skid-mounted system designed for rapid installation. The absorbers are pressure vessels, complete with all process and carbon transfer piping, valving, and instrumentation. Each absorber holds awful truckload of 9,072 kg (20,000 lb) of granular carbon and can hydraulically process up to 662l/min (175 gal) of wastewater. When a carbon bed is spent, the spent carbon is pneumatically and hydraulically transferred to. . .

--W. McDougall and R. A. Fusco, "Containment and Treatment of the Love Canal Landfill Leachate," *Journal of the Water Pollution and Control Federation*

Process

Use process in paragraphs to develop sequences that describe how an action is carried out or how something works. The following paragraph shows a typical sequential treatment of a general physical phenomenon. Note the concentration of process verbs such as *to find*, *samples*, *sums*, and *provides*.

Example

Ideally, an image should contain a region of high-intensity pixels that form the target, and a low-intensity background. To find the target region, the algorithm first samples the images in overlapping windows and sums the pixel intensities contained in each window. The window with the highest sum is assumed to contain the target, and the average of the remaining windows is assumed to be indicative of the background level. Thus, subtracting the average of the window sums from the highest window sum provides a measure of the target strength over the background noise level. If an image does not contain a target, then the difference between the highest sum and the average sum will be very small. The difference will also be small for images containing faint targets and high levels of background noise.

--M. Menon, E. Boudreau, and P. J. Kolodzy, "An Automatic Ship Classification System for ISAR Imagery," *Lincoln Laboratory Journal*

Description

Use descriptive prose to provide a physical picture or a functional view of the subject. Physical description develops a picture by identifying the shapes, materials, position, and functions of its subject. Such prose often serves as the raw material for more elaborate forms of analytical prose.

Boundary-Layer Test Section

The test section (0.86 m × 2.44 m) of the boundary layer tunnel is situated between the nozzle and the diffuser. It consists of a flat aluminium test plate, a contoured wall, and two transparent side walls. A bleed-scoop layer at the leading edge of the test plate removes the inlet boundary layer. The contoured wall opposite the test plate generates the required pressure distribution. The two differently-contoured walls used in this investigation generate either squared-off pressure distribution or aft-loaded pressure distribution.

--O. P. Sharma et al., "Boundary Layer Development on Turbine Airfoil Suction Surfaces," *Transactions of the ASME*

Analogy

Use analogy to explain one object or process in terms of another. The aptness of the analogy is generally a point of subtle judgment. Some analogies are more valid than others. Comparing an apple to the space shuttle is not likely to be an effective analogy. Explaining the Internet by reference to a highway system might make a better analogy. In the following analogy, a body infection is compared with an invading army of attack organisms.

Example

The Immunological Defenders and How They Work

The immune response of billions of cellular defenders is carried out by different kinds of white blood cells, all of which are continuously being produced in the bone marrow. Neutrophils, one type of white blood cell, travel in the blood stream to areas of invasion, attacking and ingesting pathogens. Macrophages, or "big eaters," take up stations in tissues and act as scavengers, devouring pathogen sand worn-out cells. Natural killer cells directly destroy virus-infected cells

and cells that have turned cancerous. When lymph nodes are actively involved in fighting an invasion of microorganisms, they fill with lymphocytes.

P. Insel and W. Roth, *Core Concepts in Health*

Cause and Effect

Use cause and effect in paragraphs when you are tracking the development of one situation or event out of another. Cause and effect is an analytical mode of paragraph development. It attempts to show how events are influenced by or caused by others—the linkage of causation. In the following paragraph, the development follows the inductive pattern of reasoning from effects back to causes.

Example

Global climate change resulting from the accumulation of greenhouse gases, for example, is likely to have significant health effects, both direct and indirect. An average global temperature rise of 3-4°C, predicted for the year 2100 by the Intergovernmental Panel on Climate Change, will greatly increase the number of days in the United States with temperatures over 38°C(100°F), with a resulting sharp rise in heat-related mortality. Deaths would occur primarily from heat strokes, heart attacks, and cerebral strokes. The very young, poor, and elderly, as well as those with chronic cardiovascular and respiratory diseases, are most at risk. During the two-week heat wave of July 1993 in the eastern United States, 84 people died in Philadelphia alone as a result of the higher temperatures.

E. Chivan, "The Ultimate Preventive Medicine," *Technology Review*

Comparison and Contrast

Use comparison and contrast to develop a topic by examining its similarities or dissimilarities to another thing, process, or state. Comparison emphasizes the similarities, contrast the differences. A paragraph may use both comparison and contrast. In the following example, two kinds of electrical cable are compared. The aim here is to convey the superiority of A over B for two categories of performance.

Coaxial vs. Fiber-Optic Cable: Comparative Cable-Length Performances

For a number of critical performing characteristics, fiber-optic cable offers considerable advantages over standard coaxial cables. The most obvious distinction between the two is the greater bandwidth-distance capacity of fibers. The high-frequency capacity of coaxial cables decreases rapidly with increased length, but the bandwidth of a commercial fiber-optic system will remain constant with length. A commercial fiber-optic system like that of Artel, remains constant for a bandwidth over a distance of 4,000 ft, while three different sizes of coaxial cable rapidly drop in less than half the distance.

For RG-179 coax, a 1,024 × 1,024 signal is limited to 50 ft; RG-59 rolls off 3 dB at 170 ft. Larger, bulkier cables such as RG-11 can reach up to 250 ft, but are impractical to install, since three such cables are required for RGB color. Fiber-optic cable, on the other hand, allows transmission of more than 60 MHz video clock over a mile, and 20 MHz over 2½ miles, with no repeaters or equalizers.

Noise interference is another important area in which performance differs greatly. Coaxial cables are susceptible to induced interference (EMI/RFI) from such noise generators as fluorescent lights, computers, power cables, industrial equipment, and even other communications cables. Cable frequency equalization further aggravates this noise problem. Fiber-optic cable is, in contrast, immune to all forms of EMI, RFI, and crosstalk.

--Artel Communications Corporation, "Fiber Optics in RGB Color Computer Graphics Communications," Application Note CG-1

Classification and Division

Use classification and division to develop material by relating parts to wholes. In classification, you associate similar things or processes by grouping them into classes. You can classify organisms, mechanisms, processes according to shapes, magnitudes, effects, and so on. In division, you develop a topic by breaking it down into smaller parts. Classification is the tutorial prose strategy. It is an effective approach for showing the terrain of a subject by elaborating upon its essential types. In the following example, corrosion-resistant ceramics are broken down into types.

Acid Service: Choice of Materials

Careful design and selection of corrosion-resistant ceramics by process engineers and designers is necessary for long-lasting, reliable, and cost-effective ceramic linings for process equipment. The following types of ceramics are used for acid service.

These bricks are manufactured from iron-bearing sedimentary clays prepared with low-melting additives. The clay mixture is extruded through a die and then wire-cut into individual bricks. The units are fired to form a bond of melted material between the clay particles. . . .

Stoneware and porcelain: A vitreous or semi-vitreous ceramic ware, stoneware is made with a fine texture, low-melting-point fireclay. The uniform, chemically resistant microstructure of a stoneware part offers chemical resistance throughout its service lifetime. Stoneware is used in distributors, packing supports, and. . .

Glazed ceramic tile: Industrial glazed ceramic tile units are made of fireclays with an iron oxide content of less than 2%. The clays are processed and then extruded into various shapes. The shaped parts are coated on the process side before firing with a glass-forming glaze solution. Then the tile is fired, the clay body. . .

--Adapted from K. Brooks and M. W. Martin, "Ceramics Stand Up to Acid Service," *Chemical Engineering*

Definition

Develop paragraphs by definition when you want to set working generalizations that will help control the meaning and scope of important terms. Defining is an effective way of controlling the scope of terms. In the following paragraph, an extended definition is used as part of the introduction to a research article. The intention here is both to establish the terms of the discourse and to establish the importance of the subject. By exploring the meaning of the term

bimetals, the writer creates a shared concept that focuses the discussion that follows. Note the use of other devices, such as functional description and enumeration.

Bimetallic Components

Bimetals are components made up of two separate metallic units, each occupying a distinct position in the component. Bimetal rods or wires (also called clad metal, duo- or dual-metal) are made of dissimilar metals. The rod core, a cylindrical body made of one metal, is surrounded by a concentric, cylindrical sleeve of another metal. Some fibrous metals may also be regarded as bimetallic; for example, rods made by unidirectional solidification of some eutectic compositions contain a metallic (or nonmetallic) compound of fibrous filaments embedded in an almost pure metallic matrix. The structure of a present-day Nb-Sn superconducting core can be even more complex. It is multi metallic--containing more than two dissimilar metals. The two elements of a bimetallic product are usually intimately interlocked, so that they function in unison.

Bimetal rods or wire stems make it possible to combine properties of dissimilar metals. For example:

- Aluminium-clad steel wire combines the strength of steel with the electrical conductivity and corrosion resistivity of aluminium.
- Superconductor core clad with copper sleeve combines superconductivity at cryogenic temperatures with assurance against failure when a local temporary rise in resistance or temperature occurs.

Although the number of desired bimetallic combinations for practical use is virtually unlimited, manufacturing difficulties restrict the number of bimetallic combinations actually in use.

--Based on B. Avitzur et al., "Criterion for the Prevention of Core Fracture during Extrusion of Bimetal Rods," *Journal of Engineering for*

Analysis

Analysis examines a subject by evaluating one of its aspects--weighing evidence and possible causal linkages. It resembles other forms of paragraph development, especially classification and division. The object of analysis, however, is to get to the center of how something works. The following paragraph considers the link between cancer, poverty, and stress.

One possible explanation for these statistics on cancer can be found in the high levels of stress associated with poverty. Studies have found that stress can dampen the immune system, the body's first line of defence against cancer, and experiments with animals have shown that a stressful environment can enhance the growth of a variety of tumours. The link between poverty, stress, and cancer mortality in humans has not been proven, but studies have shown a link between stress and other illnesses.

--Thomas D. Fahey, Paul M. Insel, and Walton T. Roth, *Fit and Well: Core Concepts in Physical Fitness and Wellness*

Enumeration

Use enumeration in paragraphs when you want to itemize or list a set of topics or a series of some kind. Enumeration is a powerful way to establish a series of observations and to emphasize each element. In the following paragraph, the items are enumerated in a series of itemized recommendations.

Have your blood cholesterol measured, if you've never had it done. Finger-prick tests at health fairs and other public places are generally fairly accurate, especially if they're offered by a hospital or other reputable health group. When you know your "number," follow these guidelines from the National Cholesterol Education Program:

- If your cholesterol is under 200 mg/dl, maintain a healthy lifestyle--including eating a low-fat diet, getting regular exercise, maintaining a healthy body weight, and not smoking--and get another test within five years.
- If your cholesterol is between 200 and 239 mg/dl, have a second test performed and average the results. If that number falls in the same range, and if you do have any form of cardiovascular disease, change your diet to improve your cholesterol. In addition, eliminate any other risk factors you have and get tested again in about one year.
- If your cholesterol is 240 mg/dl or more, your physician should order a more detailed cholesterol analysis and recommend therapy based on the results. You should begin a cholesterol-improving diet immediately.

--P. Insel and W. Roth, *Core Concepts in Health*

LESSON 36

LANGUAGE REVIEW: SENTENCES

Outline

- Stacked Modifiers and Nouns
- Wordiness
 - Passive Voice and Active Voice
 - Nominalizations
 - Unnecessary Repetition
 - Unnecessary Words and Phrases
- Overloaded Sentences
 - Sentence Fragments
 - Comma Splice
 - Fused Sentences
 - Stringy Sentences
- Agreement

Stacked Modifiers and Nouns

Avoid using long strings of modifiers or nouns. These stacked modifiers and nouns can be hard to read and sometimes create ambiguity. Add a few words (especially prepositions and conjunctions) to make the relationships between nouns clear to the reader.

Wordiness

Say what you have to say in as a few words as possible without sacrificing clarity or omitting vital information. Conciseness is desirable in all writing, but especially so in technical writing. Excessive use of the passive voice, excessive nominalization, unnecessary repetition, and unnecessary words and phrases are some common causes of wordy writing.

Passive Voice and Active Voice

Use the active voice whenever the passive voice is not appropriate. Active verbs make for concise prose; sentences with passive verbs use more words. Moreover, passive verbs de-emphasize or even eliminate mention of the performer of the action conveyed by the verb.

Nominalizations

Where possible, use verb forms instead of noun forms. Excessive or unnecessary nominalization (turning verbs into nouns) can make your writing wordy because it requires a noun and a verb instead of just the verb form.

Unnecessary Repetition

Avoid unnecessary repetition. One of the most common types of unnecessary repetition involves modifiers that repeat information given in the word modified. We will discuss further a few examples of recognizing and eliminating repetition.

Unnecessary Words and Phrases

Make sure that each word and phrase in your sentences contributes to meaning and clarity. Try to avoid the two commonly used constructions *There is/are*. . . And *It is*

Delete superfluous material when you revise your first draft.

Overloaded Sentences

Avoid sentences that contain more information than the reader can easily follow.

Instead, divide such sentences into more manageable pieces that can be easily grasped.

Sentence Fragments

A sentence fragment is missing a subject, a verb, or both, but is punctuated as if it were a complete sentence.

Examples

1. Driving in the city during the evening rush hour.
2. To apply for a job at the new store in the mall.

Comma Splice

Never link two independent clauses with just a comma; this is known as a comma splice error.

Examples

1. The sun is high, put on some sun block.
2. This computer doesn't make sense to me, it came without a manual.

You can correct a comma splice in four ways:

- Separate the independent clauses into two separate sentences. Punctuate both sentences with periods.
- Replace the comma with a semicolon or with a semicolon and a conjunctive adverb such as *however* or *furthermore*. (The conjunctive adverb is then normally followed by a comma.)
- Replace the comma with a comma and a coordinating conjunction.
- Make one of the clauses into a subordinate clause.

Fused Sentences

Do not allow two independent clauses to run together without a conjunction or punctuation between them. This error produces a fused sentence. To join two main clauses, follow the options listed under comma splice.

Examples:

I got up late this morning I didn't have time for breakfast.

The sun is 93 million miles away it can still burn a person's skin badly.

Stringy Sentences

Avoid stringing several clauses that would be easier to read and understand if they were broken up into separate clauses. The following example makes the point of how incoherent the language becomes with the use of stringy sentences.

Agreement

Agreement between subject and verb and between a pronoun and its antecedent is important for paragraph coherence, as well as for style and grammar.

When editing your document, check for agreement, paying close attention to subjects, verbs, and pronouns. Make sure your subject agrees with your verb (subject-verb agreement).

Make sure your pronouns agree in gender and number with their antecedents (pronoun-antecedent agreement). Make sure the form of your pronoun is appropriate for how you are using the pronoun in the sentence (pronoun case). For the sake of clarity, make sure your pronouns are closely linked to their antecedents (pronoun reference).

LESSON 37

LANGUAGE REVIEW: SENTENCES II

Outline

- Lack of Parallelism
- Choppy Sentences
- Interrupted Sentence Structure
- Modifiers of Nouns
- Adverb Modifiers
- Dangling Modifiers
- Double Negatives
- Inappropriate Shifts
- Sequence of tenses
- Pronoun Reference
- Pronoun Case

Lack of Parallelism

Parallelism refers to the principle that parts of a sentence which are the same in function should be the same in structure. Words or phrases joined by coordinating or correlative conjunctions should have the same form. All items or phrases in list(s) must be parallel. Make sure all headings and subheadings are parallel with the other headings and subheadings of the same level. Make sure that all entries of the same level in an outline are parallel.

Example

Incorrect: An important consideration in **orthopedic surgery** and **how to implant prostheses** is the possibility of infection.

Correct: An important consideration in **orthopedic surgery** and **prosthesis implants** is the possibility of infection.

Choppy Sentences

Avoid using too many short sentences that will create choppy prose. Vary your sentence types and combine short related sentences by making some elements dependent clauses or phrases.

Misplaced Modifiers

To ensure clarity, place your modifiers carefully. Make sure that your placement of modifiers does not interrupt the sentence structure or create ambiguity.

Interrupted Sentence Structure

Placing a modifier between the subject and the verb or between the verb and the direct object can weaken the structure of the sentence and make the sentence difficult to interpret. In general, longer and more complicated modifier weakens the sentence.

Although, you can often get away with interrupting the structure of the sentence with a short (one-word) modifier, adding a longer modifier significantly worsens the sentence.

Example

Weak: The heron, egret, and stork colonies in Everglades National Park that once each contained tens of thousands of birds whose bustling extravagance helped inspire the founding in 1905 of the National Association of Audubon Societies (later the National Audubon Society) have shrunk by 95 percent since the 1930s.

Improved: The bird colonies in Everglades National Park once each contained tens of thousands of birds whose bustling extravagance helped inspire the founding in 1905 of the National Association of Audubon Societies (later the National Audubon Society). These colonies of herons, egrets, and storks have shrunk by 95 percent since the 1930s.

Modifiers of Nouns

Modifiers of nouns should be placed either immediately before or immediately after the noun. If another phrase is used to separate the noun and its modifier, the modifier may be misinterpreted as applying to a noun in the separating phrase rather than to the original noun.

Example

Weak: More than 750 metric tons of lead ingots were examined by the quality control inspectors that circle the base of the tower. [The ingots, not the quality control inspectors, circle the base of the tower.]

Improved

- More than 750 metric tons of lead ingots that circle the base of the tower were examined by the quality control inspectors.
- The quality control inspectors examined more than 750 metric tons of lead ingots that circle the base of the tower.

Adverb Modifiers

Adverbs should be placed as close as possible to the words or phrases that they modify. If you allow an adverb to be separated from the word or phrase that it modifies, the interpretation of the adverb may become ambiguous. Always place a quantity adverb immediately before the word it modifies.

Dangling Modifiers

A modifier whose connection to the sentence is implied or intended but not actually made explicit is said to be dangled. Dangling modifiers disturb the clarity of your writing, so you should make sure that your modifiers are properly connected to the words they modify. To repair a dangling modifier, add the noun or phrase to whom the modifier was intended to modify and rephrase the sentence accordingly.

Example

Weak: When traveling at the speed of sound, the moon is approximately 320 hours away. [The moon does not travel at the speed of sound.]

Improved: An object traveling at the speed of sound will reach the moon in approximately 320 hours.

Double Negatives

Use only one negative word to express a negative idea. In English, using two negative words to express one negative idea creates a positive rather than a negative interpretation.

Example

The water management model simulated how water would flow through today's Everglades if all the pumps, gates, and other water control devices had not never been built. [Not never means at some time.]

Faulty Comparisons

Comparing one item with another can be a very powerful way to describe an object or a process (see the discussion of comparison and contrast). To make your comparison effective, however, you must maintain parallelism in your comparison. Include the basis of your comparison, and ensure that your comparison is not ambiguous.

Nonparallel Comparisons

When you construct a comparison, you must make the two items being compared parallel in structure.

Example

He likes cricket and playing football. (Incorrect)

He likes cricket and football. (Correct)

Incomplete Comparisons

Incomplete comparisons should be avoided to ensure clarity in your writing. To be complete, a comparison must include both the item being compared and the item it is being compared with. If you leave out the item being compared with, the reader may not understand your intended meaning.

Example

Shoaib Akhtar is a better player. (Incorrect)

Shoaib Akhtar is a better player than Bret Lee. (correct)

Inappropriate Shifts

Be consistent in your choice of tense, mood, person, and voice. Shifting any of these categories without good reason will detract from the clarity of your writing.

Inappropriate Shifts in Tense

As a general rule, verb tenses within a sentence or a paragraph should be consistent. A shift in tense without reason distorts the sequence of events being described and will confuse your reader. For example, if you begin a description with a verb in the past tense, do not switch to a verb in the present tense.

Inappropriate Shifts in Mood

Mood (indicative, imperative, or subjunctive) is used to express the attitude of the writer toward the state or action, or the certainty or truthfulness of the state or action.

Be consistent in your choice of mood. A shift in mood without reason will confuse your reader. For example, do not combine an imperative clause with an indicative clause in the same sentence.

Example

Incorrect

Read the instructions carefully [imperative] and you must assemble the equipment completely [indicative] before beginning the procedure.

Correct

1. Read the instructions carefully [imperative] and assemble the equipment completely [imperative] before beginning the procedure.
2. You must read the instructions carefully [indicative] and assemble the equipment completely [indicative] before beginning the procedure.

Sequence of Tenses

Choose the tenses of your verbs accurately to express the timing or sequence of events that you are describing. Often, the particular sequence of events that you are describing will require you to use several different verb tenses within a single sentence or paragraph. Although it is appropriate to vary your verb tenses in accordance with the actual timing of the events, you should avoid shifting tenses unnecessarily.

Sequence of Tenses and Timing of Events

To emphasize that an event occurred or was completed before another event, use a form of the perfect auxiliary *have*.

Example

The reaction appears to have finished already.

Pronoun Reference

Pronoun reference refers to the identification of a pronoun with its intended antecedent. Two common problems in pronoun reference are unclear pronoun reference and broad pronoun reference. Make sure all of your pronouns can be easily identified.

Unclear Pronoun Reference

Use a pronoun instead of a noun only if the connection to the intended antecedent of the pronoun is quite strong. Make sure no other nouns with the same gender and number appear between your pronoun and its intended antecedent. Otherwise, your pronoun reference may be unclear.

Example

Weak: When a second character arrives at the port before the first character has been unloaded, the port stores the second character in the same register, overwriting it.

Improved: When a second character arrives at the port before the first character has been unloaded, the port stores the second character in the same register as the first one, overwriting the first character.

Broad Pronoun Reference

Use a demonstrative pronoun only if the connection to the intended antecedent of the pronoun is quite strong. Otherwise, your pronoun reference may be too broad, thus unclear.

Example

Weak: The sophisticated computer sound system lets the user input pitch and duration from the MIDI keyboard. This facilitates musical transcription. [Does **this** refer to the sophisticated computer sound system, to letting the user, or to the inputting of pitch and duration?]

Improved: Sophisticated computer sound systems let the user input pitch and duration from the MIDI keyboard. This direct input facilitates musical transcription.

Pronoun Case

A pronoun can appear in one of three cases:

- subjective, in which the pronoun functions as a subject
- objective, in which the pronoun functions as an object
- possessive, in which the pronoun functions as a possessor

The following list shows the subjective, objective, and possessive forms of the personal pronouns.

Subjective	Objective	Possessive
I	Me	My
You	You	Your
He	Him	His
She	Her	Her
It	It	Its
We	Us	Our
They	Them	Their
Who	Whom	Whose
Whoever	Whomever	Whose

Important Links

<http://www.mhhe.com/mayfieldpub/tsw/toc.htm>

LESSON 38

LANGUAGE REVIEW

Outline

- Words and Punctuation
- Abstract and General Language
- Vague Language
- Ornate Language
- Technical Terms
- Biased Language
- Sexist Language
 - Ageist Language
 - Language Biased against People with Disabilities
 - Ethnically and Racially Biased Language
- Punctuation
- Periods
- Commas
 - Introductory Elements
 - Coordinating Conjunctions Joining Independent Clauses
 - Elements in a Series
 - Coordinate Modifiers
 - Nonrestrictive Modifiers
 - Parenthetical Elements
 - Elliptical Constructions
 - Specialized Uses of Commas
 - Superfluous Commas
 - Placement of Commas with Other Punctuation

Abstract and General Language

Clear writing consists of specific, carefully chosen words, not abstract and general language. Prose cluttered with language that is overly abstract, ornate, or vague becomes unreadable, either too dense or too vague to be understandable.

Vague Language

Although the amount of detail in your writing will depend on your audience, use specific facts whenever possible. These facts make the difference between vague assertions and accurate scientific reporting.

Ornate Language

- Clear writing uses the simplest, most direct words possible
- Used for their own sake, ornate words simply distract the reader from your main point

Technical terms

Technical terms are an essential part of all technical and scientific writing. Each field and specialty typically uses a vocabulary that relays a variety of specialized concepts by means of technical language. These special terms convey concentrated meanings that have been built up over significant periods of study of a field. Match terminology to the ability of the audience. You may use a term with great accuracy and still not reach your audience. It is important that you should be aware of your audience's level of understanding. If they are not experts in your field, you will need to substitute more general terms for your specialized terms. It means that you may not be able to write with great accuracy about your topic.

Biased Language

Avoid language that could be interpreted as biased on the basis of sex, age, physical ability, or ethnic or racial identity. Instead, use language that is inclusive and avoids unintended stereotypes, and refer to people and groups using labels they prefer. Some of the categories/types of biased language are:

- Ageist language
- Language biased against people with disabilities
- Ethnically or racially biased language

Punctuation

Punctuate your prose in order to help clarify how words, clauses, and sentences fit together. Many scientific and technical organizations have detailed style guides outlining appropriate and inappropriate uses of punctuation for technical documents in their respective disciplines. Follow the appropriate style in your particular field. Detailed information on punctuation marks is given in the following entries:

- Periods .
- Commas ,
- Colons :
- Semicolons ;
- Question marks ?
- Exclamation points !
- Apostrophes '
- Quotation marks " "
- Hyphens –
- Dashes –
- Parentheses ()
- Brackets []

Periods

Use periods to indicate the end of declarative or imperative sentences. Failing to place a period after a complete sentence may produce a comma splice or fused sentence. Placing a period at the end of an incomplete sentence may produce a sentence fragment.

Example

The Newcomen engine utilizes the condensation of steam to create a partial vacuum beneath a piston.

Some Uses of Periods

- Use a period after numbers or letters in an enumerated list.
- End each item in an enumerated list with a period if one or more items in the list are complete sentences. (For the sake of parallelism, normally all items or none should be complete.
- If a vertical list completes a sentence begun in the introduction to the list, the final period is omitted unless the items in the list are separated by commas or semicolons.
- Periods stand for decimal points within numbers.
- Use ellipsis points, three periods with spaces between and on both sides, to indicate omitted portions of a quotation.
- If the omitted portion follows a sentence period (or other end punctuation), retain the end punctuation before the ellipsis points. Retain other punctuation marks that precede or follow the skipped portion for clarity and precision.
- Use a period after certain abbreviations, especially those that themselves spell words. Use a period after certain abbreviations, especially those that themselves spell words.
- Place a period inside quotation marks.
- Place a period after the parenthesis or bracket at the end of a sentence (unless the parentheses or brackets enclose a complete new sentence).

Commas

Use commas to keep your writing clear. Omitted or incorrectly used, commas can cause confusion or even change meaning. Commas should be used with the following elements:

Introductory Elements

Use commas to set off transitional words and phrases, introductory clauses, or introductory phrases to signal where the introductory element finishes and the main part starts.

Transitional Words and Phrases

Place a comma after a transitional word or phrase that begins a sentence.

Introductory Clauses

Place a comma after an introductory dependent clause.

Coordinating Conjunctions Joining Independent Clauses

Place a comma before a coordinating conjunction that joins two independent clauses. However, if the clauses are very short and closely related, you may omit the comma.

Elements in a Series

Use a comma to separate items in a series. Although placing a final comma before the coordinating conjunction is often considered optional, omitting it can sometimes cause confusion. Consequently, most scientific and technical writing routinely uses a final comma in a series to prevent possible ambiguities.

Coordinate Modifiers

Use a comma between coordinate modifiers. Modifiers are coordinate if they modify the same word. You can test to see if the modifiers are coordinate by inserting *and* between them. If the description still makes sense, then the modifiers are coordinate.

Non-restrictive Modifiers

Use commas to set off nonrestrictive modifiers. A nonrestrictive modifier is usually introduced by *which* and contains information that is not essential for establishing the meaning of what it modifies.

Parenthetical Elements

Use commas to set off parenthetical elements.

Elliptical Constructions

Use a comma to indicate the omission of a word or words readily understood from the context.

Specialized Uses of Commas

In numbers with five or more digits, Anglo-American usage dictates that there should be commas before groups of three digits, counting from the right, except for a group of three digits at the beginning of the number.

Examples

Customers reported a total of **212,413** hardware malfunctions.

In **1994, 212** cases had been diagnosed.

Memorization Superfluous Commas

Except after an introductory dependent clause, do not use a comma to separate a dependent clause from a main clause unless the dependent clause provides nonessential information.

Placement of Commas with Other Punctuation

Place commas inside quotation marks but outside parentheses.

LESSON 39

LANGUAGE REVIEW: PUNCTUATION II

Outline

- Colons
- Semicolons
- Question Marks
- Exclamation Marks
- Apostrophes
- Quotation marks
- Hyphens
- Dashes
- Parentheses
- Brackets

Colons

Use *colons* for the following purposes:

- to introduce and emphasize lists, quotations and explanations and certain appositional elements
- to express ratios
- to separate numbers signifying different nouns, such as in separating units of time or elements in a bibliographic citation
- to separate titles from subtitles

To Set off and Emphasize Lists

- The market for photovoltaic power systems includes the following items: intrusion alarms, flood monitors, calculators, and telephone call boxes.

OR

- The market for photovoltaic power systems includes the following items:
 - intrusion alarms
 - flood monitors
 - calculators
 - telephone call boxes

(Begin each element of lists, series, or phrases with lowercase letters.)

To Set off and Emphasize Quotations

- The contract reads: “DL-400 coaxial cable shall be used for all platform instrument installations at Site 5, unless a specific exception is justified in the approved work order.”
- Kulik noted: “Even potatoes are probably much better guarded today than radioactive materials.” Phil Williams, and Paul N. Woessner, “The Real Threat of Nuclear Smuggling,” Scientific American
(Place colons outside quotation marks.)

To Set off and Emphasize Explanations and Appositional Elements

- In designing the tachometer, the team first posed a question: What operations are needed on the input signal in order to generate the desired output?

To Express Ratios

- The ratio of drag torque to bearing friction torque cannot exceed 3:1
- The anti-GAP 43, anti-MAP 2, and anti-synaptophys in antibodies were diluted 1:1000, 1:300, and 1:100, respectively, in phosphate-buffered saline containing 10% bovine serum albumin.

Andreas Schwarz et al., "A Regulatory Role for Sphingolipids in Neuronal Growth,"
Journal of Chemical Biology

To Separate Units of Time

- The main thruster engines ignited at 7:05 a.m. EDT
- Thu Mar 16 03:21:44 1995

To Separate Elements in a Citation (in certain documentation styles)

- E. F. Lyon, "Airport Surface Traffic Automation," Lincoln Laboratory Journal 4:151 (1991)

Semicolons

- Use semicolons to join two independent clauses or to separate parts of a sentence that have commas in them
- **To Join Two Independent Clauses**
The system has three beam launchers; two are in the two-tube combiner, and one is in the OP receiver
- **To Separate Sentence Elements with Commas**
Italicize titles of journals, books, newsletters, and manuals; letters, words, terms, and equation symbols; foreign words; and names of specific vessels.

Question Marks

- Use a question mark to end an interrogative sentence.
Have past efforts to develop an AIDS vaccine been based on the wrong approach?
- Use a question mark to change a declarative or imperative sentence into a question.
Their testing of the system was exhaustive? [declarative changed to interrogative] Start production on Friday? [imperative changed to interrogative]
- When a directive or a command is phrased as a question, a question mark is optional.

Exclamation Points

In technical and scientific writing, use exclamation points only to end warning or caution statements or to add specialized scientific notation. For other purposes, use a period or question mark.

Apostrophes

Use apostrophes to form the possessive case of nouns and indefinite pronouns, and contractions. Optionally, apostrophes may also be used in the plurals of abbreviations and numbers. Form the possessive of singular nouns and indefinite pronouns and of plural nouns that do not end in -s by adding -'s.

Quotation Marks

- Unless the documentation style you are following specifies otherwise, use quotation marks:
 - To enclose the names of articles, short reports, and other brief documents cited in your document
 - To indicate direct quotations of speech or excerpts from other documents
- Do not put quotation marks around a quotation in block form (that is, indented to set it off from the main text).
- Avoid using quotation marks for emphasis.

To Enclose the Names of Articles, Short Reports, and Other Brief Documents

The source of the design information is the 1982 article “Boundary Layer Development on Turbine Airfoil Suction Surfaces,” which appeared in the *Journal of Engineering for Power*.

Hyphens

Use hyphens to link:

- certain prefixes, suffixes, letters, and numbers with nouns
- compound nouns
- compound modifiers
- spelled-out numbers

Also use hyphens for the following purposes:

- To clarify the meaning of certain words
- To divide words
- To express to or through between two letters or numbers
- For specialized scientific notation

To Link Certain Prefixes, Suffixes, Letters, and Numbers with Nouns

Use hyphens to connect certain prefixes to nouns. In most scientific and technical styles, the following prefixes are usually followed by a hyphen:

- all-
- ex-
- half-
- quasi-
- self-
- hex-

However, scientific and technical writing styles omit the hyphen between most prefixes, especially prefixes that are not words themselves. The following list of prefixes that normally are

not followed by a hyphen is adapted from Scientific Style and Format by the Council of Biology Editors:

aero	electro	meta	pre
after	exo	micro	pro
ante	extra	mid	pseudo
anti	geo	mid	re
astro	hemo	mini	semi
auto	hyper	multi	sub
bi	hypo	non	super
bio	in	over	supra
chemo	infra	photo	trans
co	inter	physio	un
counter	iso	poly	
de	macro	post	

When adding a prefix to a noun forms a homograph (a word with two meanings), use a hyphen for clarity.

multiply	multi-ply
recover	re-cover
unionize	un-ionize

Use hyphens to connect numbers or letters used as prefixes to a noun.

- The T-cell
- 10-cylinder

Use a hyphen to connect any prefix to a capitalized noun.

- post-Newtonian universe
- ex-Soviet scientist

In most cases, do not place a hyphen before a suffix.

In most scientific and technical styles, however, the following suffixes are preceded by a hyphen.

- designate
- elect
- type

To Link Compound Nouns

Use a hyphen to link compound nouns, especially when the lack of a hyphen would change the meaning of the term.

- light-year
- light year

[The first term is a unit of measurement, not of time; the second pair of words, on the other hand, may indicate a year that is not heavy.]

To Link Compound Modifiers

Use a hyphen to connect compound modifiers to promote clarity and prevent ambiguity.

Examples

- laser-alignment process [compound modifier + noun] laser alignment [modifier + noun]
- the two-tube combiner
- wire-grid aperture cap [aperture cap for a wire grid]
- wire grid-aperture cap [a wire cap for a grid aperture]
- wire-grid level adjustment
- wire grid-level adjustment
- heavy-water cavity [a cavity for heavy water]
- heavy water cavity [a water cavity that is heavy]

To Link Spelled-Out Numbers

Use a hyphen to join spelled-out numbers from 21 through 99 and spelled-out fractions.

Examples

- twenty-one moving parts
- the thirty-third experiment
- four-fifths of the subjects

To Divide Words

In general, avoid dividing words. However, use hyphens to split words at the end of a line to prevent large spaces between words in justified text and noticeably uneven margins in unjustified text. The following guidelines for dividing words are adapted from the Chicago Manual of Style and the NASA Style Guide and the Council of Biology Editors' manual.

- Divide words between syllables. If you are unsure of the syllabification, consult a standard dictionary.
 - com-pu-ter

- o Divide between the compound parts of compound words:
 - light-year
- o Divide after a prefix or before a suffix:
 - intra-system
 - hyper-tension
 - maintain-ability
- o Divide a word after any two-letter syllable within a word but do not divide a word before a final two-letter ending.
- o Do not divide a word in which the part beginning the next line will appear to be a separate word.
- o Do not divide the last word of a paragraph or page.

To Stand for to or through between Letters and Numbers

Use hyphens to stand for through or to, especially in bibliographies and reference lists; however, when a number, letter, or date is preceded by the word from, use the word to instead of a hyphen.

Examples

- pages 25-63 sections 15.2-15.8
- 1901-1911
- from 1901 to 1911

Specialized Uses

Use a hyphen in the following circumstances:

- To represent single bonds in chemical formulas: $(\text{CH}_3)_2\text{-CH-CH}_2\text{-CH(NH}_2\text{)-OH}$
- Between the spelled-out name of a chemical element and the mass number of the specific isotope: Carbon-14
- Between sequences of amino acids: Asp-His-Lys

Suspended Hyphens

If all unit modifiers in a series end with the same term, the term does not have to be repeated each time; for brevity you may suspend the hyphens and use the modified term only at the end of the series.

Examples

- The first-order, second-order, and third-order equations have all been solved.
- The first-, second-, and third-order equations have all been solved.
- 2- and 3-phase controllers

Dashes

Use dashes “sparingly” to indicate abrupt shifts in thought and to set off or emphasize appositional or parenthetical elements or interjections. In most cases, use commas or parentheses instead.

- Although we have made these comments with specific reference to water--only because of our familiarity with water--all pure substances exhibit the same behavior.

In typewritten documents, you should use two hyphens (--) with no spaces between or around them to form a dash.

Parentheses

Use parentheses to enclose qualifying detail that is of secondary importance to the main discussion.

- Use parentheses sparingly within sentences; commas often do the job better.
- Parentheses can also be used to enclose one or more entire sentences that add relevant but not essential detail to the main discussion.

Brackets

Use brackets to set off an explanatory reference, your own comments, or corrections within material you are quoting.

- According to Smith, “Proton energy levels [in the accelerator] are consistently higher than expected.” [These comments were made before Broodier became aware of Light man’s experiments.]

Unless the documentation style you are following specifies otherwise, use the Latin term *sic* in brackets to indicate that material in a quotation is incorrect.

- Freedman stated, “Various Indo-European languages such as Rumanian, Hindi, Hungarian [sic], and Serbian exhibit similar morphological patterns.” [Hungarian is not an Indo-European language.]

Use brackets to enclose parenthetical material that is within material already in parentheses.

- The first extant cosmological theories were developed by the early Babylonians and Greeks. (See Alan Lightman, *Ancient Light* [Cambridge: Harvard University Press], pp.5-9.)

Use brackets to indicate the isotope of a specific chemical.

- [14C] urea

LESSON 40

LANGUAGE REVIEW: MECHANICS

Outline

- Capitalization
- Italics
- Abbreviations
- Acronyms
- Numbers
- Enumeration
- Symbols
- Equations
- Spelling

Capitalization

Although there are many specialized rules for capitalizing letters, the following are the most common.

1. Capitalize the first words of sentences, including sentences cited in quotations. For example:
The QA engineer has been quoted as saying, “The main source of connector failure found in the analysis is seal deformation caused by pressures in excess of 1000 psig.”
2. Capitalize proper names, including any particular person, object, place, project, institution, river, vessel, genus, culture, ethnic group, or formal job title.
3. Unless you are following a documentation style that specifies otherwise, capitalize titles of books, periodicals, published and unpublished reports, articles, and document sections.

Rules for Capitalizing Multiple-Word Titles and Proper Names

Unless you are following a documentation style that specifies otherwise, observe the following rules for capitalizing multiple word titles and proper nouns. Capitalize all nouns, pronouns, verbs, adjectives, adverbs, and subordinating conjunctions. Capitalize any word, regardless of the part of speech, if it is the first or last word of the title or subtitle or a proper name or if it follows a punctuation mark indicating a break in the title.

General Guidelines for Capitalizing Scientific Terms

Each discipline has its own specific conventions for determining which terms should be capitalized. In general, scientific writing tends to minimize capitalized nouns.

- Capitalize astronomical terms such as the names of galaxies, constellations, stars, planets and their satellites, and asteroids.
- However, the terms *earth*, *sun*, and *moon* are often not capitalized unless they appear in a sentence that refers to other astronomical bodies.

Example

The **sun** is an ordinary star. **Venus** and **Earth** differ significantly in the composition of their atmospheres.

- Do not capitalize medical terms except for any part of a term consisting of a proper noun:

Examples

1. infectious mononucleosis
2. brachial plexus
3. Parkinson's disease

Italics

Unless you are following a style guide that specifies otherwise, observe the following conventions.

Italicize titles of journals, books, newsletters, and manuals; letters, words, terms, and equation symbols that are being highlighted for discussion; foreign words; words or phrases that are being emphasized; and names of specific vessels.

Titles of Journals, Books, Newsletters, and Manuals

Examples

- *The Journal of the American Chemical Society*
- *Aviation Week and Space Technology*
- *Handbook of Physical Constants*
- *Operator's Manual: TD-100 B&S Spectroscope*
- *Pollution Abstracts*

Letters, Words, Terms, and Equation Symbols that are Being Highlighted for Discussion

Examples

- If either 1 or 2 is negative, *Equation 8* describes a convex reflecting surface.
- How does one program the computer, for example, to pronounce the letter combination *gh*? In the word *thorough*, *gh* has no sound; in *enough*, it is pronounced *f*; in *ghost*, it is pronounced *g*.
- The term *dielectric* is used here to refer to all. . .

Foreign Words

Examples

- Against the criminally stubborn conviction of the professional officer corps that courage, *élan*, and naked steel must carry the day, the machine gun was the ultimate argument.
- Bohr returned to Göttingen as a *Privat dozent* working under Born. [In German all nouns are capitalized.]
--Richard Rhodes, *The Making of the Atomic Bomb*
- The SPOT (for *système probatoire d'observation de la terre*) views the area in question every 2.5 days.

Emphasis

Example

The Chernobyl reactor surged from its standby level to 50 percent of its capacity *in just 10 seconds*.

Names of Specific Vessels

Do not italicize the model's class, manufacturer, or model number.

Examples

The experiment is scheduled to be performed during a future mission of the space shuttle *Enterprise*.

He returned on a Boeing 757.

Abbreviations

Unless you are following a style guide that specifies otherwise, observe the following conventions.

- Abbreviations, shortened forms of words, are commonly employed in scientific and technical writing. However, avoid unnecessary abbreviations, which can confuse a reader.
- Some abbreviations are always followed by a period.
- Always abbreviate certain words and phrases in your text. Those always abbreviated include
Mr., Ms., B.A., Ph.D., B.C., B.C.E.
cf. (from the Latin for "compare")
et al. (from the Latin "and others")
i.e. (from the Latin "that is")
e.g. (from the Latin "for example")

Acronyms

Unless you are following a style guide that specifies otherwise, observe the following conventions.

Use acronyms to shorten phrases in order to save space or to avoid awkward repetition of phrases. Acronyms are abbreviations of the things they represent and are formed by combining the first, and sometimes other, letters of the principal words.

Examples

AIDS -- Acquired Immunodeficiency Syndrome

RAM -- random-access memory

ROM -- read-only memory

DOS -- Disk Operating System

FTP -- file transfer protocol

HTML -- Hypertext Markup Language

HIV -- Human Immunodeficiency Virus

Numbers

Unless you are following a style guide that specifies otherwise, observe the following guidelines in using numbers.

In general, use Arabic numerals instead of words in scientific and technical writing for both cardinal and ordinal numbers:

- **3** subroutines
- **6** braces
- **61** amino acids
- the **3rd** subroutine

- the **6th** brace
- the **61st** amino acid

British and American Formation of Numbers

Form integers of two to four digits without any punctuation or spacing:

- 21 412
- 8024

Use the period (.) to indicate the decimal point and use an initial zero (0) for numbers less than 1.0:

- 31.3 1.41
- 0.414

Form numbers of five digits or more by using a comma (,) to mark off groups of three digits, starting at the decimal point:

1. 10,000
2. 12,341
3. 12,341.34
4. 12,432,421

European and International Standards for Formation of Numbers

Form integers of two to four digits without any punctuation or spacing:

- 21 412
- 8024

Use the comma (,) to indicate the decimal point and use an initial zero (0) for numbers less than 1,0:

- 31,3 1,41
- 0,414

General Guidelines for Using Numbers in Non-technical Prose

When using numbers in nonscientific text, spell out numbers less than one hundred or numbers of any size that begin a sentence.

In addition, spell out round numbers of any size and use Arabic numerals followed by the terms *million* and *billion* to express numbers larger than one million.

- seventy-three hours
- 173 hours
- nine hundred thousand

Form numbers of five digits or more by using a period (.) to mark off groups of three digits, starting at the decimal point:

- 10.000 12.341
- 12.341,34

- 12.432.421

Enumeration

Use enumeration in reports and other documents to identify sequences of chapters, sections, page numbers, figures and tables, equations, footnotes, and appendixes. Lengthy reports may contain and enumerate all these items. Any technical or scientific document of more than one page, however, will at least enumerate its pages, as well as any other of these elements that are present.

Chapter-Section Enumeration

Of the two general enumeration systems widely used, the numerical system is clearer than the alphanumerical system. In the numerical system, the reader can always locate his or her place in the document from the single decimal number.

Pagination

Number the front matter in italic lowercase roman numerals (*i, ii, iii, iv*, and so on).

Normally, number the pages in the body of the document with Arabic numerals, starting with page 1.

Tables and Figures

Number, tables, and figures sequentially as *Table 1, Table 2, Table 3*, and so on.

In long documents, however, table and figure numbers are often prefixed with a chapter number: *Table 5-1* or *Table 5.1*, for example, refers to the first table of Chapter 5.

Symbols

Use symbols consistently and in keeping with the common practice of your discipline.

Biology, chemistry, engineering, mathematics, and physics, among many other fields, have extensive and precise systems to represent quantities, objects, and actions. Check with a relevant style guide, textbook, or handbook.

If you are not certain that your readers will recognize a symbol, give the full spelling in parentheses the first time you use the symbol. If your document contains a large number of symbols that may be unfamiliar to your readers, consider including a list of symbols in the front matter, following the list of tables.

Equations

Unless you are following a style guide that specifies otherwise, observe the following conventions.

- Integrate equations into the body of your document by including in the text one or more explicit references to each one and, if appropriate, a short explanation of each term.
- Include only the main equations in the body of the document. Detailed derivations and calculations, if appropriate, should be put in appendixes.
- Set off equations from the text by displaying them, centered on the longest line, and with equation numbers as shown.

Example

An ion in crossed electric and magnetic fields drifts at right angles to both fields with a velocity of

$$V_d = E_s / B$$

(Eq. 7)

where V_d is the drift velocity, E_s is the magnitude of the static field, and B is the magnetic field strength. If V_d were to approach unity, the behavior of the electric. . .

Spelling

Here are a few suggestions to help ensure that your document is free of spelling errors.

- Always proofread your document for misspellings.
- If you are writing on a word processor, always use the spell checker but do not rely on it alone.
- It cannot catch one word substituted for another (*discreet* for *discrete*) or a typographical error that is a word (*cod* instead of *code*).
- Be consistent in the spelling of words in your document.
- Use the same dictionary when writing your first draft as when revising or editing the document.
- If you first learned British or Commonwealth English, be careful to use American English spellings of words rather than British forms.

The following list summarizes some of the most common differences between American English and British English spelling.

<i>American English</i>	<i>British English</i>
center, fiber	center, fibre
color, labor, odor	colour, labour, odour
defense, offense	defence, offence
encyclopedia, medieval	encyclopaedia, mediaeval
enroll, fulfill	enrol, fulfil
organize, civilization	organise, civilisation

Following dictionaries can be consulted to resolve any confusion regarding spellings of words.

- Desk Dictionaries
- Unabridged Dictionaries
- ESL Dictionaries
- Technical Dictionaries

LESSON 41

LISTENING AND INTERVIEWING

Outline

- Facing a Communication Dilemma at Rockport
- Communicating Orally
- Speaking
- Listening
 - What Happens When You Listen
 - The Three Types of Listening
 - How to be a Better Listener
- Conducting Interviews on the Job
- Categorizing Interviews

Facing a Communication Dilemma at Rockport

Calling a meeting is not unusual; executives do it every day. Even so, few executives shut down an entire company to bring everyone to a meeting, but that is exactly what Rockport president John Thornback decided to do. Rockport is a footwear subsidiary of Reebok, and except for the handful of people left behind to answer telephones in the company's headquarters, all 350 managers and employees were asked to gather in a huge room for a two-day meeting.

Communicating Orally

Rockport's John Thornback knows that speaking and listening are the communication skills we use the most. Given a choice, people would rather talk to each other than write to each other. Talking takes less time and needs no composing, typing, rewriting, retyping, duplicating, or distributing. By communicating with facial expressions, eye contact, tone of voice, gestures and posture, people can send subtle messages that add another dimension to the spoken words. Oral communication satisfies people's need to be part of the human community and makes them feel good. Talking things over helps people in organizations build morale and establish a group identity.

When communicating orally, try to take advantage of the positive characteristics while minimizing the dangers. To achieve that goal, work on improving two key skills:

- Speaking
- Listening

Speaking

Organize your thoughts in a logical way, decide on a style that suits the occasion, and edit your remarks mentally. As you speak, watch the other person, judging from verbal and nonverbal feedback whether your message is making the desired impression. If not, revise and try again. Just as various writing assignments call for different writing styles, various situations call for different speaking styles. Your speaking style depends on the level of intimacy between you and the other person and on the nature of your conversation. When you are talking with a friend, you naturally speak more frankly than when you're talking to your boss or a stranger. An important

tool of oral communication, the telephone, can extend your reach across town and around the world.

However, if your telephone skills are lacking, you may waste valuable time and appear rude. You can minimize your time on the telephone while raising your phone productivity by delivering one-way information by fax.

Other ways of increasing your phone productivity by

- jotting down an agenda before making a call
- saving social chitchat for the end of a call
- saving up all the short calls you need to make to one person during a given day and simply making one longer call
- sending your message by fax, if you can't reach someone by the phone
- making sure you're your assistant has a list of people whose calls you'll accept even if you're in a meeting

Listening

If you are typical, you spend over half your communication time listening. Listening supports effective relationships within the organization, enhances the organization's delivery of products, alerts the organization to the innovations growing from both internal and external forces, and allows the organization to manage the growing diversity both in the workplace and in the customers it serves.

What Happens When You Listen?

- Sensing
- Interpreting
- Evaluating
- Remembering
- Responding

The Three Types of Listening

Various situations call for different listening skills. The three types of listening differ not only in purpose but also in the amount of feedback or interaction that occurs.

The goal of **content listening** is to understand and retain information imparted by a speaker. You may ask questions, but basically information flows from the speaker to you. Your job is to identify the key points of the message, so be sure to listen for clues to its structure:

- Previews
- Transitions
- Summaries
- Enumerated points

Critical Listening

Critical listening is a much more active behaviour than informational listening and usually involves some sort of problem solving or decision making. We can be said to be engaged in critical listening when the goal is to evaluate or scrutinize what is being said. Informational

listening may be mostly concerned with receiving facts and/or new information; critical listening is about analyzing opinion and making a judgment.

When the word ‘critical’ is used to describe listening, reading or thinking it does not necessarily mean that you are claiming that the information you are listening to is somehow faulty or flawed. Rather, critical listening means engaging in what you are listening to by asking yourself questions such as, ‘what is the speaker trying to say?’ or ‘what is the main argument being presented?’, ‘how does what I’m hearing differ from my beliefs, knowledge or opinion?’. Critical listening is, therefore, fundamental to true learning.

It is often important, when listening critically, to have an open-mind and not be biased by stereotypes or preconceived ideas. By doing this you will become a better listener and broaden your knowledge and perception of other people and your relationships.

Active Listening

Active listening means, as its name suggests, actively listening. That is fully concentrating on what is being said rather than just passively ‘hearing’ the message of the speaker. Active listening is a skill that can be acquired and developed with practice.

Active listening involves listening with all senses as well as giving full attention to the speaker. Interest can be conveyed to the speaker by using both verbal and non-verbal messages such as maintaining eye contact, nodding your head and smiling, agreeing by saying ‘yes’ or simply ‘hmm, hmm, etc.’ to encourage them to continue. This ‘feedback’ helps the speaker to feel at ease and let him communicate more easily, openly and honestly.

How to Be a Better Listener

Regardless of whether the situation calls for content, critical, or active listening, you can improve your listening ability by becoming more aware of the habits that distinguish good listeners from bad listeners.

In addition, put nonverbal skills to work as you listen:

- Maintain eye contact
- React responsively with head nods or spoken signals
- Pay attention to the speaker’s body language

You might even test yourself from time to time: when someone is talking, ask yourself whether you’re actually listening to the speaker or mentally rehearsing how you’ll respond.

Above all, try to be open to the information that will lead to higher-quality decisions, and try to accept the feeling that will build understanding and mutual respect. If you do, you’ll be well on the way to becoming a good listener – an important quality required to be good in conducting business interviews.

To Listen Effectively	The Bad Listener	The Good Listener
Find areas of interest	Tunes out dry subjects	Opportunizes; ask “What’s in it for me”
Judge content, not delivery	Tunes out if delivery is poor	Judges content; skips over delivery error
Hold your fire	Tends to enter into argument	Doesn’t judge until comprehension is complete; interrupts only to clarify
Listen for ideas	Listens for facts	Listens for central themes
Be flexible	Takes extensive notes using only one system	Takes fewer notes; uses four to five different systems, depending on the speaker.
Work at listening	Shows no energy output; fakes attention	Works hard; exhibits active body state
Resist distractions	Is distracted easily	Fights or avoids distractions; tolerates bad habits; knows how to concentrate
Exercise your mind	Resists difficult expository material; seeks light, recreational material	Uses heavier material as exercise for the mind
Keep your mind open	Reacts to emotional words	Interprets emotional words; does not get hung up on them
Capitalize on the fact that thought is faster than speech	Tends to daydream with slow speakers	Challenges, anticipates, mentally summarizes

Conducting Interviews on the Job

The conversation bounces back and forth from interviewer to interviewee. Although the interviewer guides the conversation, the interviewee may also seek to accomplish a purpose, perhaps to:

- obtain or provide information
- solve a problem
- to create goodwill
- persuade the other person to take action

Categorizing Interviews

- Job interviews
- Informative interviews
- Persuasive interviews

- Exit interview
- Evaluation interview
- Counseling interviews
- Conflict-resolution interviews
- Disciplinary interviews
- Termination interviews

LESSON 42

PLANNING INTERVIEWS AND CONDUCTING MEETINGS

Outline

- Planning interviews
- Asking yourself the following questions will help you prepare for interviews
- Interview questions
 - Open-ended questions
 - Direct open-ended questions
 - Closed-ended questions
 - Restatement questions
- Interview structure
- Participating in small groups and meetings
- Understanding group dynamics
- Role-playing
 - Self-oriented roles
 - Group-maintenance roles
 - Task-facilitating roles
- Group norms
- Arranging the meeting
- Contributing to a productive meeting

Planning Interviews

Planning an interview is similar to planning any other form of communication. You begin by stating your purpose, analyzing the other person, and formulating your main idea. Then you decide on the length, style, and organization of the interview. Even as an interviewee, you gain some control over the conversation by anticipating the interviewer's questions and then planning your answers so that the points you want to make will be covered. You can also introduce questions and topics of your own. In addition, by your comments and nonverbal cues, you can affect the relationship between you and the interviewer.

Asking Yourself the Following Questions Will Help You Prepare for Interviews

- What are your respective roles?
- What does this person expect from you?
- Is it to your advantage to confirm those expectations?
- Will you be more likely to accomplish your objective by being friendly and open or by conveying an impression of professional detachment?

If you are the interviewer, responsibility for planning the session falls on you. On the simplest level, your job is to schedule the interview and see that it's held in a comfortable and convenient location. Good interviewers are good at collecting information, listening, and probing, so you should develop a set of interview questions and decide on their sequence.

Interview Questions

The purpose of the interview and the nature of the participants determine the types of questions that are asked. When you plan the interview, bear in mind that you'll ask questions:

- To get information
- To motivate the interviewee to respond honestly and appropriately
- To create a good working relationship with the other person

Open-Ended Questions

To obtain both factual information and underlying feelings, you'll probably use various types of questions. Open-ended questions invite the interviewee to offer an opinion, not just a yes, no, or one-word answer. You can learn some interesting and unexpected things from open-ended questions, but they may diminish your control of the interview. The other person's idea of what's relevant may not coincide with yours, and you may waste some time getting the interview back on track. Use open-ended questions to warm up the interviewee and look for information when you have plenty of time to conduct the conversation.

Direct Open-Ended Questions

To suggest a response, use direct open-ended questions. For example, asking "What have you done about ..." assumes that something has been done and calls for an explanation.

With direct open-ended questions you have somewhat more control over the interview; but, you still give the other person some freedom in framing a response.

Closed-Ended Questions

Closed-ended questions require yes or no answers or call for short responses. For example, "Did you make a reservation for the flight?"

Questions like these produce specific information, save time, require less effort to answer, and eliminate bias and prejudice in answers. The disadvantage of such questions is that they limit the respondent's initiative and may prevent important information from being revealed. They are better for gathering information than for prompting an exchange of feelings.

Restatement Questions

Questions that mirror a respondent's previous answer are called restatement questions. They invite the respondent to expand on an answer: "you said you dislike completing travel vouchers. Is that correct?" They also signal the interviewee that you're paying attention.

Restatements provide opportunities to clarify points and correct misunderstandings. Use them to pursue a subject further or to encourage the other person to explain a statement. You can also use restatement questions to soothe upset customers or coworkers because by acknowledging the other person's complaint, you gain credibility.

Interview Structure

Good interviews have an opening, a body, and a close. The opening establishes rapport and orients the interviewee to the remainder of the session. You might begin by introducing yourself, asking a few polite questions, and then explaining the purpose and ground rules of the interview.

At this point, you may want to clear the use of notes or a tape recorder with the interviewee, especially if the subject is complex or if you plan to quote the interviewee in a written document such as a business report. The questions in the body of the interview reflect the nature of your relationship with the interview.

For an informational session, such as a market research interview, you may want to structure the interview and prepare a detailed list of specific questions. This approach enables you to control the interview and use your time efficiently. It also facilitates repeating the interview with other participants. You may even like to provide the interviewee with a list of questions before the interview, giving the other person a chance to prepare coherent and well-developed answers.

On the other hand, if the interview is designed to explore problems or to persuade an interviewee, you may prefer a less-structured approach. You might simply prepare a checklist of general subjects and then let the interview evolve on the basis of the participant's responses. In the body of the interview, use a mix of question types. One good technique is to use closed-ended questions to pin down specific facts that emerge during an open-ended response. You might follow up an open-ended response by asking "How many people did you contact to get this information?"

The close of the interview is when you summarize the outcome, preview what comes next, and underscore the rapport that has been established. Restate the interviewee's key points, allowing the person to clarify any misunderstandings or add any other ideas. To signal that the interview is coming to an end, you might lean back in your chair, smile, and use an open, palms-up gesture as you say, "Well, I guess that takes care of all my questions. Would you like to add anything?" If the interviewee has no comments, you might go on to say, "Thank you so much for your help. You've given me all the information; I need to finish my report. I should have it completed within two weeks; I'll send you a copy."

Then you might rise, shake hands, and approach the door. In parting, you could add a friendly comment to reaffirm your interest in the other person: "I hope you have a nice trip to Murree. I was there when I was a kid, and I've never forgotten the experience." From a practical standpoint, you need to be certain that your interview outline is about the right length for the time you've scheduled. People can speak at the rate of about 125 to 150 words (roughly one paragraph) per minute.

Assuming that you are using a mix of various types of questions, you can probably handle about 20 questions in a half hour (or about the same amount of information that you would cover in a 10-to 12-page single-spaced document. However, you may want to allow more or less time for each question and response, depending on the subject matter and the complexity of the questions. Bear in mind that open-ended questions take longer to answer than other types do.

When you have concluded the interview, take a few moments to write down your thoughts. If it was an information gathering session, go over your notes. Fill in any blanks while the interview is fresh in your mind. In addition, you might write a short letter or memo that thanks the interviewee for cooperating, confirms understanding between you and, if appropriate, outlines the next steps.

Participating in Small Groups and Meetings

Working in small groups and attending meetings involve more people and can be more complicated than one-on-one interviews. As more and more corporations embrace the concept of participative management, involving employees in a company's decision making, the importance of teamwork has increased.

At their best, meetings can be an extremely useful forum for making key decisions and coordinating the activities of people and departments. Theoretically, the interaction of the participants should lead to good decisions based on the combined intelligence of the group. Whether the meeting is held to solve a problem or to share information, the participants gain a sense of involvement and importance from their attendance. At worse meetings are unproductive and frustrating. They waste everyone's time and they're expensive.

More important, poor meetings may actually be counter-productive, because they may result in bad decisions. When people are pressured to conform, they abandon their sense of personal responsibility and agree to ill-founded plans. We will now examine how to understand group dynamics, how to arrange meetings, and how to contribute in a productive meeting.

Understanding Group Dynamics

A meeting is called for some purpose, and this purpose gives form to the meeting. People are assembled to achieve a work-related task, but at the same time, each person has a hidden agenda, private motives that affect the group's interaction. Such personal motives either contribute to or detract from the group's ability to perform its task.

Role-Playing

The roles people play in meetings fall into three categories:

- Self-oriented roles
- Group-maintenance roles
- Task-facilitating roles

Members who assume self-oriented roles are motivated mainly to fulfill personal needs, and they tend to be less productive than the other two types. Far more likely to contribute to group goals are: those who assume group-maintenance roles to help members work well together, and those who assume task-facilitating roles to help members solve the problem or make the decision.

To a great extent, the role we assume in a group depends on our status in that group. In most groups, a certain amount of "politics" occurs as people try to establish their relative status. One or two people typically emerge as the leaders, but often an undercurrent of tension remains as members of the group vie for better positions in the pecking order. These power struggles often get in the way of real work.

Self-Oriented Roles

Controlling: dominating other by exhibiting superiority or authority.

Withdrawing: retiring from the group either by becoming silent or by refusing to deal with a particular aspect of the group's work.

Attention seeking: calling attention to self and demanding recognition the group.

Diverting: focusing group discussion on topics of interest to the individual instead of those relevant to the task.

Group-Maintenance Roles

Encouraging: drawing out other members by showing verbal and nonverbal support, praise, or agreement.

Harmonizing: reconciling differences among group members through mediation or by using humor to relieve tension.

Compromising: offering to yield on a point in the interest of reaching mutually acceptable decision.

Task-Facilitating Roles

Initiating: getting the group started on a line of inquiry.

Information Giving or Seeking: offering (or seeking) information relevant to questions faced by the group.

Coordinating: showing relationships among ideas, clarifying issues, summarizing what the group has done.

Procedure Setting: suggesting decision-making procedures that will move the group toward the goal.

Group Norms

A group that meets regularly develops unwritten rules governing the behavior of the members. To one degree or another, people are expected to conform to these norms. For example, there may be an unspoken agreement that it's okay to be 10 minutes late for meetings but not 15 minutes late.

In the context of work, the most productive groups tend to develop norms that are conducive to business. When a group has a strong identity, the members all observe the norms religiously. They are upset by any deviation, and individuals feel a great deal of pressure to conform. This sense of group loyalty can be highly motivated to see that the group succeeds. However, such group loyalty can also lead members into groupthink, the willingness of individual members to set aside their personal opinions to go along with everyone else, even if everyone else is wrong, simply because belonging to the group is important to them.

Group Decision Making

Groups usually reach their decision in a predictable pattern. The process can be viewed as passing through four phases:

- Orientation phase
- Conflict phase
- Emergence phase
- Reinforcement phase

In the orientation phase, group members socialize, establish their roles, and agree on their reason for meeting. In the conflict phase, members begin to discuss their positions on the problem.

If group members have been carefully selected to represent a variety of viewpoints and expertise, disagreements are a natural part of this phase. At the end of this phase, group members begin to settle on a single solution to the problem. In the emergence phase, members reach a decision. Those who advocated different solutions put aside their objection, either because they're convinced that the majority solution is better or because they recognize that arguing is futile. Finally, in the reinforcement phase, group feeling is rebuilt and the solution is summarized. Members receive their assignments for carrying out the group's decision and make arrangements for the following up on these assignments.

Arranging the Meeting

By being aware of how small groups of people interact, meeting leaders can take steps to ensure that their meetings are productive. The key to productive meetings is careful planning of purpose, participants, agenda and location. The trick is to bring the right people together in the right place for just enough time to accomplish your goals.

In order to do that, special attention should be given to the following:

- Determining the purpose
- Selecting the participants
- Setting the agenda
- Preparing the location

Contributing to a Productive Meeting

Whether the meeting is conducted electronically or conventionally, its success depends on how effective the leader is. If the leader is prepared and has selected the participants carefully, the meeting will generally be productive. Listening skills are especially important to meeting leaders; the leader's ability to listen will facilitate good meetings.

As meeting leader, you're responsible for keeping the ball rolling. Avoid being so domineering that you close off suggestions. At the same time, don't be so passive that you lose control of the group. If the discussion lags, call on those who haven't been heard from. Pace the presentation and discussion, you'll have time to complete the agenda. As time begins to run out, interrupt the discussions and summarize what has been accomplished.

Another leadership task is either to arrange for someone to record the proceedings or to ask a participant to take notes during the meeting. As leader, you're also expected to follow the agenda; participants have prepared for the meeting on the basis of the announced agenda. However, don't be rigid. Allow enough time for discussion and give people a chance to raise related issues. If you cut off discussions too quickly or limit the subject too narrowly, no real consensus can emerge.

As the meeting gets underway, you'll discover that some participants are too quiet and other are too talkative. To draw out the shy types, ask for their input on issues that particularly pertain to them. You might say something like "Irfan, you have done a lot of work in this area. What do you think?" For the overly talkative, simply say that time is limited and others need to be heard from.

The best meetings are those in which everyone participates, so don't let one or two people dominate your meeting while others doodle on their notepads. As you move through your agenda, stop at the end of each item, summarize what you understand to be the feeling of the group, and state the important points made during the discussion.

At the end of the meeting, tie up the loose ends. Either summarize the general conclusion of the group or list the suggestions. Wrapping things up ensures that all participants agree on the outcome and gives people a chance to clear up any misunderstandings. As soon as possible after the meeting, the leader gives all participants a copy of the minutes or notes, showing recommended actions, schedules, and responsibilities.

The minutes will remind everyone of what took place and will provide a reference for future actions. Like leaders, participants have responsibilities during meetings. If you've been included in the group, try to contribute to both the subject of the meeting and the smooth interaction of the participants. Use your listening skills and powers of observation to size up the interpersonal dynamics of the people; then, adapt your behavior to help the group achieve its goals. Speak up if you have something useful to say, but don't monopolize the discussion.

LESSON 43

GIVING SPEECHES AND ORAL PRESENTATIONS I

Outline

- Facing a communication dilemma at the Keys Group
- Preparing to speak
 - Defining your purpose
 - Analyzing your audience
 - Planning your speech or presentation
 - Establishing the main idea
 - Organizing an outline
 - Estimate the length
 - Deciding on the style
- Developing formal speeches and presentations
 - The introduction
 - Arousing interest
 - Building credibility
 - You might plan to say something like this
 - Preview the presentation

Facing a Communication Dilemma at the Keys Group

Brad Keys believes that acceptance in the community is the key. His company – the Keys Group – operates 11 KFC fast-food restaurants in Georgia. When Keys started out in the restaurant business nearly 30 years ago, he realized that good food was only half the battle. Keys realized that if he wanted to succeed in business, he'd have to gain people's respect. He'd have to persuade bankers to loan him money and big companies to do business with him. He'd have to convince employees to work hard and customers to trust him but how?

Preparing to Speak

If you were Keys, whether you were addressing a large crowd or an audience of one, what would you need to know about preparing, developing, and delivering speeches?

You need to:

- Define your purpose
- Analyze your audience
- Develop a plan for presenting your points

Defining Your Purpose

Speeches and presentations can be categorized according to their purpose, much as interviews and meetings are. The purpose helps you determine content and style. It also affects the amount of audience participation that occurs. When you're trying to motivate or entertain your audience you generally do most of the talking. During your speech the audience plays an essentially passive role, listening to your remarks but providing little direct input in the form of comments or questions. You control the content of the message. When your purpose is to provide

information or analyze a situation, you and the audience generally interact somewhat to fulfil the objective.

Basically, a group of people meet to hear the oral equivalent of a written report. Then, the audience members offer comments or ask questions. The most interaction occurs when your purpose is to persuade people to take particular action or to collaborate with them in solving a problem or reaching to a decision. You generally begin by providing facts and figures that increase understanding of the subject of your audience. You might also offer arguments in defense of certain conclusions or recommendations.

In addition, you invite the audience members to participate by expressing their needs, suggesting solutions, and formulating conclusions and recommendations. Because persuasive and collaborative presentations involve so much audience interaction, you have relatively little control of the material. To be flexible enough to adjust to new input and unexpected reactions, you cannot adhere to a prewritten script. A speech or presentation can often accomplish several of these purposes simultaneously.

Analyzing Your Audience

Once you have your purpose firmly in mind, think about another basic element of your speech or presentation: your audience. This is particularly important because you'll be gearing the style and content of your speech to your audience's needs and interests. First consider the size and composition of the audience. You can easily involve audience members in your presentation when you speak to a relatively small group. With more than 12 people it gets difficult to manage the give-and-take what's essential to building a consensus, so your approach may lean more toward telling than asking.

A homogenous group will benefit from a focused speech or presentation, a diverse group requires a more generalized approach, using less technical jargon and presenting a broader picture. Another important factor is your audience's likely reaction to your speech or presentation. Decide whether your audience will be hostile, receptive, or indifferent to your point of view. Learn as much as you can about their level of understanding: how much do they already know about your subject?

Take a cold, hard look at their relationship with you:

- Do they already know you?
- Do they respect your judgment?

The answers to the above questions will help you decide on the best way to go about planning your speech.

Planning Your Speech or Presentation

Planning an oral message is similar to planning a written message.

- You develop the main idea
- Construct an outline
- Estimate the appropriate length
- Decide on the most effective style

Establishing the Main Idea

Start by focusing on the “big picture”. What is the main idea (or theme) that you want to convey to the audience? Look for a one-sentence generalization that links your subject and the purpose to the audience’s frame of reference, much as an advertising slogan points out how a product can benefit consumers. For example,

- Demand for your low-calorie, high-quality frozen foods will increase because of basic social and economic trends.
- Reorganizing our data-processing department will lead to better service at a lower cost.
- We should build a new plant in Texas to reduce our operating costs and to capitalize on growing demand in the Southwest.

Each of these statements puts a particular slant on the subject, one that is positive and directly related to the audience’s interest.

Organizing an Outline

With a well-crafted main idea to guide you, you can begin to outline the speech or presentation. Gear the structure:

- The subject
- The purpose
- The audience
- Time allotted for your speech or presentation

If you have ten minutes or less to deliver your message, organize your thoughts as much as you would a letter or brief memo. Use the direct approach if the subject involves routine information or good news, but use the indirect approach if the subject involves bad news or persuasion.

Longer speeches and presentations are organized like reports. If the purpose is to entertain, motivate, or inform, use a direct order imposed naturally by the subject. If the purpose is to analyze, persuade, or collaborate, organize your material around conclusions and recommendations or around a logical argument. Use direct order if the audience is receptive, indirect if you expect simplicity of organization especially useful in oral communication.

A carefully prepared outline may be more than just the starting point for composing a speech or presentation. If you plan to deliver your presentation from notes rather than from a written text, your outline will also be your final “script”. For this reason, the headings on the outline should be complete sentences or lengthy phrases rather than one-or two-word topic headings. Many speakers also include notes that indicate where visual aids will be useful. You might want to write out the transitional sentences; you’ll use to connect main points.

Experienced speakers often use a two-column format that separates the “stage directions” from the content. You may have to adjust your organization in response to input from the audience, especially if your purpose is to collaborate. You might want to think of several organizational possibilities, based on “what if” assumptions about the audience’s reactions.

Estimate the Length

Time for speeches and presentations is often strictly regulated, so you'll need to tailor your material to the available time. You can use your outline to estimate how long your speech or presentation will take.

The average speaker can deliver about 125 to 150 words a minute, which corresponds to 20 to 25 double-spaced, typed pages of text. The average paragraph is about 125 to 150 words in length, so most of us can speak at the rate of about one paragraph per minute. Suppose, for example, that you want to make three basic points. In a 10-minute speech, you could take about 2 minutes to explain each of these points, using roughly two paragraphs for each point.

If you devote a minute each to the introduction and the conclusion, you would have 2 minutes left over to interact with the audience. If you have an hour, you might spend the first 5 minutes introducing the presentation, establishing rapport with the audience, providing background information, and giving an overview of your topic. In the next 30 to 50 minutes, you could explain each of the three points, spending about 10 to 13 minutes per point (the equivalent of 5 or 6 typewritten pages).

Your conclusions might take another 3 to 5 minutes. The remaining 10 to 20 minutes would then be available for responding to questions and comments from the audience. Which is better, the 10 minute speech or the hour long presentation? If your speech doesn't have to fit into a specified time slot, the answer depends on

- Your subject
- Your audience's attitude and knowledge
- The relationship you have with your audience

For a simple, easily accepted message, 10 minutes may be enough. On the other hand if your subject is complex or your audience is skeptical, you will probably need more time. Do not squeeze a complex presentation into a period that is too brief, and don't draw out a simple talk any longer than necessary.

Deciding on the Style

Another important element in your planning is the style most suitable to the occasion. Is this a formal speech or presentation in an impressive setting, with professionally devoted visual aids? Or is it a casual, roll-up-your-sleeves working session? The size of the audience, the subject, your purpose, your budget and the time available for preparation, all determine the style.

In general if you are speaking to a relatively small group, you can use a casual approach that encourages audience participation. A small conference room, with the audience seated around a table, may be appropriate. Use simple visual aids. Invite the audience to interject comments. Deliver your remarks in a conversational tone, using notes to jog your memory if necessary.

On the other hand if you are addressing a large audience and the event is an important one, you will want to establish a more formal atmosphere. Hold the presentation in an auditorium or a convention hall, and seat the audience in rows. Show slides on films to dramatize your message.

Ask people to hold their questions until after you've completed your remarks. Use detailed notes or a complete script to guide your delivery.

Developing Formal Speeches and Presentations

Developing a major speech or presentation is much like writing a formal report, with one important difference: you need to adjust your technique to an oral communication channel. This is both an opportunity and a challenge. The opportunity lies in the interaction that's possible between you and the audience.

When you speak before a group, you can receive information as well as transmit it. You can adjust both the content and delivery of your message as you go along; edit your speech or presentation to make it clearer and more compelling. Instead of simply expressing your ideas, you can draw out the audience's ideas and use them to reach a mutually acceptable conclusion. You can also capitalize on nonverbal signals to convey information to and from your audience.

The challenge lies in maintaining control and accommodating your audience's limitations. To get the benefits of oral communication, be flexible. The more you plan to interact with your audience, the less control you'll have. Halfway through your presentation an unexpected comment from someone in the audience could force you to shift to a new line of thought, which requires great skill.

At the same time, accommodate the limitations of your listeners. To prevent your audience from losing interest or getting lost, use special techniques when developing the various elements of the presentation:

- The introduction
- The body
- The close
- The question-and-answer period
- Visual aids

The Introduction

You have a lot to accomplish during the first few minutes of your speech or presentation, including:

- Arousing your audience's interest in your topic
- Establishing your credibility
- Preparing the audience for what will follow

For this reason, developing the introduction often requires utmost attention.

Arousing Interest

Some subjects are naturally more interesting than others. If you happen to have discussing a matter of profound significance that will personally affect the members of your audience, chances are they'll listen regardless of how you begin. All you really have to do is announce your topic ("Today I'd like to announce the reorganization of the company") the best approach to dealing with an uninterested audience is to appeal to human nature. Encourage people to take the subject personally. Show them how they'll be affected as individuals. For example, when addressing clerical employees about a pension program; you might want to start off like this:

If somebody offered to give you \$200,000 in exchange for \$5 per week, would you be interested? That's the amount you can expect to collect during your retirement years if you choose to contribute to the voluntary pension plan. During the first two weeks, you will have to decide whether you want to participate. Although, for most of you, retirement is many years away; this is an important financial decision. During the next 20 minutes, I hope to give you the information you need to make that decision intelligently.

Make sure your introduction matches the tone of your speech or presentation. If the occasion is supposed to be fun, you might begin with something light; but if you'll be talking business to a group of executives, don't waste their time with cute openings. Avoid jokes and personal anecdotes when you plan to discuss a serious problem. If you're developing a routine oral report, don't be overly dramatic.

Most of all, try to make your introduction natural. Nothing turns off the average audience faster than a trite, staged beginning.

Building Credibility

One of the chief drawbacks of overblown openings is that they damage the speaker's credibility, which is even more important than arousing interest. A speaker with high credibility is more persuasive than a speaker with low credibility.

When developing a speech, it's important to establish your credentials quickly; people will decide within a few minutes whether you're worth listening to. Establishing credibility is relatively easy if you'll be speaking to a familiar, open-minded audience.

The real difficulty comes when you must try to earn the confidence of strangers, especially those predisposed to be skeptical or antagonistic. One way to handle the problem is to let someone else introduce you. That person can present your credentials so that you won't appear boastful, but make sure the person introducing you doesn't exaggerate your qualifications. If you plan to introduce yourself, keep your comments simple. At the same time, don't be afraid to mention your accomplishments.

Your listeners will be curious about your qualifications, so plan to tell them briefly who you are and why you're there. Generally speaking, one or two aspects of your background are all you need to mention:

- Your position in an organization
- Your profession
- The name of your company

You Might Plan to Say Something Like This

I'm Karen Whitney, a market research analyst with Information Resources Corporation. For the past five years, I've specialized in studying high-technology markets. Your director of engineering, John Laborer, has asked me to brief you on recent trends in computer-aided designs so that you'll have a better idea of how to direct your research-and development efforts.

This speaker establishes credibility by tying her credentials to the purpose of her presentation. By mentioning her company's name, her position, and the name of the audience's boss, she lets her listeners know immediately that she's qualified to tell them something they need to know. She connects her background to their concerns.

Preview the Presentation

Giving your audience a preview what's ahead adds to your authority and, more importantly, helps people understand your message. In an oral presentation, however, the speaker provides the framework. Your introduction will summarize your main idea, identify the supporting points, and indicate the order in which you'll develop those points. Once you've established the framework, you can move into developing the body of your presentation, confident that your audience will understand how the individual facts and figures relate to the main idea.

LESSON 44

GIVING SPEECHES AND ORAL PRESENTATIONS II

Outline

- The body
 - Emphasizing structure
 - Holding the audience's attention
- The close
 - Restating the main points
 - Outlining the next steps
- The question and answer period
- The visual aids
 - Designing and presenting visual aids
 - Selecting the right medium
 - Overheads
 - Slides
 - Computers
 - Other visual aids
- Mastering the art of delivery
 - Memorizing
 - Reading
 - Impromptu speaking
 - Preparing for successful speaking
- Delivering the speech
- Handling questions

The Body

The bulk of your speech or presentation will be devoted to a discussion of the three or four main points in your outline. Use the same organizational patterns you'd use in a letter, memo, or report, but keep things simple. Your two goals are making sure the structure of your speech or presentation will be clear and making sure your organization will keep your audience's attention.

Emphasizing Structure

To show how ideas are related in oral presentations, you rely more on words. For the small links between sentences and paragraphs, one or two transitional words will be enough: therefore, because, in addition, etc. To link major sections of the speech or presentation, you'll need to complete sentences such as "Now that we've reviewed the problem, let's take a look at some solutions." Every time you shift topics, stress the connection between ideas. Summarize what's been said; preview what's to come. The longer the speech or presentation, the more important the transitions become. When you present many ideas, the audience has trouble absorbing them and seeing the relationship among them. Listeners need clear transitions to guide them to the most important points. They need transitions to pick up any ideas they may have missed. If you repeat key ideas in the transitions, you can compensate for lapses in the audience's attention.

You can also call attention to the transitions by using gestures, changing your tone of voice or introducing a visual aid.

Holding the Audience's Attention

To communicate your points effectively, you have to maintain the audience's attention. Here are a few helpful tips for creating memorable speeches:

- Relate your subject to the audience's needs.
- People are interested in things that affect them personally.
- Present every point in light of the audience's needs and values.
- Explain the relationship between your subject and familiar ideas. By showing how your subject related to ideas the audience already understands, you give people a way to categorize and remember your points.
- You can also hold the audience's interest by introducing variety into your speech or presentation.

The Close

The close of a speech or presentation is almost as important as the beginning because audience attention peaks at this point. Plan to devote about 10 percent of the total time to the ending. Begin your conclusion by telling listeners that you're about to finish so that they'll make one final effort to listen intently. Don't be afraid to sound obvious. Plan to say something like "in conclusion" or "to sum it all up" to let the people know you are in the home stretch.

Restating the Main Points

Once you have planned how to get everyone's attention, you will repeat your main idea. Be sure to emphasize what you want the audience to do or think. Then state the key motivating factor. Reinforce your theme by repeating the three or four main supporting points.....
A few sentences are generally enough to refresh people's memories.

Outlining the Next Steps

Some speeches and presentations require the audience to reach a decision or agree to take specific action. In such cases the close provides a clear wrap-up. If the audience has agreed on an issue covering the presentation, plan to review the consensus in a sentence or two. If not, make the lack of consensus clear by saying something like "We seem to have some fundamental disagreement on this question." Then you'll be ready to suggest a method of resolving the differences. If you expect any acting to occur, you must explain who is responsible for doing what.

One effective technique is to list the action items, with an estimated completion date and the name of the person responsible. Plan to present this list in a visual aid that can be seen by the entire audience, and ask each person on the list to agree to accomplish his or her assigned task by the target date. This public commitment to action is the best insurance that something will happen.

If the required action is likely to be difficult, make sure everyone understands the problems involved. You don't want people to leave the presentation thinking that their tasks will be easy, only to discover later that the jobs are quite demanding. If that happens, they may become

discouraged and fail to complete their assignments. You'll want everyone to have a realistic attitude and to be prepared to handle whatever arises. So use the close to alert people to potential difficulties while ending your presentation on a positive note.

Make your final remarks enthusiastic and memorable. Even if parts of your speech will be downbeat, try to develop your ending on a positive note. You might stress the benefits of action or express confidence in the listener's ability to accomplish the work ahead. An alternative is to end with a question or statement that will leave your audience thinking. Remember that your final words round out the presentation.

You will leave the audience with a satisfied feeling, a feeling of completeness. The close is not the place to introduce new ideas or later the mood of the presentation. Although you'll want to close on a positive note, avoid developing a staged finale (keep it natural).

The Question and Answer Period

Along with the introduction, body, and close, include in your speech or presentation an opportunity for questions and answers. If you aren't planning to interact with the audience, you're wasting the chief advantage of an oral format. The important thing to consider when you're developing your speech is the nature and timing of that audience interaction. Responding to questions and comments during the presentation can interrupt the flow of your argument and reduce your control of the situation. If you'll be addressing a large group, particularly a hostile or unknown group, questions can be dangerous.

Your best bet in such a case would be to ask people to hold their questions until after you have concluded your remarks. On the other hand, if you'll be working with a small group and will need to draw out their ideas, you'll want to encourage comments from the audience throughout the presentation.

The Visual Aids

Visual aids dramatically increase the audience's ability to absorb and remember information. From a purely practical standpoint, they're a convenience for the speaker who can use them as a tool for remembering the details of the message (no small feat in a lengthy presentation). Novice speakers also like visual aids because they draw audience attention away from the speaker.

Designing and Presenting Visual Aids

Two types of visual aids are used to supplement speeches and presentations.

Text visuals consist of words and help the audience follow the flow of ideas. Because text visuals are simplified outlines of your presentation, you can use them to summarize and preview the message and to signal major shifts in thought.

On the other hand, graphic visual aids illustrate the main points. They help the audience grasp numerical data and other information that would be hard to follow if presented orally. Simplicity is the key to effectiveness when designing both types of visual aids. Because people can't read and listen at the same time, the visual aids have to be simple enough that the audience can understand them within a moment or two. As a rule, text visuals are more effective when they

consist of no more than six lines, with a maximum of six words per line. Produce them in large, clear type, using uppercase and lowercase letters, with extra white space between lines of text.

Make sure the type is large enough to be seen from any place in the room. You should phrase list items in parallel grammatical form. Use telegraphic wording (for example “Compensation soars”) without being cryptic (“Compensation”). It is a good idea to include both a noun and a verb in each item. You can use any of the graphic visuals you might show in a formal report, like pie charts, bar charts, and flow charts, etc. The graphic visuals used in oral presentations are simplified versions of those that appear in written documents.

Eliminate anything that is not absolutely necessary to the message. To help the audience focus immediately on the point of each graphic visual, use headings that state the message in one clear phrase, like “Earnings have increased by 15 percent”. When you present visual aids, you’ll want people to have the chance to see what’s there, but you’ll also want them to listen to your explanation. Be sure all members of the audience can see the visual aids. Allow the audience time to read a visual aid before beginning your explanation.

Limit each visual aid to one idea. Illustrate only the main points, not the entire presentation. Use no visual aids that conflict with our verbal message. Paraphrase the text of your visual aid; don’t read it word for word. When you’ve finished discussing the point illustrated by the visual aid, remove it from the audience’s view.

Selecting the Right Medium

Visual aids for documents are usually limited to paper. For speeches and presentations, however, you have a variety of media to choose from:

Handouts

In a presentation, you may choose to distribute sheets of paper bearing an agenda, an abstract, supplementary data, etc.

Chalkboard and whiteboards

These are of value when you want to draw out ideas in a small group of people.

Flip charts

Large sheets of paper attached at the top like a tablet can be propped on an easel so that you can flip the pages as you speak.

Overheads

One of the most common visual aids in business is the overhead transparency which can be projected on a screen in full daylight. Transparencies are easy to make using a typed original on regular paper, a copying machine, and a page-size sheet of plastic.

Slides

The content of slides may be text, graphics, or pictures. If you’re trying to create a polished, professional atmosphere, you might find this approach worthwhile, particularly, if you’ll be addressing a crowd that doesn’t mind speaking in a darkened room. Remember that you may

need someone to operate the projector and that you'll need to coordinate the slides with your speech. Take a few minutes before your speech to verify that the equipment works correctly.

Computers

With a special projector, a personal computer can be turned into a large-screen “intelligent chalkboard” that allows you to create and modify your visual aids as the presentation unfolds. When the presentation is over, you can printout hard copies of the visual aid and distribute them to interested members of the audience. You can also use a computer-generated slide show which gives you the opportunity to make changes right up to the minute you start speaking.

Other Visual Aids

In technical or scientific presentations, a sample of a product or material allows the audience to experience your subject directly. **Models** built to scale are convenient representations of an object. **Filmstrips and movies** can capture the audience's attention with color and movement. **Television and videotapes** are good for showing demonstrations, interviews, and other events.

Mastering the Art of Delivery

When you've planned all the parts of your presentation, and have your visual aids in hand, you're ready to begin practicing your delivery. You have a variety of delivery methods to choose from; some of which are easier to handle than others.

Memorizing

Unless you're a trained actor, avoid memorizing an entire speech, particularly long one. You're likely to forget your lines. A memorized speech often sounds very stiff and stilted. On the other hand, memorizing a quotation, an opening paragraph, or a few concluding remarks can bolster your confidence and strengthen your delivery.

Reading

If you're delivering a technical or complex presentation, you may want to read it. Policy statements by government officials are sometimes read because the wording may be critical. If you choose to read your speech, practice long enough so that you can still maintain eye contact with the audience.

Making a presentation with the help of an outline, note cards, or visual aids is probably the most effective and easiest delivery mode. You have something to refer to and can still have eye contact and interaction with the audience. If your listeners look puzzled, you can expand on a point or put it in another way. Generally, note cards are preferable to sheets of paper; nervousness is more evident in shaking sheets of paper.

Impromptu Speaking

Avoid speaking unprepared unless you've spoken countless times on the same topic or you are an extremely good public speaker. When you are asked to speak “off the cuff”, take a moment to think through what you're going to say and avoid the temptation to ramble.

Mastering the Art of Delivery

Regardless of which delivery mode you use, be sure that you're thoroughly familiar with the subject. Knowing what you're talking about is the best way to build your self-confidence. It's also helpful to know that how you'll approach preparing for successful speaking, delivering the speech, and handling questions.

Preparing for Successful Speaking

You can build self-confidence by practicing, especially if you haven't had much experience with public speaking. Even if you practice in front of a mirror, try to visualize the room filled with listeners. Put your talk on tape to check the sound of your voice and your timing, phrasing, and emphasis. If possible, rehearse on videotape to see yourself as your audience will. Go over your visual aids and coordinate them with the talk. Whenever you can, check the location for your presentation in advance, and locate the light switches and dimmers. Check for any small but crucial items that you might need, like chalk and eraser.

If you're addressing an audience that doesn't speak your language, consider using an interpreter. Anytime you make a speech or presentation to people from other cultures, take into account cultural differences in appearance, mannerisms, and other customs, in addition to adapting the content of your speech.

Delivering the Speech

At the time to deliver the speech, you may feel a bit of stage fright. Most people do, even professional actors. A good way to overcome your fears is to rehearse until you're thoroughly familiar with your material. Communication professionals have suggested other tips, which we will now go over:

- Prepare more material than necessary. Extra knowledge, combined with a genuine interest in the topic, will boost your confidence.
- Think positively about your audience, yourself, and what you have to say.
- See yourself as polished and professional, and your audience will too.

Be realistic about stage fright. After all, even experienced speakers admit that they feel butterflies before they address an audience. Tell yourself you're ready. Use the few minutes while you're arranging your materials, before you actually begin speaking, to tell yourself you're on and you're ready.

Before you begin speaking, take a few deep breaths. It will help you calm down and improve your delivery. Have your first sentence memorized. Having your opening on the tip of your tongue helps you get started, and everything else starts falling into place. If your throat is dry, drink some water. Tension often causes your mouth to become dry. It is best to have a few sips of water before you begin.

Don't panic if at any time during the speech you feel like you're losing your audience. Try to pull them back by involving them in the action. Use your visual aids to maintain and revive audience interest. Visual aids, especially those involving color and movement, are much better at getting back the audience's attention than any words you may have for them. Keep going, things usually get better, and your audience will silently be wishing you success.

Handling Questions

The key to handling this segment effectively is preparation. Spend time, before your speech, thinking about the questions that might arise including abrasive or difficult questions, and prepare accordingly. Some experts recommend that you hold back some dramatic statistics as ammunition for the question-and-answer session. However, bear in mind that circumstances may require some changes in the answers you prepare. When someone poses a question, focus your attention on that individual. If the question is vague or confusing ask for clarification. Then give a simple, direct answer. Don't say more than you need to if you want to have enough time to cover all the questions.

If giving an adequate answer would take too long, simply say "I'm sorry that we don't have enough time to get into that issue right now, but if you'll see me after the presentation, I'll be happy to discuss it with you." If you don't know the answer, don't pretend that you do. Instead of pretending, say something like "I don't have those figures. I'll get them for you as quickly as possible." Don't allow one or two people to monopolize the question period. Try to give everyone a chance to participate; call on people from different parts of the room.

If the same person keeps angling for attention, say something like "Several other people have questions; I'll get back to you if time permits". If audience members try to turn a question into an opportunity to mount their own soapboxes, it's up to you to maintain control. You might admit that you and the questioner have a difference of opinion and offer to get back to the questioner after you've done more research.

Don't indulge in put-downs which may backfire and make the audience more sympathetic to the questioner. Prepare the audience for the close of session by saying "Our time is almost up, let's have one more question", even if more people want to talk. After your reply, summarize the main idea of the presentation and thank people for their attention. Conclude the same way you opened: by looking around the room and making eye contact. Then gather your notes and leave the podium, shoulders straight, head up.

LESSON 45

REVIEW WRITTEN COMMUNICATION

Outline

- Reading
- Modes of delivery
- Delivery guidelines

Reader Centered Writing

- Writing your resumes
 - Defining your objectives
 - Planning
 - Drafting
 - Evaluating
 - Revising
- Writing your letter of application
 - Defining your objectives
 - Planning
 - Drafting
 - Evaluating
 - Revising

Audience Analysis

- Target your audience by identifying audience type, characteristics and level of expertise.
- Determine your audience's needs by assessing their expertise and their purpose in reading the document.
- Determine document density.

Defining Objectives

- Defining objectives
- Document purpose
 - Implicit purpose
 - Explicit purpose
- Why do we need documents?

Identify the tasks you will help your readers perform while they read. Tell how you want to change the readers' attitudes. Learn your readers' important characteristics. Learn who your readers will be. Fill in a sample worksheet that should be kept in mind when defining objectives. Learn the importance of 'Appropriateness' in business and technical communication.

Fundamentals of Communication

The importance of appropriateness

- Accuracy
- Clarity
- Conciseness

- Coherence

The 7 Cs: Clarity

- Answer all questions; stated as well as implied questions of the questionnaire must be answered..
- Give extra information when desirable.
- Use one word in place of phrases; one sentence in place of two.
- Read out loud to listen for wordiness.
- Omit outdated trite expressions.
- Ask yourself: what material is really relevant?
- Look for unnecessary repetition: Does the same word or idea appear too often?
- See your material from reader's point of view. 'You' is more desirable than 'I' or 'we' in most instances.
- Readers like to see these benefits. Be sure benefits are a prominent part of the message.
- Consciously use positive words.
- Were you precise in using facts and figures whenever possible?
- Choose as precise or as concrete a word as possible.
- Did you use active voice more than passive?
- Is there action in verbs rather than in nouns?
- Did you try occasionally to use vivid, image building words? But in business writing use them sparingly.
- Select words that have high sense of appropriateness for the reader.
- Opt for familiar words, the ones that are not pretenses present.
- Limit the average sentence to 17 to 20 words.
- Insert no more than one main idea into a sentence.
- Arrange words so that the main idea occurs early in a sentence.

Planning Business Messages

- Describe the basic tasks in the composition process.
- Define both general and specific purposes of your business message.
- Test the purpose of your message.
- Develop an audience profile.
- Analyze the needs of your audience.
- Establish the main idea of your message.
- Select an appropriate channel or medium for transmitting a particular message to a particular audience.

Composing Business Messages

- Identify the characteristics of a well-organized message.
- Explain why organization is important to both the audience and the communicator.
- Break a main idea into subdivisions grouped under logical categories.
- Arrange ideas in direct or indirect order, depending on the audience possible reaction.
- Compose a message using a style and tone that are appropriate to your subject, purpose, audience and format.

- Use the 'you' article to interest the audience in your message.

Revising Business Messages

- Edit your messages for content and organizational style and readability.
- Choose the most correct and most effective words to make your point.
- Rewrite the sentences to clarify the relationships among the ideas and to make your writing interesting.
- Identify the elements of paragraph.
- Choose the best design for written documents.
- Rewrite paragraphs using the appropriate development techniques.
- Proofread your message for mechanics and format.

Memorandum

- Memoranda are brief, informal reports used to establish a record. They generalize the communication process by transmitting the message from one or more authors to one or more recipients.
- E-mail messages typically take the form of memoranda.

Letters

- Use letters to communicate outside your organization. Whereas the memorandum is the primary vehicle for communication within an organization, letters are often used to communicate to individuals outside it, especially in formal and semiformal contexts.
- Letters are an essential part of all business and technical communication because they are more formal and reliable than electronic mail and more precise and permanent than telephone or face-to-face conversations.

Letters of Inquiry

Format of a letter of inquiry

Components of a letter of inquiry:

- Head
- Body
- Footer
- Headings

Letters of Recommendation

- Format of a letter of recommendation
- Components of a letter of recommendation:
 - o Head
 - o Body
 - o Footer
 - o Headings
- Methods of obtaining letter of recommendation
- General guidelines for writing letter of recommendation

Writing Direct Requests

- Why you follow the customs of your audience when making requests across cultural boundaries.
- Clearly state the main idea of each direct request you write.
- Indicate/express your confidence that the request will be filled.
- Provide a sufficient detail for the reader to be able to comply with your request.
- Clarify complicated request with lists and tables.
- Close with a courteous request for specific action.

Writing Routine, Good-News and Goodwill Messages

- Decide when to write a routine, good-news, or goodwill message.
- Adjust the basic organizational pattern to fit the type of message you are writing.
- Add resale and sales promotion material when appropriate.
- Encourage your reader to take any desired action.
- Write credit approvals and recommendation letters.
- Use the correct form for such specialized messages as instructions, news releases, and goodwill letters.

Writing Bad News Messages

- Choose correctly between indirect and direct approaches to a bad-news.
- Establish the proper tone from the beginning of your message.
- Use neutral lead-ins to put your audience in an accepting mood.
- Present bad news in a reasonable and understandable way.
- Write message that motivate your audience to take constructive action.
- Close messages so that your audience is willing to continue a business relationship with your firm.

Writing Persuasive Messages

- Strengthen your persuasive messages with appropriate appeal.
- Gain credibility by supporting your persuasive message with relevant facts.
- Use attention, interest, desire, and action (the AIDA plan) to organize persuasive messages.
- Write a message persuading your audience to take action or grant you an adjustment.
- Design a sales letter around selling points and benefits.

Writing Short Reports

- Identify the qualities of good reports and proposals.
- Choose the proper length and format of your report.
- Decide when to use direct versus indirect order.
- Organize informational and analytical reports.
- Establish an appropriate degree of formality in the in a report.
- Use headings, lists, transitions, openings and summaries to guide readers through the report.

Planning Long Reports

- Define the problem to be solved by studying and outlining the issues to be analyzed.
- Identify and analyze the issues that have to be analyzed during your study.

- Prepare a work plan for conducting your investigation, planning the necessary steps, estimating their timing, and deciding on the sources of information required.
- Organize the research phase of the investigation, including the identification of secondary and primary sources of data.
- Draw sound conclusions and develop practical recommendations.
- Develop a final outline and visual aid plan for the report.

Writing Long Reports

- Describe how organizations produce formal reports and proposals.
- Prepare all necessary parts of a formal report.
- Select and prepare the visual aids to support the text of your report.
- Assemble all the parts of a formal report in the proper order and use an appropriate format. Prepare and assemble all the parts of a formal proposal.
- Critique formal reports prepared by someone else.

General Reports

- Varieties of report-writing situations
- How your readers want to use the information you provide
- The questions readers ask most often
- Sample outlines
- Planning guide
- Sample reports

General superstructure for reports

- Introduction
- Method of obtaining facts
- Facts
- Discussion
- Conclusions
- Recommendations

Empirical Research Report

- Typical writing situations
- The questions readers ask most often
- Superstructure for empirical research reports
- Introduction
- Objectives of research
- Method
- Discussion
- Superstructure for empirical research reports
- Conclusions
- Recommendations
- An important note about headings
- Planning guide

- Sample research report

Feasibility Reports

- Typical writing situation
- The questions readers ask most often
- Superstructure for feasibility reports
- Introduction
- Criteria
- Two ways of presenting criteria
- Importance of presenting criteria early
- Sources of your criteria
- Four common types of criteria
- Method of obtaining facts
- Overview of alternatives
- Evaluation
- Choose carefully between the alternating and divided patterns
- Dismiss obviously unsuitable alternatives
- Put your most important point first

Progress Reports

- Typical writing situations
- The readers' concern with the future
- The questions readers most often ask
- Superstructure for progress reports
- Introduction
- Facts and discussion
- Answering your readers' questions
- Providing the appropriate amount of information
- Organizing the discussion
- Emphasizing important findings and problems
- Conclusions
- Recommendations
- A note on the location of conclusions and recommendations
- Tone in progress reports
- Sample outlines
- Planning guide
- Sample progress report

Proposals

- The variety of proposals-writing situations
- Proposal readers are investors
- The questions readers ask most often
- Strategy of the conventional superstructure for proposals
- Superstructure of proposals

- Introduction
- Problem
- When readers define the problem for you
- When readers provide a general statement of purpose
- When you must define the problem yourself
- Objectives
- Product
- Method
- Resources
- Schedule
- Management
- Costs

Instructions

- The variety of instructions
- Three important points to remember
- Instructions shape attitudes
- Good visual design is essential
- Page design
- Visual aids
- Testing is often indispensable
- Conventional Superstructure for Instructions
- Introduction
- Subject
- Aim
- Intended Readers
- Scope
- Organization
- Usage
- Motivation
- Background

Using Visual Aids

Look for places where visual aids will help you achieve your communication objectives:

- Choose visual aids appropriate to your objectives
- Make your visual aids easy to understand and use
- Fully integrate your visual aids with your prose

Creating Twelve Types of Visual Aids

How to construct

- Tables
- Bar graphs
- Pictographs
- Line graphs

- Pie charts
- Photographs
- Drawings
- Diagrams
- Flow charts
- Organizational charts
- Schedule charts
- Budget statements

Writing Specifications and Analysis Reports

- Types of specifications common to the computer industry
- Importance and main features of analysis reports
- It will be noted that terms and conventions often differ from company to company, but the general framework is similar.

How to Avoid Common Problems

- Writer's block
- Lack of a well-defined purpose
- Poorly analyzed structure
- Lack of coincidence
- Organizational problems
- Punctuation problems
- Readability problems
- Writing style problems
- Organizational logic
- Mechanical development of the topic
- Writer's style
- Quality of the manuscript

Language Review-Paragraph

- Paragraph unity
- Topic sentences
- Paragraph coherence
- Transitional devices
- Transitional words and phrases
- Common transitional words and phrases
- Linking pronouns
- Repetition of key words
- Paragraph development
 - Exemplification
 - Narration
 - Process
 - Description
 - Comparison and contrast

- o Analogy
- o Cause and effect
- o Classification and division
- o Definition
- o Analysis
- o Enumeration

Language Review-Sentences

- Stacked modifiers and nouns
- Wordiness
- Passive voice and active voice
- Nominalizations
- Unnecessary repetition
- Unnecessary words and phrases
- Overloaded sentences
- Sentence Fragments
- Comma splice
- Fused sentences
- Stringy sentences
- Agreement
- Subject-verb agreement
- Two or more nouns
- Sentences beginning with there
- Indefinite pronouns
- Collective nouns
- Quantifiers
- Pronoun-antecedent agreement

Language Review-Sentence II

- Lack of parallelism
- Choppy sentences
- Misplaced modifiers
- Interrupted sentence structure
- Modifiers of nouns
- Adverb modifiers
- Dangling modifiers
- Double negatives
- Inappropriate shifts
 - o Tense
 - o Mood
 - o Person
 - o Voice
- Sequence of tenses
- Pronoun Reference
 - o Unclear pronoun reference

- Broad pronoun reference
- Pronoun case

Language Review-Words and Punctuation I

- Abstract and general language
- Vague language
- Ornate language
- Technical terms
- Biased language
 - Ageist language
 - Language biased against people with disabilities
 - Ethnically and racially biased language

Punctuation

- Periods
- Commas
 - Introductory elements
 - Coordinating conjunctions joining independent clauses
 - Elements in a series
 - Coordinate modifiers
 - Nonrestrictive modifiers
 - Parenthetical elements
 - Elliptical constructions
 - Specialized uses of commas
 - Superfluous commas
 - Placement of commas with other Punctuation
- Colons
- Semicolons
- Question marks
- Exclamation marks
- Apostrophes
- Quotation marks
- Hyphens
- Dashes
- Parentheses
- Brackets

Language Review-Mechanics

- Capitalization
- Italics
- Abbreviations
- Acronyms
- Numbers
- Enumeration
- Symbols

- Equations
- Spelling

Listening and Interviewing

- Apply the communication process to oral communication.
- Summarize the skills involved in being an effective listener.
- Identify nine common types of business interviews.

Planning Interviews and Conducting Meetings

- Define four types of interview questions and clarify when to use each type.
- Describe how groups make decisions. Discuss the preparations and duties necessary for productive meetings.

Giving Speeches and Oral Presentations

- Categorize speeches and presentations according to their purpose, analyze the audience for speeches and presentations, and discuss the steps required in planning a speech or presentation.
- Develop an introduction, a body, and a close for a long formal presentation.
- Select, design, and use visual aids that are appropriate for various types of speeches and presentations.
- Deliver your speech or presentation and handle audience questions effectively.

REMEMBER IN PRAYERS
KEEP SMILING
SAY NO TO CURRUPTION
HELP TO OTHERS

Regards,
AARISH ALI & TEAM

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