The Outline

- An outline has much the same use to the technical writer that a map has to the serious traveler.

- You also need a route in order to get where you are going in your writing.

- The route you take is your method of development. The actual physical map that you will use is your outline.

- **Like a map, your outline will help you in a number of different ways:**

1. It forces parallel structure of your ideas.

2. It allows for easy evaluation of your organization and development.

3. It shows you completeness

4. It saves you time.

1. Outlining forces parallel structure of your ideas

- This simply means that ideas of equal importance get equal emphasis.

- Ideas of lesser importance are always subordinate to some idea of greater importance and related to that idea.

- The very act of outlining forces this.

    I. First Main Idea

        A First subtopic subordinate to I

        B. Second subtopic subordinate to I

    II. Second Main Idea

2. Outlining allows for easy evaluation of your organization and development

- Has a dual advantage:
  - evaluate your approach to your writing assignment,
  - anyone who must pass approval on the writing project can give preliminary approval.
- This has tremendous value in speeding up the process of revising, correcting, and rewriting.

- If, while looking over an outline, you notice a violation of logic or fact, you can make the change far easier and faster than trying to pick it out of the finished text.

3. Outlining shows you completeness

- There is nothing worse than trying to write something and getting to the end of it only to realize that you have left something out.

- Outlining allows you to rework transitions and make sure that what *YOU* have to move or add fits smoothly before even writing.

- You can spot the problem quickly and make the addition or deletion easily.

4. Outlining saves you time

- The greatest value in outlining and, ironically, the most overlooked.

- Writers who outline as a regular, systematic procedure save themselves time because The outline will point out defects clearly and allow their repair long before they are in final prose.

- By not taking the time to write an outline, you probably are causing yourself the inconvenience and aggravation of time-consuming rewrites.

- You can't outline something in your mind.
- You must write it down on paper and follow it as you write.

- There are basically three ways to format an outline:

  - Simple list

  - Academic outline

  - Engineering outline

1. Simple List

- It will suffice for all brief and simple written communications, such as memos and brief letters.

- It is amazing to find out how often the simple memo has left out needed information such as time, place, or someone's name.

- This is why even these simple and brief messages should be outlined at least in a simple list form.

- The greatest advantages of a list are speed and simplicity.
- It is an outline that you can write simply and quickly for a routine message.
- Be careful not to use this for any writing that requires more than a simple parallel structure.

  Memorandum
  1. Announce meeting at 2:00 P.M.
  2. Have section heads bring weekly reports.
  3. Mention change in travel policy.

2. Academic Outline

- Called "academic" mainly because it is the kind of outline format most commonly taught in high schools and colleges.

- It uses a combination of Roman numerals, Arabic numerals, and uppercase and lowercase English letters.

- This format has the advantage of distinctly separating the various parallel structures in the outline.

- You can see the divisions at a glance.
- For example:

  I. Main Heading

     A. First subtopic under main heading

     B. 2nd subtopic under main heading

        1. First subtopic under B

        2. Second subtopic under B

           a. First subtopic under 2

           b. Second subtopic under 2

  II. Main Heading

3. Engineering Outline

- Called an *engineering outline* because of its almost exclusive use in the scientific and engineering communities.

- Has the advantage of being able to go to any level of complexity of detail without repeating symbols.

- Because of the meticulous detail many engineering and scientific reports need, this advantage is a real one.

- Another advantage is the immediate ability to number all levels of the actual prose in accordance with the outline.

- For example:

    1 Main Heading

    　　1.1 First subtopic under 1

    　　1.2 Second subtopic under 1

    　　　　1.2.1 First subtopic under 1.2

    　　　　1.2.2 Second subtopic under 1.2

    　　　　　　1.2.2.1 1st subtopic under 1.2.2

    　　　　　　1.2.2.2 2nd subtopic under 1.2.2

    2 Main Heading

Know Your Purpose and Outline First.

- **Outlining:** create a hierarchy of your ideas.

- **Outlining** helps you to identify (1) what your main points are, (2) what supporting material is available, and (3) what other information you need to include.

Progress Report for January 2002

I. Background

    A. Detailed plan regarding staff hired in Dec. 2007

    B. Objectives set for the first month

        1. Training/Orientation

        2. End-of-Month testing

II. Work completed to date

    A. Developed a training plan and presented it to the necessary committee

    B. Plan approved Jan. 2008

III. Work to be completed

    A. Plan to be initiated by March 2008

    B. Contact new staff

    C. Train new staff

Topic Outline

Choices in College and After

Thesis: The decisions I have to make in choosing college courses, depend on larger questions I am beginning to ask myself about my life's work.

 I. Two decisions described

  A. Art history or chemistry

    1. Professional considerations

    2. Personal considerations

  B. A third year of French?

    1. Practical advantages of knowing a foreign language

    2. Intellectual advantages

    3. The issue of necessity

II. Definition of the problem

  A. Decisions about occupation

  B. Decisions about a kind of life to lead

III. Temporary resolution of the problem

  A. To hold open a professional possibility: chemistry

  B. To take advantage of cultural gains already made: French

Sentence Outline

Choices in College and After

Thesis: The decisions I have to make in choosing college courses depend on larger questions I am beginning to ask myself about my life's work.

I. I have two decisions to make with respect to choosing college courses in the immediate future.

    A. One is whether to elect a course in art history or in chemistry.

        1. One time in my life, I planned to be a chemical engineer professionally.

        2. On the other hand, I enjoy art and plan to travel and see more of it.

    B. The second decision is whether to continue a third year of French beyond the basic college requirement.

        1. French might be useful both in engineering and travel.

        2. Furthermore, I am eager to read good books which are written in French.

        3. How necessary are these considerations in the light of other courses I might take instead?

II. My problem can be put in the form of a dilemma involving larger questions about my whole future.

    A. On the one hand I want to hold a highly-trained position in a lucrative profession.

    B. On the other hand I want to lead a certain kind of life, with capacities for values not connected with the making of money.

Report writing guidelines

- Format of Technical Reports
  - Front material
  - Main Text
  - Back matter
- Front matter
  - Letter of transmittal: Per company guidelines
  - Title page
    - Title, team members, report date
  - Preface
    - Briefly introduces the reader to the report. Includes subject, purpose, acknowledgements.

Report writing guidelines

- Table of contents
- List of figures
- Abstract or summary: A mini-report
  - Summary is written last
  - Excludes all the supporting materials
  - Includes the objective, the approach, the results, and the conclusions and recommendations.

The Structure of a Report

1. Title Page
2. Table of Contents
   - List of Figures
   - List of appendices
3. Executive Summary

The Structure of a Report

4. Introduction
5. The Body
   - Procedures
   - Findings
   - Recommendations
   - Conclusion
6. Appendix

Letter of Transmittal

- It contains information related to the report. Keep it simple, brief and friendly.

- Background Information (title & Purpose)

- Summarize conclusions and recommendations

- Acknowledge Assistance. Thank those who helped. Also offer to help in any comment, answer questions.

- Additional research necessary

- Thank the reader.

Sample: Letter of Transmittal

A Letter of Transmittal accompanies a business report and may take the form of a simple memo with the following parts:

TO: Dr. Rose Norman

FROM: Heather Cross

DATE: June 24, 2008

SUBJECT: EH 501 Final Report: An Analysis of Training Manuals for Peer Tutors in
        Post-secondary Writing Centers

[Open with an overview.]
Enclosed you will find my final report for EH 501 entitled "An Analysis of Training Manuals for Peer Tutors in Post-Secondary Writing Centers" due December 7, 1999.
[Then state your main finding] From interviews with five writing center directors and four consultants, I found that each writing center has its own unique circumstances for training. The manuals from these same writing centers do contain some consistent areas of attention. The manual produced for the University of Alabama in Huntsville Writing Center should reflect these findings.

[Then comes the descriptive abstract.]
The purpose of this report is to develop recommendations for a new training manual for peer tutors in a post-secondary writing center. Initially the report gives **a brief description** of the writing center environment, pedagogy, and theory. For the specific application of peer tutor training, the findings from interviews with Dr. Diana Calhoun Bell—director of the UAH Writing Center, directors of other writing centers, and consultants are presented. The report compares information from these practitioner inquiries with the content and form of the sample manuals obtained from three other university writing centers and with the existing UAH manual. The report concludes with recommendations for the UAH Writing Center's Training Manual.

[Then add whatever else you need to say.]
After an initial email request to twenty-five writing centers, I was able to collect three peer tutor training manuals and receive answers to interview questions from two other directors. I interviewed four consultants in the UAH Writing Center using an abbreviated form of the questions. Dr. Bell has continued to express interest in this study and its continuation into an actual product. I hope to undertake the writing of the UAH Writing Center Consultant Training Manual as an independent study in the next semester.

Enclosure: Final Report (2 Copies)

Table of contents

- Your report should include a table of contents if longer than about 5-10 pages. This allows the reader to quickly find the relevant section. While many word processing packages will automatically generate a table of contents, it is wise to check that the page numbers are correct before printing and before submission.

2. Table of contents

Table of Contents

Acknowledgements

- If anyone has substantially contributed to the production of the report but not enough to be considered an author, their help should be acknowledged. This includes people who edited the document, provided funding to support the work or offered useful suggestions.

Acknowledgements

- Keep track of those to be acknowledged-keep a diary so that you don't forget anyone
- Include: your sponsor, outside sources (companies or agencies), other departments on campus, individuals outside of your team who have helped
- Be brief

Abstract

- Think of it as a substitute for the report for a busy reader
- Length never less than three sentences or longer than a full page. Often 200 words.
- Sentence One: expand on the title
- Sentence Two: why the work was done
- Remainder: key results, with numbers as appropriate, conclusions, recommendations

Abstract

- Its purpose is letting the readers understand the gist of the research paper to be presented during a seminar or a conference.
- is written for orientation
- Always comes first
- Used in research papers – contains key info from each section
  - Contains essential information only – it is brief!
  - Covers research highlights
  - Gives the research problem and/or main objective of the research
  - Indicates the methodology used
  - Presents the main findings and conclusions

Rules for writing Abstract

- It is best to use numbers instead of approximations (near, about)
- Important things should come first
- Use direct, active and simple sentences
- It is a short form of the entire research paper.
- It contains the subject matter of the research paper in a nutshell.

Abstract: Illustration

- This article proposes. . .[a general semiparametric model . . .]. . . This model provides. . . [tests]. . . This contrasts with previous approaches based on . . . We demonstrate that conditional likelihood is robust to . . . Its main advantages are that. . . A case study of spike data illustrates that this method. . .

Abstract example

A nonlinear finite element procedure for the pre- and post buckling analysis of thin-walled box-section beam-columns is presented. The influence of local plate buckling upon the overall ultimate buckling behavior of the member is incorporated in the analysis by adopting a set of modified-stress – versus – strain curves for axially loaded plates. Factors such as residual stresses, associated with hot-rolled and cold-formed sections, and initial geometrical imperfections are. Accounted for in the analysis. A number of examples are presented to demonstrate the accuracy and efficiency of the method.

Executive Summary

- A brief account of the work done, the major findings and conclusions.

- It allows the reader the opportunity to make an informed decision as to the importance of the rest of the report to them.

- It allows busy executives to get the gist of a report rapidly and hence make decisions. It needs to be concise, factual and interesting.

- This summary should be written last.

Executive Summary?

- It provides the reader with an overview of the report's essential information.

- It is designed to be read by people who *will not* have time to read the whole report or *are deciding* if this is necessary

- should be written in non-technical language.

- An executive summary should have conclusion at the end.

- should attempt at making a recommendation at the end

How to Write an Executive Summary?

- Consider an executive summary to be a narrative account of the report.

- The executive summary should briefly give an account to the subject matter.

- The executive summary should not just be an outline of the points to be covered in the report with no detail of the analysis that has taken place or conclusions that have been reached.

Executive Summary Example

EXECUTIVE SUMMARY

This report analyzes plans for revitalizing the downtown area and offers recommendations for future development.

Future development in the downtown corridor should make our city attractive to businesses by improving our city's image. Over the past year, two separate proposals have been made to the city council for publicly funded projects: a new sports complex for a major-league soccer franchise and a new performing arts center. In this report, a cost-benefit analysis has been developed in order to ascertain the best use of designated downtown sites.

Analysis of Proposed Soccer Stadium

Despite the popular appeal of major-league soccer in the area, the projected impact of a sport stadium has been greatly exaggerated. The location of the new baseball park on the northwest side contributed only 75 new jobs in the area and failed to attract entertainment businesses to the surrounding neighborhood. The economic impact of a new soccer stadium would be negligible. Since the early 1980s, nearly all new retail development has occurred in suburban areas, while urban areas have languished. In 1990, the Marsalis Center was constructed around the new baseball stadium with taxpayer support as part of an urban renewal project, but now over 60% of the shops in the downtown Marsalis Center are closed.

Report components

- **Introduction**
  - Purpose and Scope; Limitations, Assumptions, and Methods
- Background/History of the Problem
- **Body**
  - Presents and interprets data
- **Conclusions and Recommendations**
- **References or Works Cited**
- **Appendixes**
  - Interview transcripts, questionnaires, question tallies, printouts, and previous reports

INTRODUCTION/Background

- This describes the background to the report, the reasons for doing the work and the aims of the work.

- It should set up the rest of the report in such a way as to leave the reader in no doubt as to why they are reading the report and what they are going to get out of it.

- Explains the research problem and its context
  - Why is more information needed?)
  - Explains reason and goals for study
  - Explains the limitations of the research performed

Introduction

- Introduction is describing the nature and scope of the problem.
- provides clarification for the rest of the report.
- **Goals**
  - Convey Importance, Impact of research results
  - Attract readers
- **Content**
  - General Context
    - What is the problem?
    - Why care about the work?

How to Write an Introduction?

The introduction presents:

- the background to the issue (i.e. why was the report commissioned),

- the objective or purpose of the report

- a definition of the problem/topic

- a description of the range of sources used (i.e. feedback, analysis, figures and statistics)

- acknowledgment of any valuable assistance received in the preparation of the report

Difference Between the Executive Summary and the Introduction

- The purpose of the executive summary is to provide a summary of the findings of each section of the report.

- The purpose of the introduction, however, is to outline what the report will cover and how these issues address the research problem.

Main Body

- Text with headings and sub-headings
- The main part of the report is here. The headings and sub-headings will vary from report to report but some common ones include:
  - Materials and Methods;
  - Results;
  - Analysis;
  - Mathematical Modeling;
  - Discussion.

Main Body

- In subsequent paragraphs, group related information together.
- Include only one key point in each paragraph or section.
- When listing information in paragraph format, use first, second, third..etc. to help your reader easily follow the organization of your document.

Main Body

- Feel free to use others if appropriate.
- The headings should be self-explanatory.
- The main body of the report needs to be clear, concise and follow a logical order.
- Figures and tables must be referred to in the body of the text and need to have clear captions.
- Label figures at the bottom and tables at the top in numerical order.
- Each figure should be capable of being understood on its own using the caption as the only reference.

Graphs

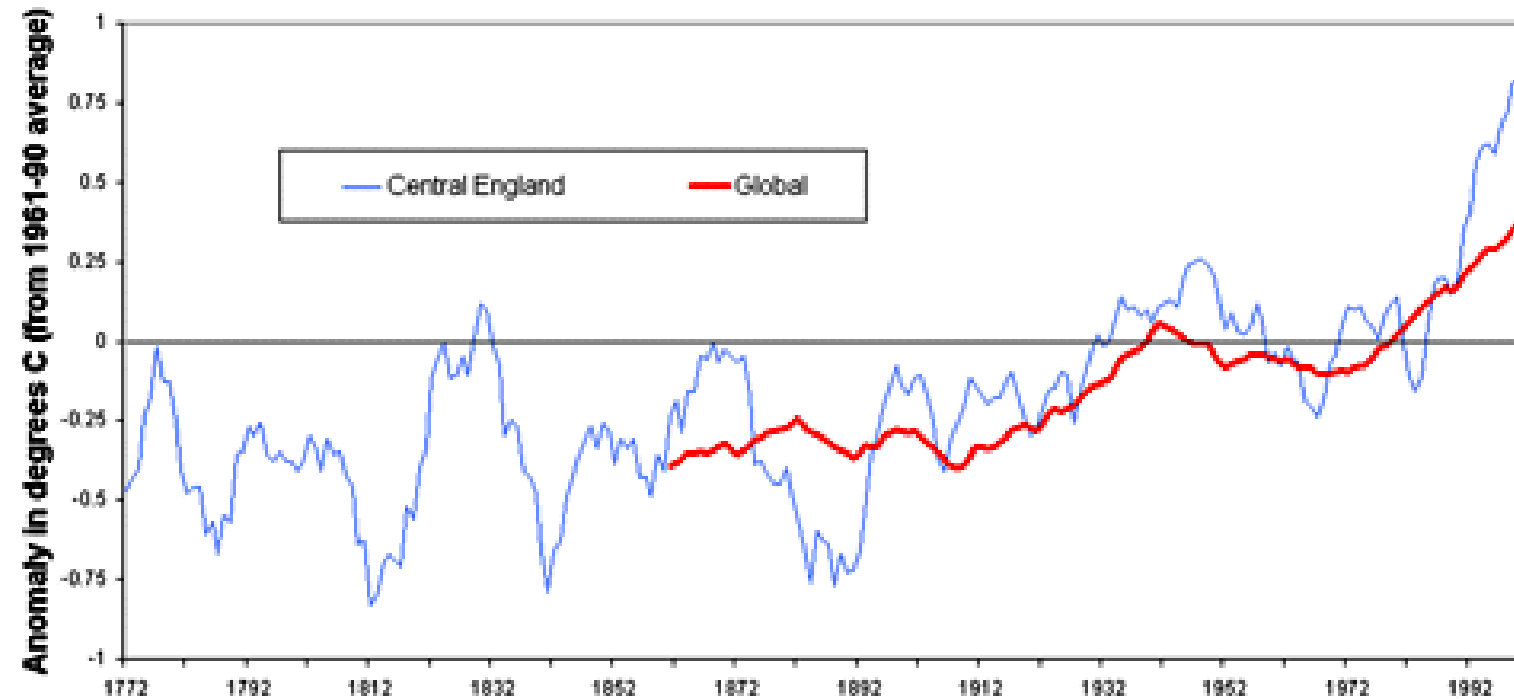**"A good diagram is often worth more than a page of writing"**

- Appropriate scales

- Clearly defined units

- Axes labeled

- Each line labeled

- Use appropriate fitting

- Beware extrapolation

What do you think?
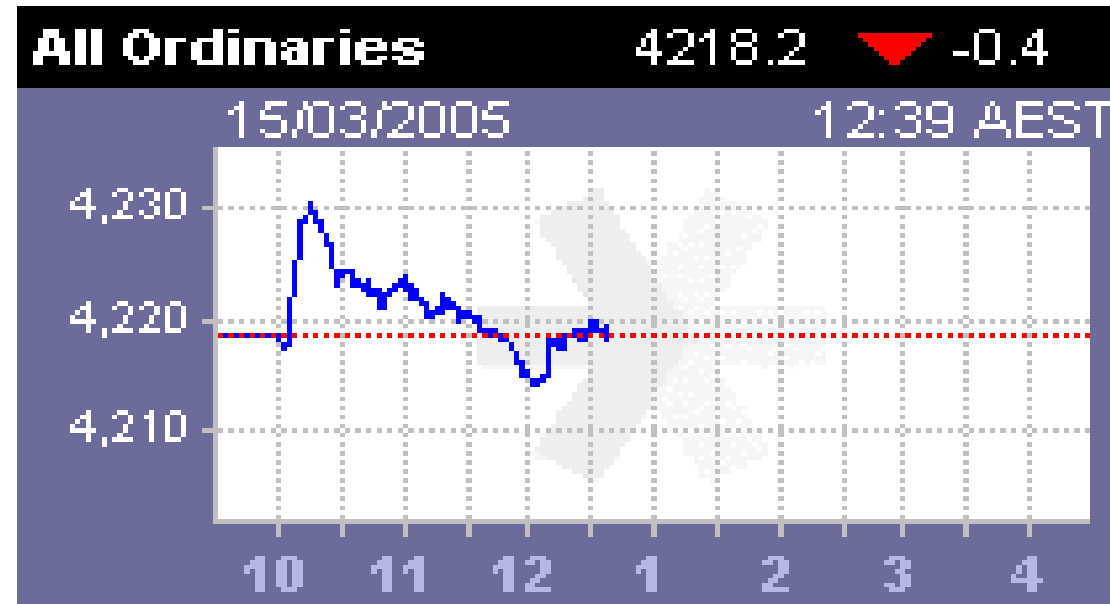
What about this one

Figure 1.1 Global and Central England surface temperature anomalies: 1772-2000

These are smoothed figures based on 10 year moving averages

Source: Met Office, Hadley Centre for Climate Prediction and Research

Conclusions

- Summarize the report and reiterate the main findings. They should relate back to the aims of the report as stated in the introduction.

- Restate the main purpose of the document and tell the reader what you want him to with information provided.

- State clearly what action should be taken as a result of your Recommendations, and by whom;

- Emphasize finally the significance of your subject matter;

Conclusion

- Drawn from evidence, analysis, interpretation and evaluation presented in the discussion

- No new material introduced

- Follows logically from the Discussion

- Conclusions section should give:

  - Key points
  - Main findings
  - NOT another Executive Summary

- Overview of the research, where you've reached, and where further investigation might be warranted

Recommendations

- Suggestions for possible actions based on the research

- Applications of your research in industry

- Recommendations to scientific or business community

- Possible improvements to your research

- Areas for further research

- be definite
- be perceptive
- be imaginative
- be rational

Footnotes

- Used with discretion they may help the unimpeded flow of narrative or argument.
- Footnotes should be as brief as possible.

Footnotes may be used to:-

- Give sources of quotations or references mentioned in the text;
- Indicate authorities or sources of additional information;
- Explain passages in the text which may be clear to some readers but not to others.

References or Bibliography

- It is essential that any research material used in the report is cited in the body of the text and the reference included in the reference section.

- Also material included in the reference section must be cited in the text.

References example

- William Strunk and E. B. White, <u>The Elements of Style</u> (New York: Macmillian, 2000).
- H. R. Fowler, <u>The Little, Brown Handbook</u> (Boston: Little, Brown and Company, 1980).
- G. L. Tuve and L. C. Domholdt, <u>Engineering Experimentation</u> (New York: McGraw-Hill Book Co., 1966).
- Craig Waddell, <u>Basic Prose Style and Mechanics</u> (Troy, NY: Rensselaer Press, 1990).
- Joseph Williams, <u>Style: Ten Lessons in Clarity and Grace</u> (Glenview, IL: Scott, Foresman, 1981).
- ECE Dept, "Engineering Report Writing," September 2003.

Bibliography

- The bibliography lists all publications either cited or referred to in preparing the report

- Give full details of all publications and web pages either cited or used for background research while preparing the report.

e.g.

1. R. Resnick, D. Halliday and K.S. Krane, (1992), Physics 4th ed. (Wiley: New York) p. 55.

2. J.P. Gordon, H.J. Zeiger and C.H. Townes, "The maser - new type of microwave amplifier, frequency standard, and spectrometer", Phys. Rev. 18, 1264-1274 (1955).

3. Sigma Pro Inc, http://www.sigmaprotraining.com/outsourcing.htm

Appendices

- Any material that is not essential to the understanding of the document but is useful for the reader to have available should be put in the appendices.

- Examples include raw data, extended calculations, computer code, equipment design calculations, detailed procedures for equipment operation and calibration curves.

IV. The Rough Draft

- The first draft you write is the *rough draft.*
- This is the only draft that *you* write without the help of revision.
- This draft comes out of your head with only the help of your **outline.**
- The only thing you are striving to do at this point is to turn the outline into prose.
- To do this, you take everything in your head concerning each outline point and put it on paper in rough form.

- Just get it down.
- That is your *only* concern.
- Speed is essential.
- Don't labor over the writing.
- Don't wait for "inspiration."
- Start putting words on paper no matter how poorly written they may seem to you.
- The faster you write, the easier it is for your mind to quit worrying about how "good" or "bad" it may be.

<p style="text-align:center; color:red; font-size:2em;">Don't stop to correct.</p>

- The rough draft is the major cure for writer's block, because it gets you started writing, no matter what.
- The rough draft shows you how to say it without worrying about how.
- Do not show anyone your rough draft.
- Show them your outline or any subsequent drafts after the rough draft - but not the rough draft.
- Why?
- By absolutely not showing anyone your rough draft, you have the assurance that no one but you will ever know exactly how bad you write on your first effort.

V. Revision

- Revision is not simply a matter of correcting spelling errors and placing commas.

- Revision is a matter of converting your raw creative prose into flowing and readable writing.

- The system of revision is basically made up of three parts:

  1. Activate the writing
  2. Clarify the writing
  3. Simplify the writing

Reports Revision

- Revise
  - **First revision:**
    - Check for accuracy and validity of statements, charts, and equations. Cross misleading or confusing information.
  - **Second revision:**
    - Strive for clarity.
    - Use simple non-confusing statements.
    - As a rule of thumb, each statement should not be more than two lines.

Reports Revision

- **Second revision**
  - Avoid jargon not known to readers.
  - Avoid complicated drawings.
  - Match the report to the interest, need, and technical level of audience.
  - Under-estimate the knowledge of the audience.

Reports Revision

- **Third revision**
  - Does the material follow a logical development
  - Improve the report organization
  - Are there enough headings and sub-headings

Reports Revision

- **Fourth revision**
  - Seek conciseness
  - Ask yourself how much can be deleted without disturbing the reader's comprehension of the report.

Reports Revision

- **Fifth revision**
  - Correct errors in grammar, spelling, and sentence structure.
- **Sixth revision**
  - Are you satisfied?
  - Allow someone to read your report

Clarify the Writing

- If your reader can't understand what you are writing, you've failed.

- When your writing is clear, your reader can go directly to your ideas and concepts without struggling with the writing.

Determine whether jargon is helpful

- Every organization has its own sub-language or jargon.
- When a person first comes into a new job or organization, he or she must "learn the language."
- Only the members of the group understand the *actual* meaning.
- Jargon has an advantage and disadvantage, and both stem from its *exclusivity.*

- On one hand, jargon is an abbreviated language that makes for quick and easy messages.

- The disadvantage to jargon is that only an exclusive few understand the meaning.

- If you are not extremely careful in evaluating your audience, you will write a message that is at best unclear and sometimes totally misunderstood.

- Jargon can be a helpful tool in a memo of limited circulation and exclusive readership.

- However, a manual loaded with jargon that is going out to a wide range of customers could be a disaster of misunderstanding.

Simplify the Writing

The following elements are basic to the simplification process in revision:

    1. Keep down sentence length.

    2. Keep down word length.

    3. Eliminate needless words.

    4. Simplify positive and negative constructions.

    5. Watch out for the "It … that" syndrome.

1. Keep down sentence length

- Long sentences are hard to read.

- The longer the sentence, the more you limit your reader's ability to understand.

- Try to break long sentences into simple, declarative sentences.

Example:

The total quantity of air (Cubic Feet of air per Minute or CFM) to be moved is governed by various local and state codes and if no local or state codes exist, the total quantity of air (CFM) to be exhausted from the hood shall be determined by one of the formulas that follow.

Consider the same sentence after it is broken down into shorter and more easily read sentences:

The total CFM (Cubic Feet of air movement per Minute) must usually conform to local or state code. If there is no code, you can figure the CFM by anyone of the following formulas.

2. **Keep down word length**

- Word length here refers to the number of syllables rather than the number of letters in the word.

- Shorter words are one or two syllables; longer words are four or five syllables.

- It is in these words that syllable length will make for either easy or difficult reading.

- The most blatant example in recent years is the verb "utilize." It is almost impossible to find an instance where the verb "use" won't work better.

3. **Eliminate needless words**

- Get rid of needless words.

- In almost all cases, needless words are directly or indirectly redundant for the sake of impressiveness.

- Consider the following example and how the elimination of needless words has helped.

Shipping considerations will be easy because of the flexible nature of the materials.

Shipping will be easy because the materials are flexible.

- Two particular problems with needless words crop up when you use *of* and when you use *the*.

- When you use them correctly, they are absolutely necessary in the construction.

- When you use either of these two words unnecessarily, you complicate the writing.

- Consider the following examples and their corrections using the words *of* and *the:*
  - *all of the labs*   *- all labs*
  - *many of the engineers*   *- many engineers*
  - *some of the tests*   *- some tests*
  - *the engineers at the test site* *-engineers at the test site*
- But always use *the,* however, if it is a *specific* reference such as the following:
- She is *the engineer* who performed *the initial tests.*

VI. The Final Draft

- The actual physical form of your technical writing influences your readers before they ever read the first word.
- There are five basic steps that you must always take to ensure the attractiveness and sense of professionalism your technical writing deserves:
  - Allow for generous use of white space.
  - Use topic heads often.
  - Use listing.
  - Use illustrations effectively.
  - Include adequate appendixes.

1. **Allow for Generous Use of White Space**

- There is nothing more discouraging to your reader than to look at a report that is solid copy in small print that covers every inch of the page.

- A reader wants to look at a page and sense that it can be read with ease.

- The key to having your reader want to read your writing is adequate white space.

- Generous use of white space makes your reader want to read what you have written.

Manufacturers have prepared charts that show which of their models should be used with what carrier weight class. However, if you want to double-check those figures or match hammers and carriers already in the fleet, use this formula: the quantity of Wh multiplied by A divided by the quantity Wc multiplied by B where A equals the maximum reach of carrier, B equals half the length of the wheelbase, and Wc equals the weight of the carrier. Generally, if the ratio derived is less than 0.30, the carrier is too heavy. If the ratio is greater than 0.50, the breaker is too heavy.

[poor use of white space]

Manufacturers have prepared charts that show which of their models should be used with what carrier weight class. However, if you want to double-check those figures or match hammers and carriers already in the fleet, use this formula:

$$AxWh / BxWc$$

where:

A = Maximum reach of carrier

B = Half the length of the wheelbase

Wh = Weight of the breaker

Wc = Weight of the carrier

Generally, if the ratio derived is less than 0.30, the carrier is too heavy. If the ratio is greater than 0.50, the breaker is too heavy.

2. Use Topic Heads Often

- Topic heads open up the copy and allow for the use of white space.

- They allow your reader to know what is coming up next.

- Topic heads alert your readers to major breaks in the writing and in its concepts.

- Through the use of topic heads, your readers have the ability to move ahead in the writing and skim it or read it out of sequence.

- Your reader can also move back through the writing with ease.

SYSTEM DESCRIPTION

System Controls

Maintain Terminals

This online facility allows the System Administrator to add, amend, or delete Terminal details including System ID, Printers, and authorized Menus.

Maintain Operators

...

Maintain Menus

...

3. **Use Listing**

- Listing saves your reader time and makes it far easier to see what the various elements of the list are.

- Without using a list, the items would often become a cumbersome block of information that would be next to impossible to follow or understand.

- Lists that are set off from the main block of copy are easier for your reader to follow.

4. **Use Illustrations Effectively**

- Every illustration should be referred to at least once in the text and should be accompanied by an identifying caption or title. If you have more than 2 or 3 illustrations, it may be advisable to number them for reference.

- The old expression "a picture is worth a thousand words" is true, provided that the illustration says what it is meant to say.

4. Use Illustrations Effectively

- There are ten basic types of illustrations, although each has many variations.
  - Line drawings   - Tables
  - Pie charts   - Bar graphs
  - Line graphs
  - Flow charts and logic diagrams
  - Schematics   - Photographs
  - Cutaway diagrams
  - Exploded diagrams

1. Line Drawings

- A line drawing is an illustration or picture of something that has been rendered by an artist using only lines.
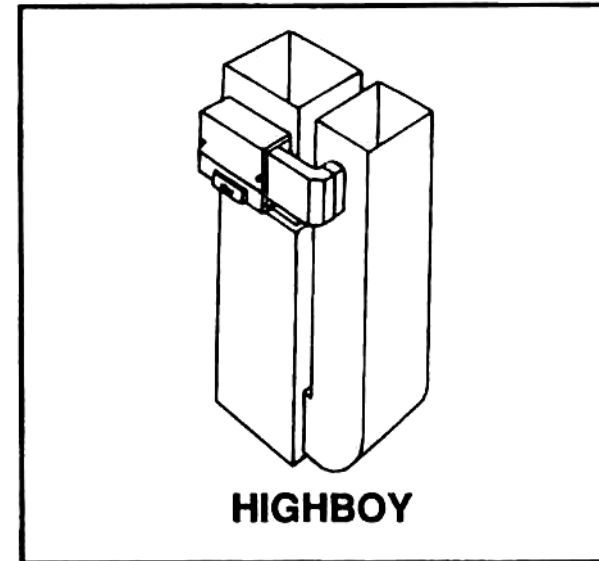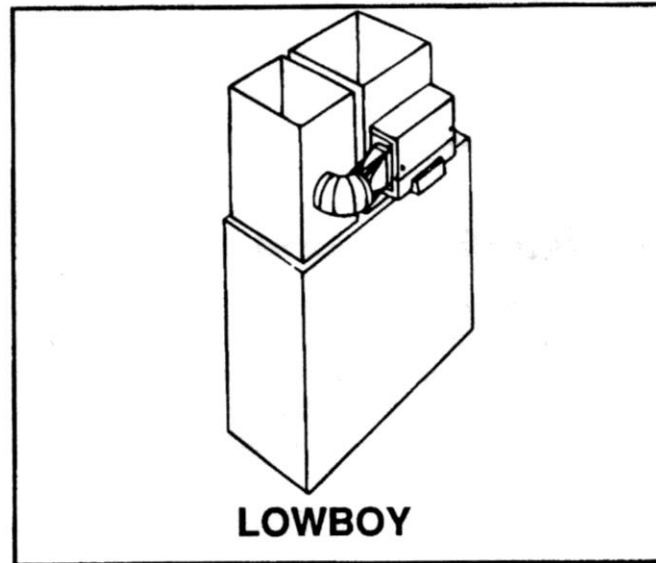
Line drawings of plenum-mounted humidifiers on two different types of furnace designs

2. Tables

- You should use tables to visually display a lot of information in one place.

- The main advantages of using tables follow:
    - Information is visually concise.
    - Facts are easily compared.
    - Quick references are easily done.
    - Presentation of information is done more easily than in paragraph form.

INPUT	TEST POINT A	TEST POINT B	TEST POINT C
(+) Full Scale .05, .5, 5, 50, and 500 V 50 μA, 50 mA, and 500 mA	50 mV	1.2 V	−1.2 V
(−) Full Scale .05, .5, 5, 50, and 500 V 50 μA, 50 mA, and 500 mA	−50 mV	−1.2 V	0
AC Full Scale .05, .5, 5, 50, and 500 V 50 μA, 50 mA, and 500 mA	42 mVAC	1.0 VAC	−.46 V
OHMS, Shorted Inputs	−50 mV approx.	−1.2 V approx.	n/a
LO OHMS, Shorted Input	−50 mV approx.	−1.2 V approx.	n/a

Source: Energy Concepts, Inc.

3. Pie Charts

- A pie chart visually shows percentage relationships.

- Each "pie" is 100 percent of something.

- Each section or "piece" is drawn to accurately represent a certain percentage of the whole pie.
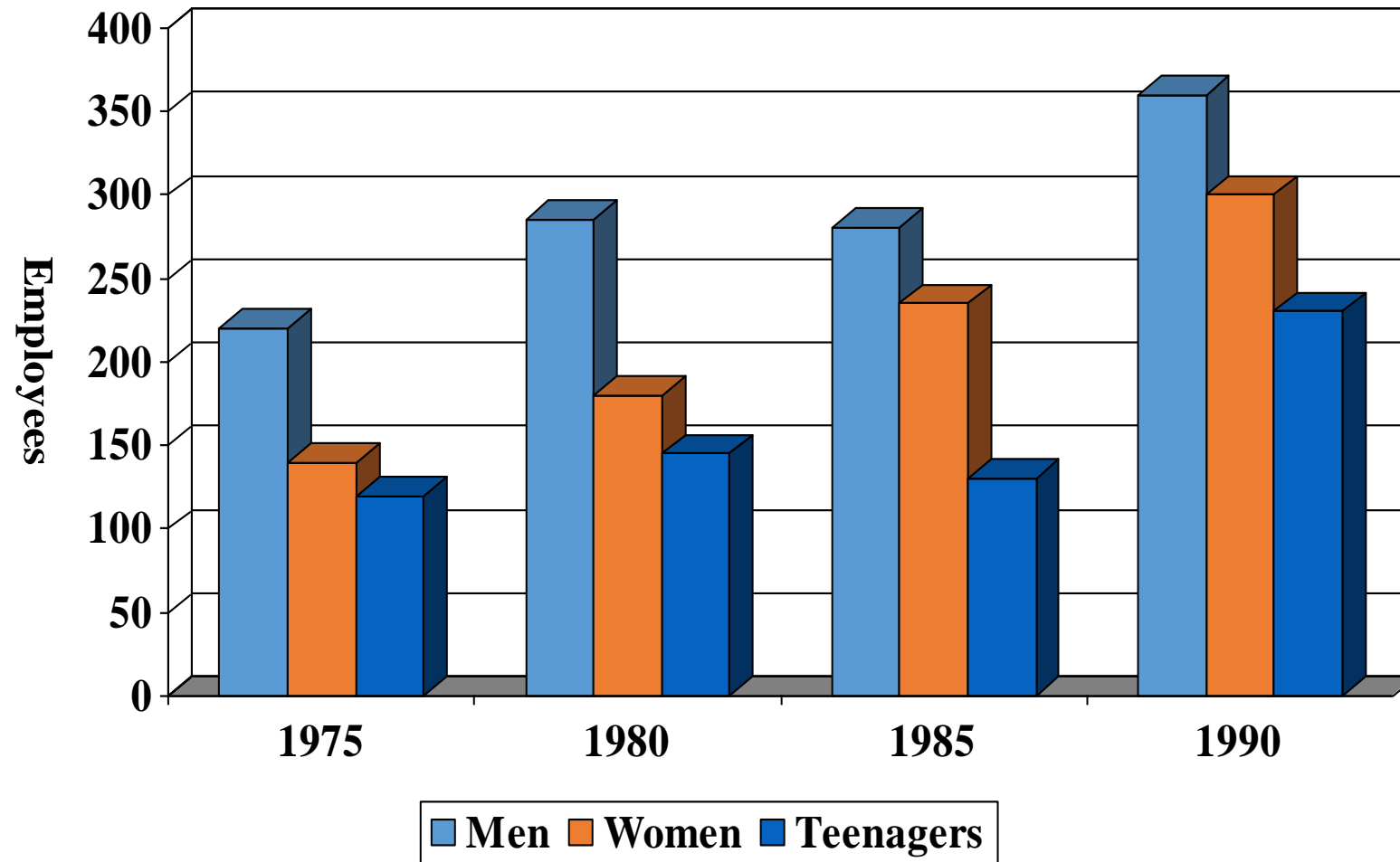
Barley Exports to Foeign Nations

Canada 6%

India 9%
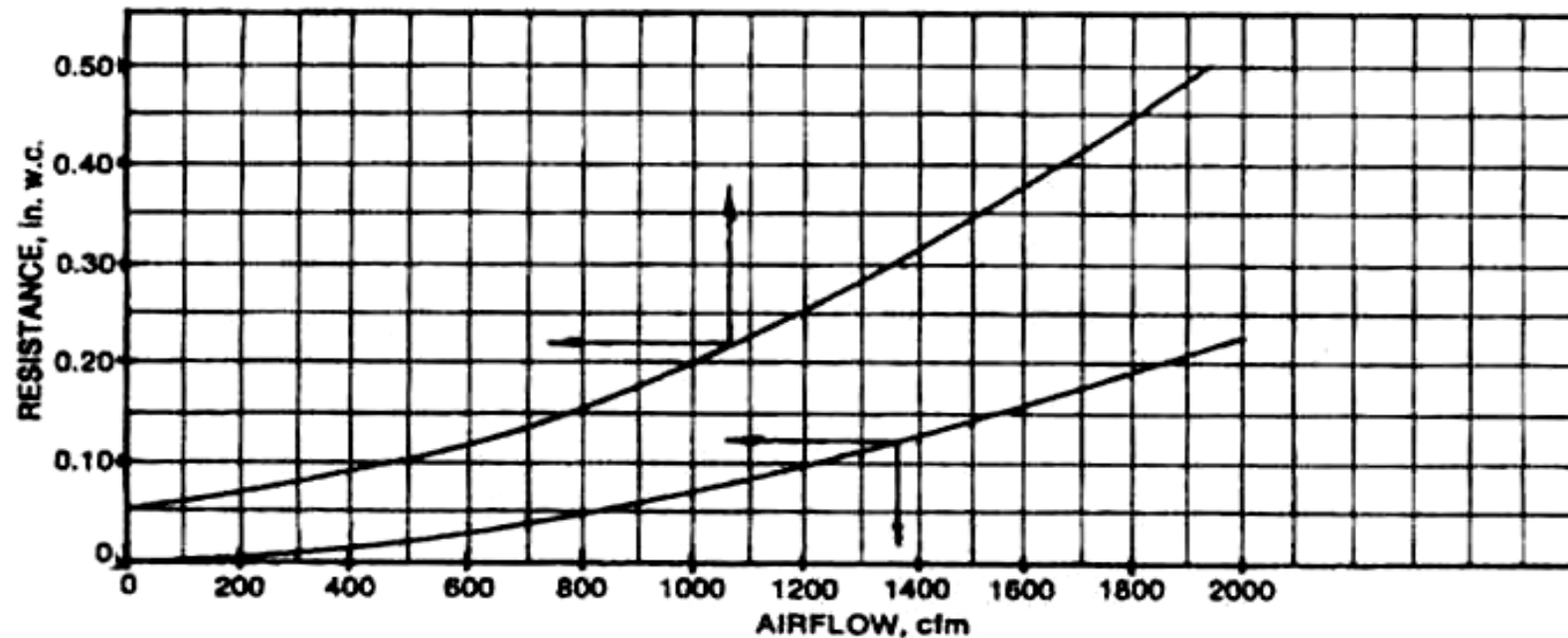
China 12%

Russia 14%

Europe 37%

South America 22%
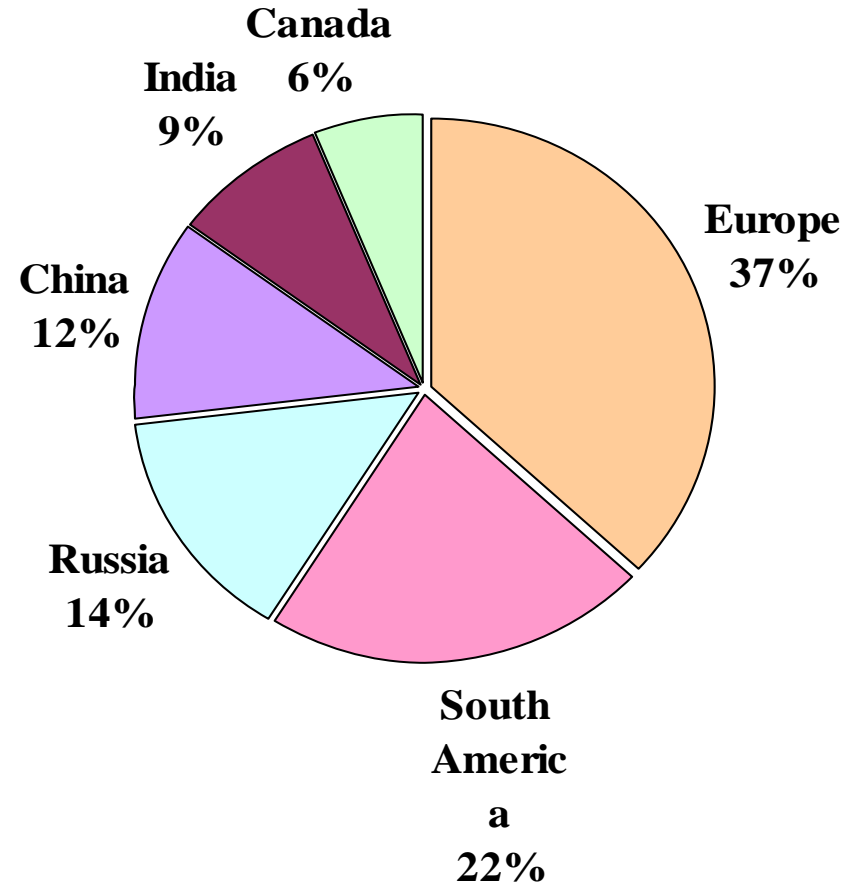
4. Bar Charts

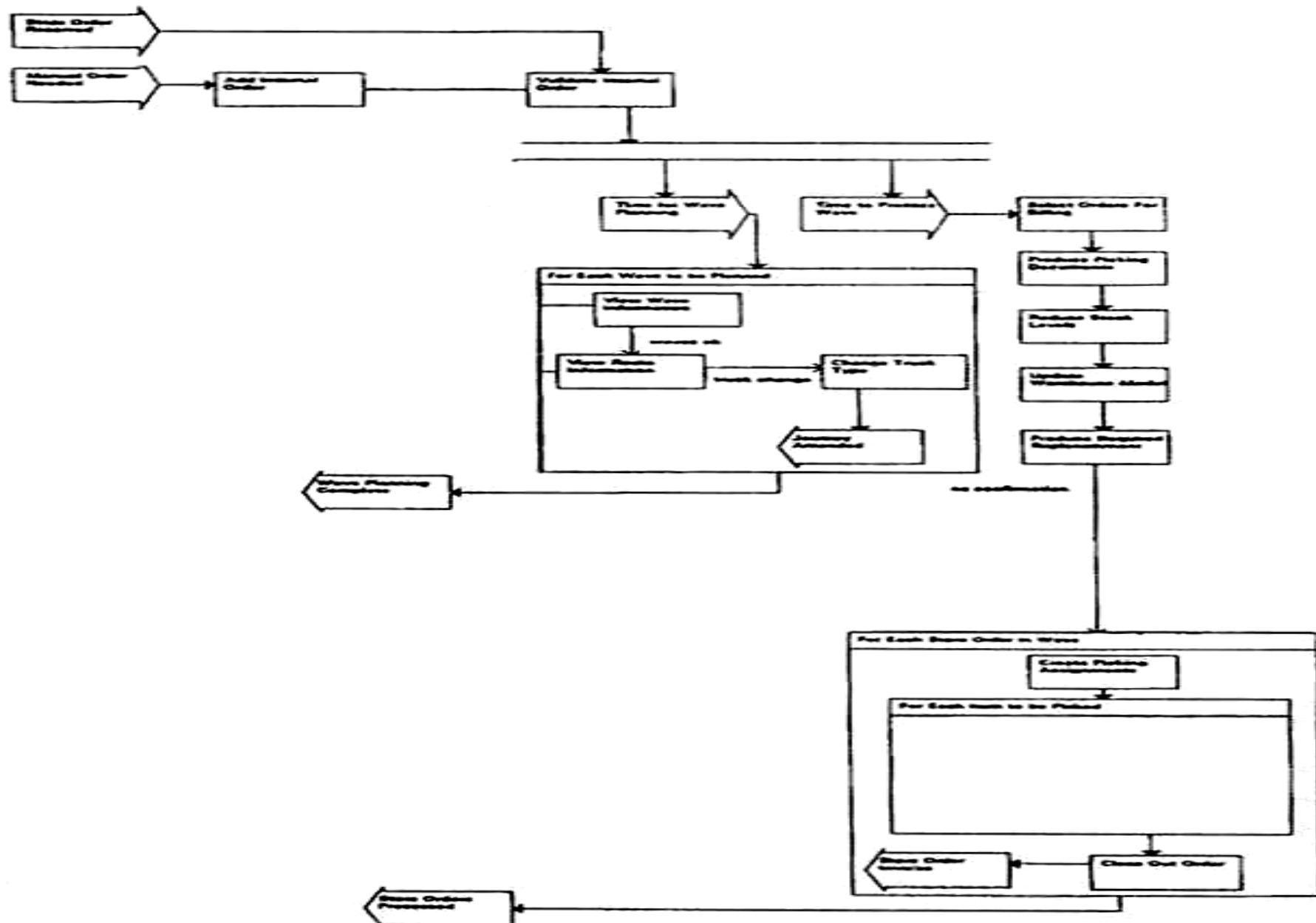**Employee Distribution at an Electric Company**

5. Line Charts

- The main purpose of a line graph is to show the trend between two variables.

- Another useful thing about a line graph is its ability to show comparisons of trends by plotting multiple lines.

6. Flowcharts and Logic Diagrams

- Show a process in various stages from beginning to end or the reverse.

- They can use a number of different symbols, from blocks to icons, depending on the need.

- The direction of flow should be absolutely clear and is usually indicated using arrows.

- You can also connect the blocks and then label the elements appropriately to show points of direction or use, such as in a wiring or hydraulics diagram.

Flow Chart

Logic Diagram

WATER SUPPLY VALVE
(SADDLE VALVE)

WATER SUPPLY SOURCE

120 V
60 Hz
Power Source

FURNACE BLOWER MOTOR
For multi-speed blower motors, or systems that have other than 120 V power, use Research Products Corporation Current Sensing Relay Model No. 50.

CORD & PLUG TO 120V
60 Hz POWER SUPPLY

DRAIN HOSE CONNECTION

SOLENOID
VALVE

24 V
LEADS

HUMIDISTAT

WIRING DIAGRAM

NOTE: SOME FURNACES ARE EQUIPPED WITH ACCESSORY TERMINALS THAT CAN BE USED FOR THE HUMIDIFIER. THE RP MODEL 50 RELAY MAY NOT BE NECESSARY IN THIS CASE. CONSULT THE FURNACE MANUFACTURER'S RECOMMENDATIONS FOR WIRING.

IMPORTANT

USE 120 V POWER SOURCE OTHER THAN FURNACE MOTOR CIRCUIT. HOWEVER THE TRANSFORMER CAN BE POWERED OFF THE HOT 120 V LINE BEFORE IT ENTERS THE FURNACE.

CURRENT SENSING RELAY

COMMON LEAD

LO

C   HI

FURNACE BLOWER MOTOR

7. Schematics

- Schematics show both process and layout of parts.

- All schematics use symbols that are unique to the subject of the schematic.

- Therefore, be careful to consider your reader's ability to understand the symbols.
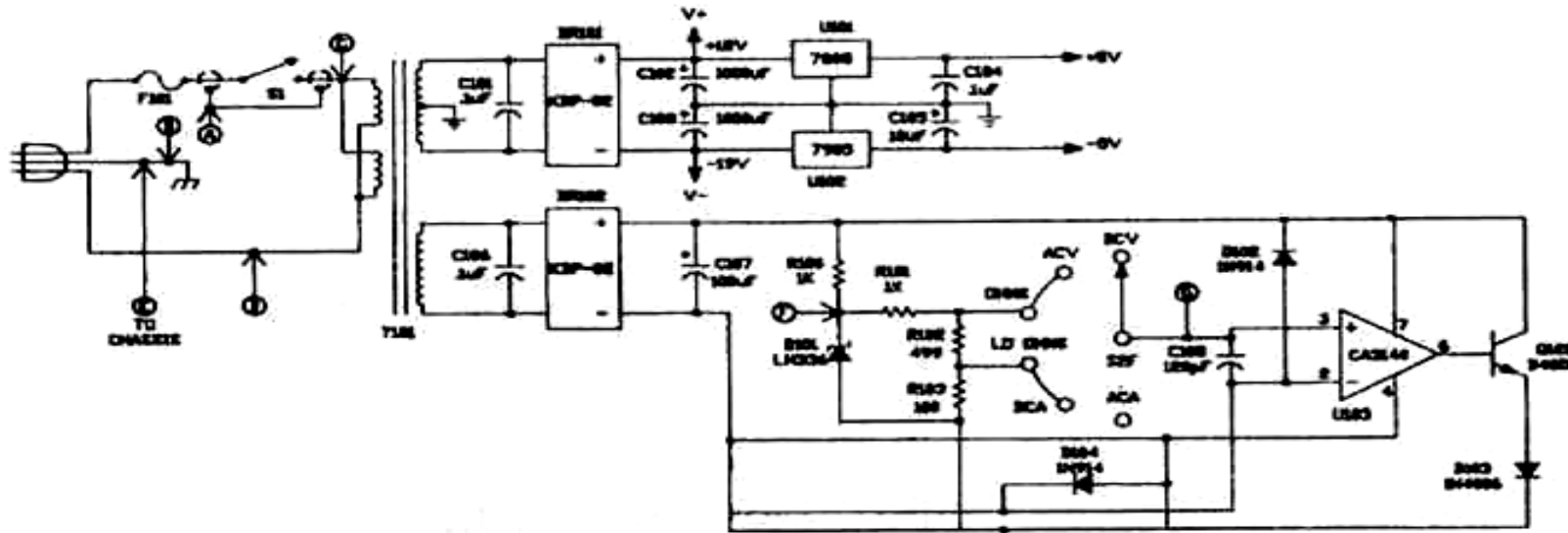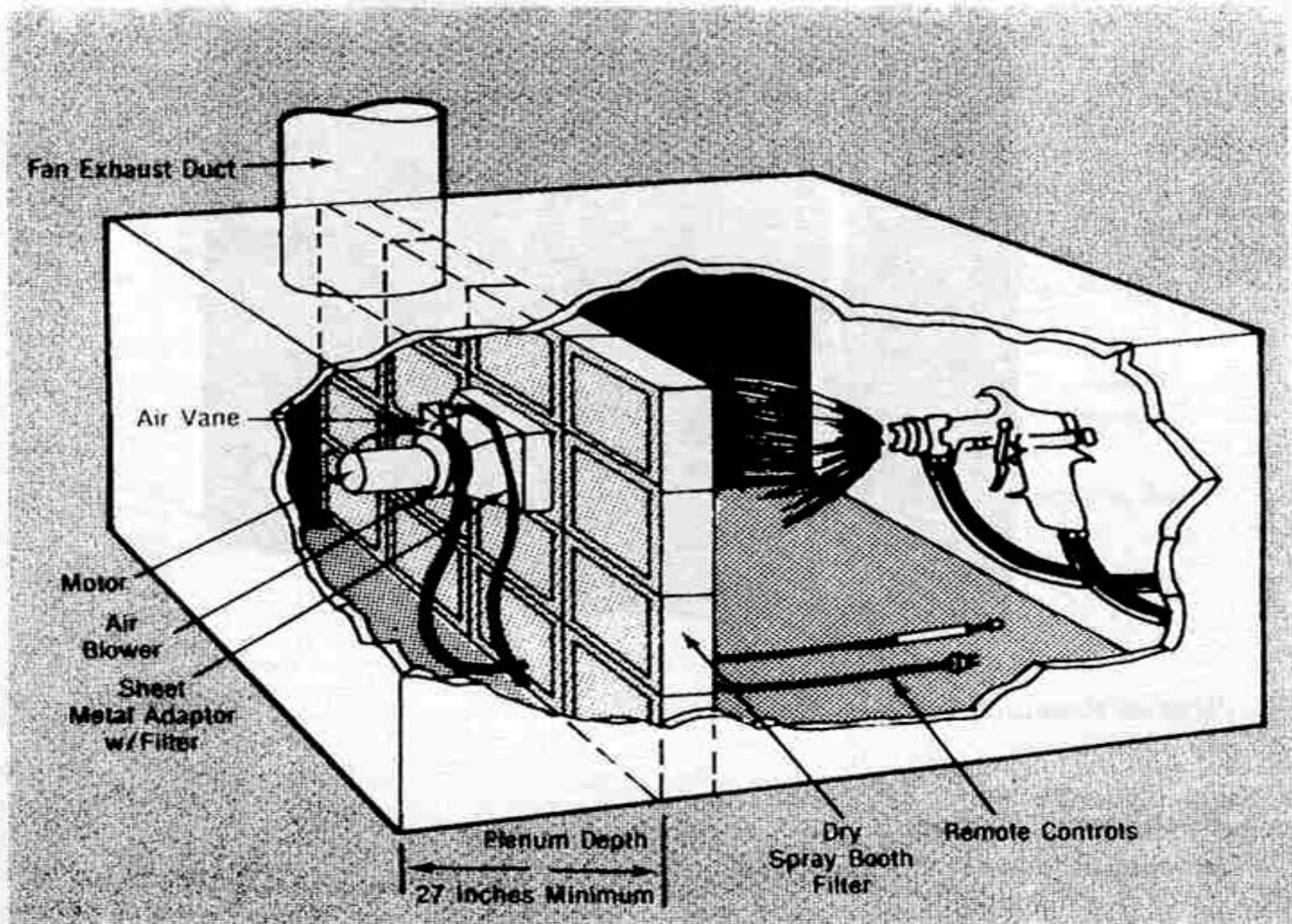
8. Photographs

- Photographs show absolute realism.

- When you need to show it absolutely as it looks, you would opt for a color photograph.

- Photographs work best when you want to show the shape or complete detail of an object or mechanism, such as a small motor.

9. Cutaway Diagrams

- A cutaway diagram shows what is inside of an enclosure.

- The illustration allows the reader to maintain a sense of the outside shape of the object while at the same time looking inside as though there was an opening cut into it.

- This type of drawing is especially useful in showing the inside of mechanisms and the inside of buildings and structures.

Fan Exhaust Duct

Air Vane

Motor

Air
Blower

Sheet
Metal Adaptor
w/Filter

Plenum Depth

27 inches Minimum

Dry
Spray Booth
Filter

Remote Controls

10. Exploded Diagrams

- An exploded diagram shows the relationships of different physical elements that fit together.

- An exploded diagram is an excellent way to show how to assemble or disassemble a mechanism by showing the parts as though they were "exploding" in the exact position and connecting relationship to each other.
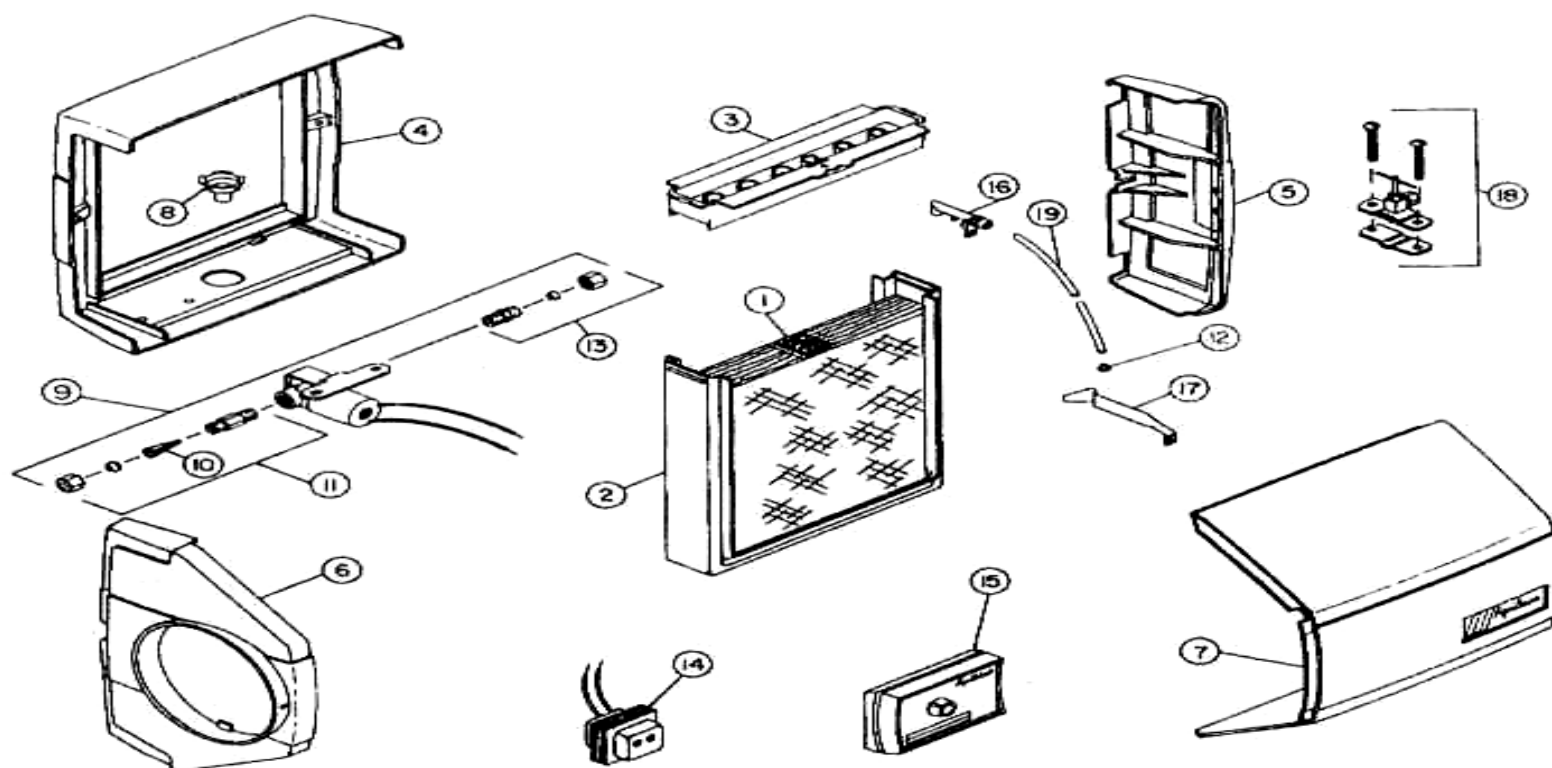
Instructions for Ordering Parts — Specify: MODEL NO. — PART NAME — PART NO.

NO.	PART NAME	QTY/CTN	MODEL 550 PART NO.
1	Water Panel Evaporator	10	10
2	Scale Control Insert	10	4217
3	Water Distribution Tray	1	4218
4	Base	1	4219
5	End Panel	1	4220
6	Duct Panel	1	4221
7	Cover With Latch and Label	1	4222
8	Drain Spud	1	4223
9	Water Solenoid Valve (24 Volt)	1	4040
10	In Line Strainer	12	4004
11	Compression Fitting and Strainer	1	4102
12	Orifice (Yellow) .... (144/ctn.)	12 - 12 pks.	4231
13	Tube Fitting	6	4076
14	Transformer	1	4010
15	Humidistat	1	4016
16	Nozzle	1	4184
17	Cover Latch Spring	1	4225
18	Saddle Valve	1	4001
19	Feed Tube With Compression Sleeve	1	4226

Include Adequate Appendixes

- Raw data, reinforcing information from tables, and supporting passages from other documents belong in an appendix when they are not critical to the text.

- State facts obtained and indicate source;

- Analyses these facts;

- State the conclusions or recommendations based on them;

- Describe the procedure followed in your investigations or experiments;

- Refer to, or summarize, matters fully presented in an Appendix.

Adequate Appendixes

- Use an appendix at the end of a formal report or book to supplement or clarify.

- The information in an appendix is material that is pertinent to the body of writing but is either not critical or too voluminous to be placed in the main body of the text.

Finding Words That Communicate Well

Use Strong Verbs

Use Familiar Words

Avoid Clichés & Buzzwords

Minimize Jargon

Coherent Paragraphs

Topic Sentences

Support Sentences

Transitions

Organizing Reports

- Comparison/contrast
- Problem-solution
- Elimination of alternatives
- General to particular
- Geographic or spatial
- Functional
- Chronological

Paragraph Development

Technique	Description
•Illustration	•Use examples for support
•Comparison/Contrast	•Use similarities and differences
•Cause and Effect	•Focus on reasons for something
•Classification	•Categorize a general idea
•Problem and Solution	•Pose problems, offer solutions

Use Simple Words

Use Simpler Words Instead of Complex Words	
Complex Words	**Simpler Words**
approximately	about
ascertain	find out
assistance	help
commence	start or begin
converse	talk
endeavor	try
enumerate	list
equitable	fair
finalize	complete or finish
gratuitous	free
hold in abeyance	delay
interrogate	ask
it is requested that	please
negligible	small or slight
numerous	many
omit	skip
peruse	read or study
procure	get
pursuant to your request	as you asked
render services	serve
subsequently	later
sufficient	enough
terminate	end, finish, fire
utilize	use
detained	delayed
verbalize	say
viable option	good choice

VII. The Final Presentation

- Formal reports should be bound in ring binders or covering folders that not only protect the report but also present an attractive appearance.

- Manuals should be bound professionally if they are to go to consumers and have wide circulation.

- Shorter and less formal reports should be clean and have a cover sheet on them.

- Always have your technical writing reflect a professional appearance, because it reflect you and your efforts.

Ethical Writer's Checklist

- Does my use of visuals accurately represent the truth?

- Does my language obscure the truth in any way?

- Have I used vague, ambiguous, misleading, abstract language in my document, and if so does its use alter the meaning of the document?

- Can my document be interpreted in inaccurate ways?

Ethical Writer's Checklist

- Is my document jargon filled?
- Have I confirmed all information I've presented?
- Have I cited all information I have gathered and used in the document?
- If there are inaccuracies in the information, have I reported them before the document has been published/made public?

Responsibility

- Writers have more responsibilities than just to inform the reader. His job is:
  - Investigate
  - Analyze
  - Understand
  - Describe
  - Explain
  - Draw conclusion
  - Recommend
  - Help the reader decide on action.

Rules of writing

1. Interest, inform, and persuade the reader
2. Write for your reader and write clearly
3. Eliminate unnecessary redundancy
4. Use consistent tenses
5. Use the precise word
6. Simpler words are preferred over complex words and use concrete words and examples

Rules of writing (Cont.)

7. Simpler sentences are preferred over more complicated sentences

8. Use the active voice .

9. Make sure the subject and verb agree

10. Cite sources as well as findings

11. Proofread your paper carefully; spell check does not catch everything; "there" is spelled

12. correctly but not if you meant "their"

DO's and Don'ts (written)

- DO -- realize it is not read as soon as it is received
- DO -- make sure that there is enough time to prepare and send, and for the recipient to receive and digest
- DO -- assess writing skills, if poor -- get help
- DO -- outline key points before producing a draft
- DO -- always draft a written piece and then reduce all unnecessary language -- be brief
- DO -- proof-read very carefully before any document is distributed

Do's and Don'ts (written)   cont...

- DON'T-- use this form of communication if writing is full of errors -- this reflects poorly on the writer

- DON'T -- use if communication is time sensitive. If immediate feedback is necessary -- use email

Bibliography

- Bugs in Writing, Lyn Depre

- www.stc.org: Society for Technical Communication

- www.technical-writing-course.com:
  A short course on technical writing

- www.micron.com/k12/writing: Micron Writing in the Workplace

- www.critical-reading.com/inference_denotation.htm: Headlines

Sources

- **Society for Technical Communication**

- ***Technical Writing** - A Dalton: **Organizing***

- Online ***Technical Writing***: Information Infrastructures – Comparison

- Online Technical Writing

Thank You