

Professional Development Short Course On:

Improving Report Writing
For Engineers and Other Professionals

Instructor:

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CLARIFYING YOUR THOUGHT PROCESSES BEFORE WRITING

Research studies show that the **single biggest cause** of report writing problems is inadequate attention to planning one's writing.

Before setting out to write any type of report, **ALWAYS** think about questions like:

- ▶ **Who** is to read this report?
- ▶ What do **they** want/need to know?
- ▶ What result do **I** want to accomplish as the writer? What does **my organization** want or need to accomplish via this report?
- ▶ How should the report be **structured** to meet **BOTH my AND their** needs? How should its content be configured?
- ▶ Do I fully understand the **exact type of report** I will be writing?

TWO CRITICAL PRINCIPLES OF COMMUNICATION

1. ***YOU must take FULL responsibility for the success of your message***

- ▶ It's your job -- not the recipient's -- to get your message understood
- ▶ It's your job to find out what the recipient can and cannot understand, what language he/she will be able to make sense of
- ▶ By taking **100% responsibility**, you gain control of the only part of the communication process you can control -- your own part!
- ▶ You can no longer play the "Victim" role -- "Oh, poor me! Why don't people understand what I say when I write to them?"
- ▶ If your message does not get the results you want, it's your job to figure out why not -- for instance, why it was misunderstood, why it offended the reader, was considered an inappropriate request, etc.

TWO CRITICAL PRINCIPLES OF COMMUNICATION

2. *You must structure your message so it meshes with the RECIPIENTS' thought processes*

- ▶ What are their most common thought processes for receiving and understanding your information?
- ▶ What way is most likely to work to persuade them -- to get them to:
 - act on your ideas
 - accept your proposals
 - buy into your recommendations

TWO LEVELS OF SKILLS DEVELOPMENT

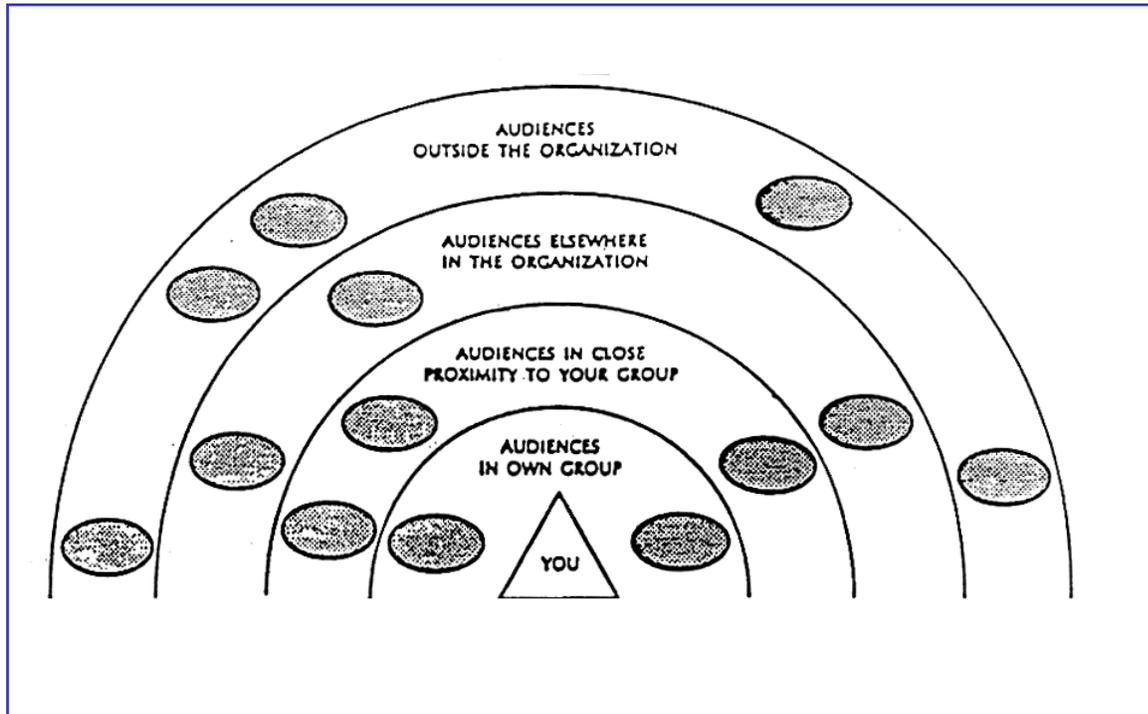
The successful report writer needs skills at two quite distinct levels, which form the two major sections of this course. The two skill sets you will master include:

1. **MACRO Level Skills** – for example:
 - How to **plan** a report, including knowing **what type of report** is required or expected
 - How to **analyze the audience** (readers) of your report, and understand their needs
 - How to select what the **essential information** is for the report
 - How to organize the report into **major sections**
 - How to organize the information **within each section and subsection**

2. **MICRO Level Skills** – for example:
 - Structuring and organizing the information **within sentences** for logic, clarity, and ease-of-understanding
 - Ensuring your sentence are **free of ambiguities** and other potentially confusing wording
 - Learning to use the **active rather than the passive voice**, whenever possible and appropriate
 - Making sure your **sentences link to one another** within a paragraph (and that paragraphs link to one another)
 - **Editing and proofreading** your own drafts

AUDIENCE ANALYSIS: DEGREE OF DISTANCE

Use this chart to help you increase your Audience Sensitivity skills. It can help you understand just how "different" your audience may be from people who share your assumptions, language, and the like.



AUDIENCE SENSITIVITY: **USE THE APPROPRIATE LANGUAGE LEVEL**

Based on your analysis of who the audience(s) is (are), you must determine their language level, and write or speak accordingly, by considering such questions as the following about them:

- How much background material/context do they need – and where is the most effective place to put it?
- What specialized technical terms/acronyms/abbreviations you can use, and which ones should you avoid?
- How extensive will your explanations have to be?
- How long can your sentences and paragraphs be?
- How much "backup" data or evidence do your readers need?

UNDERSTANDING DIFFERENT TYPES OF REPORTS

Not understanding what type of report is required in a given organizational or research setting is probably the most common cause of a report's failing to accomplish its purpose.

Before setting out to even plan any type of report, **it is imperative** that you have answers to such questions as these:

- ▶ **What type** of report is expected? Full-scale research report? Summary report? Progress report? Status report? Problem report? Investigative report? Evaluation reports
- ▶ **What length/depth** of report is expected? What level of technical expertise is being assumed in the readers? What backup should be included? What is their prior familiarity with this subject?
- ▶ **Who is the report for** -- who are its primary readers, secondary readers, other audiences? Answers to these questions will help you address the above two issues, as well as determine the "language level" at which the report is composed.
- ▶ **What is my model/template** for this type of report? Most organizations have specific expectations about not just the type of report, but its format, structure, appearance, etc. Yet rarely do they have written guidelines for such important success factors. The writer will be helped immeasurably if he/she can locate a model of the type of report that has worked in the organization in the past.

A TRUE STORY

Someone once e-mailed a government agency asking whether hydrochloric acid could be used to clean the tubes in his steam boiler. In reply, he received this e-mail:

Uncertainties of reactive processes indicate use of hydrochloric acid problematic where alkalinity is involved.

To which the person e-mailed back:

Thanks for the advice. I'll start using it this week.

Back from the agency's Washington, D.C. office came this urgent e-mail:

Regrettable decision involves uncertainties. Substance utilization will produce sublimate invalidating reactions.

To which our inquirer e-mailed back:

Thanks again. Glad to know it's okay.

This time there came the following urgent but clear e-mail:

**DON'T USE HYDROCHLORIC ACID! IT WILL EAT HELL
OUT OF YOUR TUBES!**

WHAT DO MANAGERS/EXECUTIVES WANT TO KNOW?

This is a real list of questions that senior managers wrote on their employees' reports in a division of GE. It indicates the types of information they wished had been included in those reports.

Problems?

What is it?

Why undertaken?

Magnitude and importance?

What is being done? By whom? Why?

Approaches used?

Thorough and complete?

Suggested solution? Best? Consider others?

What's next?

Who does it?

Time factors?

New Projects and/or Products?

Potential?

Risks?

Scope of application?

Commercial implications?

Competition?

Importance to company?

More work to be done? Any problems?

Required personnel, facilities, equipment?

**Importance relative to other
projects/products?**

Life of project or product line?

Effect on firm's technical position?

Priorities required?

Proposed schedule?

Business value added?

Shelf life of solution?

What investigated? By whom? When?

Why? How?

What did it show?

Better ways? Why?

Conclusions? Recommendation?

Implications for firm?

Materials and Processes?

Properties, characteristics, capabilities?

Limitations?

Use requirements and environment?

Areas and scope of application?

Cost factors?

Availability and sources?

What else will do it?

Problems in using?

Significance of application to firm?

Field troubles/Special design problems?

Specific equipment involved?

What trouble developed? Any trouble history?

How much involved?

Responsibility? Others? Ours?

Impact on other organizations? Their reaction?

What is needed?

Special requirements and environment?

Who does it? Time factors?

Most practical solution? Recommended action?

Customer service implications?

What would happen if we did nothing?

EXAMPLES OF PURPOSE STATEMENTS

1. The purpose of this Progress Report is to formally update [verb] you [to whom?] on the status of implementing our new imaging software. [what?]
2. This Evaluation Report has been written to recommend [verb] to the department [to whom?] that we add an additional CT-Scan in our unit, [what?] and to outline [verb] the reasons [what?] for this recommendation.

SELECTING THE ESSENTIAL INFORMATION

1. Critical issues:
 - What do you need to tell the reader in order to achieve *your* result?
 - What is the **least** you need to say? What can safely be *left out* in order to be concise?
 - What level of detail does the reader need? Can these details go into an attachment? What kind? See below.

2. What does "essential" mean? The answer comes from:
 - ▶ Your own audience analysis: for whom are you writing?
 - ▶ An understanding of your relationship with the reader(s)
 - ▶ Your purpose statement: why are you writing?

3. What is the basis of your "selecting" certain information?
 - ▶ _____
 - ▶ _____
 - ▶ _____

AUDIENCE ANALYSIS / PLANNING TOOL

<u>Questions to Ask Yourself</u>	<u>Primary Reader(s)</u>	<u>Secondary Reader(s)</u>
Reader Name/Title		
General background & role (function, division, location)		
Relationship to you/any "political" issues?		
Appropriate tone		
Background on subject (what info do they already have?)		
How familiar with terminology/jargon?		
Information the. reader needs to know		
Reader's concerns/ possible objections		
Level of depth needed by reader		
How will they use this report?		
Your objective / purpose statement		
Your hoped-for reaction		
Action(s) you want reader to take based on reading report		
<i>Other factors:</i>		

PROGRESS REPORTS

Among the most common types of brief reports is:

The Progress/Status Report -- What has been achieved so far on a project or task?

Do's for Progress Reports:

1. Make the "as of" date clear
2. Specify the project or task clearly - some readers may NOT be familiar with it
3. Even if progress has been limited, state in positive terms what HAS been achieved or accomplished since the previous report -- don't be negative about your own efforts
4. Present problems or factors impeding progress -- but state how you plan to overcome seeming obstacles -- if you can't do so on your own (e.g., lack of authority), request help in overcoming them -- use a "can do," confident tone, not defeatism/cynicism!
5. The "Status" or "Progress" should be summarized in at most 2 sentences right upfront
6. Follow by a "Next Actions" section detailing what you're doing next toward the goal
7. Include whatever level of detail is needed by the reader(s)
8. If there are Attachments, explain what they are and/or how it could benefit the reader to read or review them; if they are meant only for certain groups of readers (e.g., technical peers in your specialty), say so directly so that the non-technical reader is not intimidated
9. If you are requesting certain actions of the reader (e.g., approval for certain expenditures to move ahead) state these clearly under a heading like "Actions Requested" -- then, close the report by reminding the reader that progress depends on these actions
10. Use a separate brief report for each project or task unless instructed otherwise -- or if not, at least have a new major heading (all caps, underlined) for each project or task

Paragraph Organization Exercise

Re-organize the seven sentences in the paragraph below so that they form a much better organized paragraph within a report. You may use one or more than one paragraph. See if you can explain why you chose the order you chose. What do these explanations teach you?

(1) Depending on the costs estimated from the pilot study and the demand potential from the market study, it might either abandon the project, build a large plant, or build a small one. (2) Rather, decisions are made in stages. (3) If the survey results are favorable, it might spend \$500,000 on a pilot plant to investigate production methods. (4) Thus, the final decision is actually made in stages, with subsequent decisions depending on the results of previous decisions. (5) Most important decisions are not made once and for all at one time. (6) It might spend \$100,000 for a survey of supply-demand conditions in this industry. (7) For example, a firm in another industry considering the possibility of expanding into this one might take a series of steps.

SHORT REPORT -- RE-ORGANIZATION EXERCISE

To: John Hoffner, Comptroller
From: Harvey Kingsley, Office Manager
Subject: Reorganization of the Filing System
Date: 9/9/99

1. We will start work immediately, with William Riley and Andrew Stanton supervising. James Rancher, the filing expert of Laughton-Smith, will counsel us.
2. I shall submit a "mid-way" progress report to you at the end of the fifth week.
3. We are convinced that this program will save us both time and money through the building of a highly efficient, smooth-flowing file system.
4. As you requested in your September 12 memo, I have completed plans for reorganizing and centralizing our present filing system.
5. I have notified department heads of this project and have asked them to assist us in this work insofar as it affects their departments. To keep the cost to a minimum and yet complete this work within the next ten weeks, priority will be given to requests of those responsible for the success of this project.
6. The principal objectives of this program are:
 - A. Establishment of a sound and workable retention and disposition program for all records, reports, orders, and correspondence.
 - C. Establishment of a central filing department (with supplementary files where needed).
 - B. Formation of an efficient messenger service to facilitate the flow of paper to and from the files.

COMMON ORGANIZING PATTERNS IN WRITING

- ▶ **Chronological Order** - Organize your facts in the order in which the events occurred. Like a historical narrative or telling a story.

Example: Appropriate when reporting how a network snafu was discovered and fixed.

- ▶ **Cause To Effect** - Organize your facts in terms of what caused what else to happen.

Example: Appropriate when explaining the detected causes of a bug.

- ▶ **Evidence To Conclusion** - Organize your facts, data, experimental results, etc., so as to show how a definite conclusion follows from them.

Example: Testing of a new software module showed its compatibility with a certain platform.

- ▶ **Comparison and/or Contrast** - Organize your facts to show important differences/similarities between two (or more) processes, methods, etc.

Example: Comparing, for purchase, two different types of virus detection packages.

- ▶ **Logical Ordering** - Organize your facts in terms of how different events depend on other events, require other purchases, make certain decisions necessary, and the like. (Often used without our being aware it's a "method" of patterning.)

Example: Why setting up a test sequence for a new network component will require additional person-hours, new software, etc.

- ▶ **Instructional Sequencing** - Use this patterning of your facts when you are writing instructions for someone to follow in a step-by-step order that must be just that way.

Example: Step-by-step instructions for checking for network problems.

COMMON ORGANIZING PATTERNS IN WRITING (cont'd)

- ▶ **By Importance of Features** - A forceful way of organizing facts about the features of something is simply to describe them in order from most important to least important.

Example: You want to recommend purchase of a new software package; start with the most crucial features first.

- ▶ **By Order of Operation** - Organize your facts in terms of the precise sequence of operations needed to operate a piece of equipment.

Example: Describing a wide instrument panel by going from left-to-right, explaining what each dial means.

**MAKING YOUR WRITING
CLEAR & FORCEFUL**

FORCEFUL WRITING

- ▶ A *Harvard Business Review* survey of the writing styles of successful executives revealed three characteristics; their writing was:
 - forceful,
 - interesting, and
 - personal.

- ▶ **Some Strategies for Being Forceful**
 - Use short sentences
 - Emphasize verbs not nouns: verbs = action, movement, decisiveness, liveliness, visualizability
 - Turn nouns into verbs [watch out for nouns ending in: *tion, ance, ion, ship*, etc.]
 - Limit the number of words between the verb and subject, verb and object
 - Prefer active, not passive voice
 - Avoid roundabout and indirect writing
 - Unmask your verbs
 - Use an assertive -- but appropriate -- tone or "voice"
 - Avoid impersonal phrases like "one"; instead, prefer "you" and "I" just as you would in conversation
 - Be careful when using jargon/technospeak/acronyms
 - Choose concrete/visual words, rather than abstract words
 - Prefer positive to negative ways of saying it

USE SHORT SENTENCES

- ▶ Short sentences are easier to read -- **and** easier to **write** -- than long ones
- ▶ Each sentence should contain one important idea
- ▶ If a reader doesn't grasp the idea on the first reading, a short sentence is much easier to go back over
- ▶ Studies show that 15 - 33 word sentences are easy to read (see handout)
- ▶ Don't make all sentences similar length -- aim for some variation.

Guidelines for Readable Paragraphs

- ▶ A single theme or central idea
- ▶ Begin a new paragraph when you have a new theme
- ▶ In general, a paragraph should not contain more than three to five sentences
- ▶ If a paragraph has more than one sentence, it needs a topic sentence, which tells the reader what it's about

THINK ABOUT HOW MANY RE-READS OF A LONG PARAGRAPH OR COMPLEX SENTENCE ARE NEEDED FOR COMPREHENSION.

HOW MANY ARE NEEDED FOR A SHORT PARAGRAPH? A SIMPLE SENTENCE?

CHAINS OF NOUNS AND MODIFIERS AND PHRASES

1. State-of-the-art overall extra-intelligence information network conference leaders have been difficult to find in recent years.
2. Engineer continuing education credit information procedures and policies are being promulgated by the members of the executive committee.
3. Sulfur containing additives have been found to be more harmful than previously thought by environmentally oriented research teams.

REDUCING INFORMATION OVERLOAD

Here is an actual passage from a government regulation:

As a minimum, each establishment's log should contain the following information: date, time, code/reference/file number, location of condition, brief description of the condition, classification (imminent danger, serious or other), and date and nature of action taken.

Executive Order 12196 requires that agency inspections be conducted within 24 hours for employee reports of imminent danger conditions, within three working days for potentially serious conditions, and within 20 working days for other than serious safety and health conditions.

LEAD A BREAKOUT

Here's how a "breakout" of this information overload might look:

As a minimum, each establishment's log should contain the following information:

- (1) date and time;
- (2) code/reference/file number;
- (3) location of condition;
- (4) brief description of the condition;
- (5) classification:
 - (a) imminent danger,
 - (b) serious, or
 - (c) other; and
- (6) date and nature of action taken.

Executive Order 12196 requires that agency inspections be conducted according to these rules:

Type of Situation:	Inspect within:
1. employee report of an imminent danger condition	1.24 hours
2. potentially serious condition	2.3 working days
3. other than serious safety and health conditions	3.20 working days

NOUNS INTO VERBS

- ▶ A common source of overly complicated phrasing is using "the (noun) of (noun)" construction. Make this easier to understand by changing at least one of the nouns into an action verb:

<u>TRY CHANGING THIS ...</u>	<u>TO THIS ...</u>
1. Difficulties in <u>the analysis of</u> such a large body of data	1. Difficulties in <u>analyzing</u> such a large body of data
2. By <u>the maintenance of</u> files on all visitors, we could meet our security needs more quickly.	2. _____ _____ _____

PROBLEMS EDITING ONE'S OWN WRITING

Many people don't do as good a job editing their own writing as they might. Here are some that might apply to you -- check those that do:

1. I don't always accept the necessity of making revisions
2. I sometimes forget about the dangers of over-revising (after all, it's mine, so it should be perfect) -- even to the detriment of "getting it out, soon"
3. I sometimes get "perfectionistic" because I'm not sure I know what's "good enough" for the particular:
 - audience
 - context
 - degree of importance of the document
4. I don't always know how to gain distance on my own writing:
 - I'm not sure I know what achieves distance for me: whether it's place, time of day, length of time since I wrote it, etc.
 - I don't always know when to merely edit what I've written or when to write a new draft
5. I sometimes deceive myself about:
 - macro issues in the document, such as overall structure
 - micro-level items, such as how clear I am

Remember the words of a famous writer: The more deeply you're in love with the specific words, the more likely it is that they need to be revised!"