

# Lecture 7

## Accuracy, Clarity, Conciseness and Coherence

In this lecture you will learn

- **The importance of**
  - **Accuracy**
  - **Clarity**
  - **Conciseness**
  - **Coherence**

### Characteristics of Effective Technical Communication

Learn to recognize and cultivate the qualities of effective technical communication.

Good technical communication is

- accurate
  - clear
  - concise
  - coherent
  - appropriate
- In the prose of science and technology, these qualities are sometimes difficult to achieve.
  - Not only do science and technology depend heavily on specialized concepts and terminologies, but they also make extensive use of numbers and graphics.
  - Consider the example on the next page.

*The flow of electrical current can induce the migration of impurities or other defects through the bulk of a solid. This process is called electromigration. In simple electromigration, the force on the defect is thought to have two components. The first component is the force created by direct interaction between the effective charge of the defect and the electric field that drives the current. The second component, called the "wind force," is the force caused by the scattering of electrons at the defect.*

(--J.A. Stroscio and D.M. Eigler, "Atomic and Molecular Manipulation with the Scanning Tunneling Microscope," *Science*)

The preceding example is accurate in two ways.

- It is stylistically accurate in its precise use of language.
- It is technically accurate in its use of specialized terms technical terms such as *electromigration*, *charge*, *electric field*, and *scattering*, whose meanings are based in the context of a technical discipline.

### Both kinds of accuracy-

- accuracy of phrasing and
- accuracy of technical concept

are of first importance in technical and professional writing.

The example is also *clear* because it is written in simple, direct sentences.

Although the technical context is the highly specialized realm of theoretical and applied nanotechnology, the sentence syntax--*word order*--is restrained and structurally very simple.

Part of this clarity is achieved by the rhetorical device of defining a term, electromigration.

The example is *concise* in its use of a minimum of words to express the basic idea of electromigration.

It is not wordy, and it does not digress from the point being made.

The example is *coherent* because it develops its subject matter in an easy-to-follow line of thinking. The sentences are further linked by referents such as "this process," "the first component," and "the second component."

Finally, the example is *appropriate* to its purpose of presenting a general description of the process of electromigration, and to its audience, educated readers of Science, who are not necessarily experts in the field of nanotechnology.

➤ What is accuracy and why is it important?

## **Accuracy**

Cultivate accuracy in your writing.

Accuracy, which is the careful conforming to truth or fact, has three main aspects:

- Document Accuracy
- Stylistic Accuracy
- Technical Accuracy

▪ What is document Accuracy and why is it important?

Document accuracy refers to the proper coverage of your topics in appropriate detail. Often an accurate document needs to focus clearly on a problem.

Document accuracy is generally cultivated by a clear problem statement and by a preliminary outline.

These writing tools help you focus your writing effort by reducing your data in a way that solves a theoretical or practical problem.

➤ What is Stylistic Accuracy and why is it important?

Stylistic accuracy concerns the careful use of language to express meaning.

Accurate language requires the careful use of paragraph and sentence structure and word choice to describe and analyze your topics effectively.

As a writer, you gain command of accuracy by studying the elements of style and by learning to apply those elements to your drafting, revising, editing, and proofreading. Stylistic accuracy is also a matter of using words precisely.

➤ What is technical accuracy and why is it important?

Technical accuracy requires stylistic accuracy but is not based solely on it.

The effective document in science and technology must be grounded in a technically accurate understanding and representation of the subject.

Technical accuracy depends on the writer's conceptual mastery of the subject and its vocabulary, as well as on his or her ability to analyze and shape data with a minimum of distortion.

In science and technology, enormous creative energy is given to mastering this technical aspect of subject development.

➤ What is Clarity and why is it important?

## **Clarity**

Strive for clarity in your writing.

Clarity, which refers to ease of understanding, is a special problem in technical and professional writing.

Specialized languages, mathematically detailed analyses, and complex conceptual schemes can make technical subjects hard to grasp even when prepared by skilled writers and read by expert readers.

You can increase the clarity of your material in following ways.

- Structural Clarity
- Stylistic Clarity
- Contextual Clarity

➤ What is Structural Clarity and why is it important ?

At the level of the whole document, you can promote structural clarity, making it easy for the reader to get the large picture.

Use abstracts and other forecasting strategies such as introductions that state the purpose and scope of the document.

➤ How can you promote structural clarity?

- Tables of contents, problem statements, and even strategic repetition also promote structural clarity.
- Graphs and tables, effectively designed and placed, help focus and clarify information.
- Descriptive titles and frequent subject headings guide readers and help keep the large picture in focus.

### ➤ What is meant by Stylistic Clarity and why is it important?

- Stylistic clarity is promoted by simple, direct language.
- Simplicity in language is obtained with directly worded sentences.
- Using simple sentences and avoiding overloaded sentences and excessive normalization also contribute to clarity.
- Word choice is a factor in stylistic clarity: use simple language wherever possible to counteract the abstract, highly specialized terms of science and technology.

### ➤ What is meant by Contextual Clarity ?

Contextual clarity, in which the importance, authorization, and implications of your work are made available, also contributes to ease of understanding.

All work has a context, and your readers want to understand what the context of your document is.

- What prompts you to write?
- What is your purpose?
- Whose work precede has influenced yours?
- What is the organizational and intellectual context of your problem?

You answer those questions in introductions and problem statements and in your citations and other references.

### ➤ What is 'Conciseness' and why is it important ?

## **Conciseness**

Learn the strategies of conciseness.

Conciseness has a special value in technical fields.

Writers are often tempted to include everything that could be relevant to their subject, rather than merely everything that is relevant to the communication task at hand. The concise document is a piece of writing that conveys only the needed material.

At the level of the whole document, conciseness is helped most by focus, the narrowing of document scope to a manageable problem and response.

Preparing a clear introduction and developing a detailed outline are two strategies that give you control over document length and scope.

- Identify and eliminate material that is not necessary to support your claims.
- Look for sections, including appendixes, that are not essential to your work.
- Graphics are powerful aids to conciseness because they cut down on the amount of prose necessary to describe objects and processes, summarize data, and demonstrate relationships.

➤ How do you make your document more concise?

Conciseness requires careful revising.

Become familiar with the strategies for reducing wordiness.

Look for ways of cutting useless words, sentences, and sections from the document.

➤ What is coherence and why is it important?

## **Coherence**

Look for ways to improve the coherence of your writing.

Coherence is the quality of hanging together, of providing the reader an easily followed path.

Writers promote coherence by making their material logically and stylistically consistent, and by organizing and expressing their ideas in specific patterns.

Efforts to emphasize the relationships among the elements of a document strengthen its impact. Coherence can dramatically improve the reader's ability to understand your material by promoting its flow or readability.

Coherence is especially valued in technical communication and writing because of the inherent complexity of the subjects.

At the level of the whole document, coherence helps to provide the larger picture, in which the connections among the parts of the document are made clear by the writer.

Give readers a roadmap to help them anticipate the content of your work.

- Abstracts
- clear titles
- introductions
- problem statements

all promote *coherence* by linking various parts of a piece of writing.

The paragraph is one of the most powerful instruments of coherence.

By organizing material into a topic sentence and supporting sentences, paragraphs pull together material and emphasize various forms of conceptual development.

Paragraph development is achieved partly through the specific strategies of

- exemplification
- analysis
- comparison and contrast
- definition
- enumeration
- description

All of which furnish distinct approaches to developing ideas.

Transitional devices also operate at the paragraph level to provide links between sentences and between paragraphs.

## **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 health 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.*

## **Exemplification**

Use exemplification 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.

*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. Bread 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)

## 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 performance characteristics, fiber-optic cable offers considerable advantages over standard coaxial cables. The most obvious distinction between the two is the great 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. (--Artel Communications Corporation, "Fiber Optics in RGB Color Computer Graphics Communications," Application Note CG-1)*

## Transitional Words and Phrases

Use transitional words and phrases to clarify and smooth the movement from idea to idea.

### **Weak**

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**

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.

## **In this lecture you learnt**

The importance of

- **Accuracy**
- **Clarity**
- **Conciseness**
- **Coherence**