

Written Communication Skills

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Class 3

The following are the slides for the third day in the three-class module on written communication. The objective of the class is to provide students with some general tips that they can use in writing their Executive Summaries, but also that they can use in doing any technical writing.



Class 3 - Outline

- **Student critique of homework assignments**
- **Tips for effective writing**
 - Interactive exercise to develop additional tips for effective writing
 - Instructional material on tips for effective writing
- **In-class exercise**
- **Homework Assignment**



Student Critique of Student Work



Student Critique

- **You need to spend the first ten minutes of class critiquing two students' Executive Summary. Remember that you are to read these as if you are two levels of management above the engineer.**
- **Keep your feedback constructive.**
- **Work through the following checklist:**
 - objective included?
 - Results included?
 - Conclusions included?
 - Substance of all sections included?
 - Form of the abstract OK - did it flow well?
 - Was it accurate?
 - Any other comments?



In-Class Exercise



In-Class Exercise

- The Executive Committee of our company has latched onto the idea our Vice-Presidents had to focus some time, attention, and resources (\$\$\$) on improving the ability of our engineers to write. They are satisfied with the basic form of the Executive Abstracts, but are concerned with the effectiveness of the writing.
- As individuals:
 - list between four and five overriding guidelines you might employ in all of your technical writing
- As a group:
 - compile a formal list of steps an engineer could use to write more effectively.

Results of In-Class Exercise

- Groups should publish their lists and possibly discuss in class.

Instructional Material for Writing Guidelines

10 Tips for Writing More Effectively

- Better technical writing can result in proposals that win contracts, advertisements that sell products, instruction manuals that technicians can follow, and letters, memos, and reports that get your message across to the reader.
- The following ten tips on style and word choice can make your writing clear and persuasive.

1. Know your reader


- Are you writing for engineers? managers? technicians? lay people? Make the technical depth of your writing compatible with the background of your reader.
- You should never start writing until you have decided exactly whom you are writing for.

2. Write in a clear, conversational style

- Naturally, a technical paper on sizing pumps shouldn't have the same chatty tone as personal letter. But, most technical professionals lean too much in the other direction, and their sharp thinking is obscured by windy, overly-formal prose.
- The key to success in technical writing? Keep it simple! Write to express -- not to impress.
- A relaxed, conversational style can add vigor and clarity to your work.


Style Examples

- **Formal or Technical Style**
 - The data provided by direct examination of samples under the lens of the microscope are insufficient for the purpose of making a proper identification of the components of the substance
 - We have found during conversations with customers that even the most experienced of extruder specialists have a tendency to avoid the extrusion of silicone profiles or hoses.
 - The corporation terminated the employment of Mr. Joseph Smith.
- **Informal Conversational Style**
 - We can't tell what it is made of by looking at it under the microscope
 - Our customers tell us that experienced extruder specialists avoid extruding silicone profiles or hoses.
 - Joe was fired.




3. Be concise

- Technical professionals, especially those in industry, are busy people. Make your writing less time-consuming for them to read by telling the whole story in the fewest possible words.
- How can you make your writing more concise? One way is to avoid redundancies--a needless for of wordiness in which a modifier repeats an idea already contained within the word being modified. For example, a recent trade ad describing a product as a "new innovation." Could there be such a thing as an "old innovation"? The ad also said the product was "very unique."




Examples

- **Redundancy**
 - advance plan
 - actual experience
 - two cubic feet in volume
 - cylindrical in shape
- **Wordy Phrase**
 - during the course of
 - in the form of
 - in many cases
 - in the event of
 - exhibits the ability to
- **Rewrite as**
 - plan
 - experience
 - two cubic feet
 - cylindrical
- **Suggested Substitute**
 - during
 - as
 - often
 - if
 - can



4. Be consistent


- Inconsistencies in technical writing will confuse your readers and convince them that your scientific work and reasoning are as sloppy and disorganized as your prose.
- Good technical writers strive for consistency in the use of numbers, hyphens, units of measure, punctuation, equations, grammar, symbols, capitalization, technical terms, and abbreviations.



5. Use jargon sparingly


Chemical engineering has a special language all its own. Technical terms are a helpful shorthand when you're communicating within the profession, but they may confuse readers who do not have your special background.

- Take the word "yield," for example. To a chemical engineer, yield is a measure of how much product a reaction produces. But, to car drivers, yield means slowing down (and stopping, if necessary) at an intersection.
- Use legitimate technical terms when they communicate your ideas precisely, but avoid using jargon just because the words sound impressive. Do not write that material is "gravimetrically conveyed" when it is simply dumped.



6. Avoid big words

- Technical writers sometimes prefer to use big, important-sounding words instead of short, simple words. This is a mistake; fancy language just frustrates the reader. Write in plain, ordinary English and your readers will love you for it.



Big Word Examples

<ul style="list-style-type: none"> • Big Word – terminate – utilize – incombustible – substantiate – optimum 	<ul style="list-style-type: none"> • Substitution – end – use – fireproof – prove – best
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7. Prefer the specific to the general

- Technical readers are interested in detailed technical information--facts, figures, conclusions, recommendations. Do not be content to say something is good, bad, fast or slow when you can say how good, how bad, how fast or how slow. Be specific whenever possible.

Specific Examples

<ul style="list-style-type: none"> • General – a tall spray dryer – plant – unit – unfavorable weather conditions – structural degradation – high performance 	<ul style="list-style-type: none"> • Specific – a 40-foot-tall spray dryer – oil refinery – evaporator – rain – a leaky roof – 95% efficiency
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8. Break the writing up into short sections

- Long, unbroken blocks of text are stumbling blocks that intimidate and bore readers. Breaking your writing up into short sections and short paragraphs – as in this article – makes it easier to read.
- In the same way, short sentences are easier to grasp than long ones. A good guide for keeping sentence length under control is to write sentences that can be spoken aloud without losing your breath (do not take a deep breath before doing this test).

9. Use visuals

- Drawings, graphs and other visuals can reinforce your text. In fact, pictures often communicate better than words; we remember 10% of what we read, but 30% of what we see. Visuals can make your technical communications more effective.

Examples of Visuals

<ul style="list-style-type: none"> • Type of Visual – photograph – map – schematic diagram – graph – pie chart – bar chart – table – mass and energy balances 	<ul style="list-style-type: none"> • This Shows – what something looks like – how it is put together – how it works or is organized – how much there is; how one thing varies as a function of another – proportions and percentages – comparisons between quantities – a body of related data – what goes in and what comes out
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10. Use the active voice

- In the active voice, action is expressed directly: "John performed the experiment." In the passive voice, the action is indirect: "The experiment was performed by John."
- When possible, use the active voice. Your writing will be more direct and vigorous; your sentences, more concise.
- As you can see in the samples on the next slide, the passive voice seems puny and stiff by comparison:



Active Voice Samples

- **Passive Voice**
 - Control of the bearing-oil supply is provided by the shutoff valves.
 - Leaking of the seals is prevented by the use of O-rings.
 - Fuel-cost savings were realized through the installation of thermal insulation.
- **Active Voice**
 - Shutoff valves control the bearing-oil supply.
 - O-rings keep the seals from leaking.
 - The installation of thermal insulation cut fuel costs.



Homework Assignment



Homework Assignment

- **Assignment:**
 - One of the research and test groups in our company has produced a technical report that we need to send to one of our major clients. Your job is to write an effective Executive Summary for this report.
- **Assignment Part II:**
 - You will receive some Abstracts and/or Executive Summaries written by engineers from other offices in our company. You are to evaluate these documents making sure that you rationalize your stated opinion of the document.

