Lect08: Writing Tips

8 July 2011

Announcements

- The assignment for resume and cover letter has been uploaded to Sakai
- The due date has been moved to 25 July 2011 (Monday)
- If you encounter problems with the assignment, contact me or the TAs before 15 July 2011

- Now that the writing assignment is released, today, we will talk about tips for writing

Preview

- Writing Tips
  - Concision
  - Topic Sentences
  - Cohesion and Coherence

Concision & Coherence

Courtesy of Prof. Tom Bowden

Qualities of Coherence

- Coherence gives a paper *focus* and *clarity*.
- Coherence is created by *concision*, *tone*, and *flow*.

Concision

1. **Use fewer words, when possible.** Avoid
- "It . . ."
  - Ex: It was noted that
- "There is/are . . ."
  - Ex: There are many problems caused by the malfunctioning valve
- "This is . . ."
  - Ex: This is what happens when engineers don't pay attention

Concision

1. **Use fewer words, when possible.** Avoid
- "It . . ."
  - Ex: It was noted that = We noted
- "There is/are . . ."
  - Ex: There are many problems caused by the malfunctioning valve = The malfunctioning valve caused many problems
- "This is . . ."
  - Ex: This is what happens when engineers don't pay attention = When engineers don't pay attention, malfunctions occur

Concision

2. **Avoid needless phrases**
- Due to the fact that
- We have come to the conclusion that
- The point that I wish to make is that
- The fact of the matter is that
- In order to

Concision

2. **Avoid needless phrases**
- Due to the fact that = Because
- We have come to the conclusion that = We conclude that
- The point that I wish to make is that = ø
- The fact of the matter is that = Because
- In order to = To

Concision

3. **Avoid redundancy**

Concision

4. **Avoid using the passive voice**
  - Have subjects in sentences perform the actions.
  - Ex: Instead of "it was noted by the technician," use "the technician noted."

Concision

5. **Turn negatives into positives**
- Did not succeed = failed
- Does not have = lacks

Creating Active-Voice Sentences

- Subject is usually the first noun in a sentence.
- Do you want *that* subject to perform the action?
- Make the subject act on an object
  - Ex: Cog A turns Cog B 45.˚

Good Topic Sentences

Summarize what the paragraph is about and/or present the paragraph's conclusions first.
- Ex: Tensile strength tests of Widget 59 resulted in measurements well within international standards.

Tone

- Informal versus Formal
  - Err to the side of formal rather than informal
  - Formal tone risks offense less than informal
- Informal words
  - Basically
  - Really
  - Very . . .

  —all imprecise terms

Flow

Defined as a combination of
- simplicity and concision
  - (at the word-choice level),
- active syntactical structure
  - (at the sentence level),
- logic
  - (ideas sensible in themselves, and each idea builds sensibly upon its predecessor), and
- understandability
  - (important terms are defined).

Cohesion

How Writing "Hangs Together"

Adapted from Leslie A. Olsen and Thomas N. Huckin, *Technical Writing and Professional Communication*, 2nd edition, McGraw-Hill, 1991.

Which Reads Better?

- The 5-Year Plan does not indicate a clearly defined commitment to long-range environmental research. For instance, the development of techniques rather than the identification and definition of important long-range issues is the subject of the Plan, where it does address long-range research.
- The 5-Year Plan does not indicate a clearly defined commitment to long-range environmental research. For instance, where the Plan does address long-range research, it discusses development of techniques rather than identify and define important long-range issues.

The Noun Phrase (NP)

- The main carrier of information in scientific and technical English.
- Definition
  - Any noun-plus-modifier combination that can be treated as a complete subject unit; or
  - Any pronoun that can be treated as a complete subject.
- Examples
  - Tables have three or four legs.
  - Water can be dangerous.

More NP Examples

- A potential buyer has arrived.
- The growing demand for asphalt is clearly seen.
- Strict limitations on the size of plates that can be handled have to be defined.

NP Optimal Ordering, Part 1

1. "Given information" in subject position, before "new information"
   - Given information = repeated information

Hard to Read: No Given Information in Subject Position

The 5-Year Plan does not indicate a clearly defined commitment to long-range environmental research. For instance, the development of techniques rather than the identification and definition of important long-range issues is the subject of the Plan where it does address long-range research.

Easy to Read: Given Information in the Subject Position

The 5-Year Plan does not indicate a clearly defined commitment to long-range environmental research. For instance, where the Plan does address long-range research, the Plan [why not "it"?] discusses development of techniques rather than identify and develop important long-range issues.

Given Information in the Subject Position

- Repeated forms must be understood when repeated
- Understanding will vary with background
- Use only forms understood by the entire audience

NP Optimal Ordering, Part 2

2. "Topical information" (what the sentence is about) in the subject position

Topical Information in the Subject Position

By any analysis, the problem of solid-waste disposal is notable for its sheer scatter. Just as the overall problem is concerned with thousands of heterogeneous material substances, so it comprises immaterial sub-problems that must be numbered also in the thousands. Some of these sub-problems are political, and raise questions of proper action at all levels—municipal, state, federal. Some are economic, and raise questions of manufacturing efficiencies, sales strategies, and short-range profits as against long-range resource allocation.

NP Optimal Ordering, Part 3

3. "Light NPs" before "heavy NPs"

Light NPs before Heavy NPs

We have sent the research, development, and testing office in Chicago a gas analyzer.

Better:

We have sent a gas analyzer to the research, development, and testing office in Chicago.

Light NPs Before Heavy NPs

- The idea of designing and producing an economical AM/FM receiver that is both affordable for the average consumer and profitable for the company was introduced.
- The idea was introduced of designing and producing an economical AM/FM receiver that is both affordable for the consumer and profitable for the company.

Exercise: Handout

- This exercise will substitute one quiz! ☺
- Please take one sheet of handout per person
- Take out a sheet of scratch paper
- You may work in pairs or trios, but please submit one sheet of paper per person.

Look at Sample Paragraph #1

By measuring the length, width, and height of the aluminum sample, the volume was able to be determined. For the specimen's calculated density, we determined it by figuring out the alloy's mass and dividing it into the volume we calculated. The calipers had a resolution error, and the four individual measurements of the candidate metal had a resolution error, and from these error of the density was calculated by us. Therefore, 2.80±0.04 g/cm^3 was the determined density of the aluminum sample.

Sample Paragraph #2

The fracture test we used for each of the four samples is based on standard E399 of the American Society for Testing and Materials. The values for the stress-intensity factor (K_Q) are not equal to the fracture toughness value (K_{Ic}) because a criterion for the fracture test method standard used was not met. A plot of K_Q versus B (Fig. 3, p. 4) for the four specimens reveals that this criterion was not met. However, the values are listed as overestimates for K_{Ic}. The samples did not fracture under a condition known as plane strain due to limitations in the samples' dimensions. The plane strain condition is reached when the stress-intensity factor K_Q no longer varies with thickness, B, after a critical thickness is surpassed. The stress-intensity factor was determined using Eqs. 1 and 2 (p. 4).

Sample Paragraph #3

There is a 1.4-2.9% difference in the experimental versus standard value for elastic modulus. The standard value for yield stress is 505 MPa [1], and our experimental alloy meets that standard within our error. The standard value for ultimate strength is 578 MPa [1], and our experimental alloy meets that standard within our error. The results of the tensile test helped us determine the elastic modulus to be 72±1 GPa, the yield stress to be 509±5 MPa, and the ultimate strength to be 580±6 Ma. The standard value for the elastic modulus is 70 GPa [1], which doesn't agree with the experimental value we found for the alloy.

Sample Paragraph #3 (cont'd)

During the test, the LabView 8.5 recorded load applied and the three strain gauage rosette (Figure 1) readings. We found ε_{xx}, ε_{yy}, and γ_{xy} using equations 1, 2, and 3 along with the angles from the strain gauge rosette. We were able to find the principal strains from these values using equation 4 based on Mohr's circle. WE used area (Eq. 5) along with the given force to find nominal stress (Eq. 6) once we found a principal/nominal strain. Next we converted our nominal stress and strain values to three stress and true strain based on Eqs. 7 and 8.