Technical & Academic Writing

These slides are available at www.eng.odu.edu/edservices.htm

Materials, Hand-outs, and Assignments related to this Presentation are available at www.eng.odu.edu/edservices.htm

Rhetoric

Rhetoric = Symbolic Action

Rhetoric is how language gets work done in the social sphere.
Writing Pathway
for College of Engineering and Technology Students*

1. Writing Sample Placement Test
2. Complete your English General Education requirements
   - ENGL 110C (ENGL 126C for Honors students)
   - ENGL 111C or ENGL 131C (Honors students take ENGL 127C)
3. Take and pass the Exit Writing Exam (Junior Year)
4. Take and pass a Writing Intensive Engineering course during your junior or senior year. Your specific required course, as listed on your curriculum sheet, depends upon your discipline.

   CE       CEE 407W
   EnE      CEE 355W
   EE       ECE 485W
   MeE      ECE 486W
   ME       ME 434W
   CET      CET 479W
   EET/CET  EET 480W
   MET      MET 335W

*Step 1 in the Writing Pathway for non-native speakers is determined on an individual basis.

Rhetoric
HOW WRITING WORKS

The job of any piece of writing is to move the reader from one understanding of a topic to a new understanding.

Consider this example:
if you wanted to slide a box across a floor to a specific spot . . .
You could figure out the amount and direction of the force you would need to apply to the box to get it to move to that spot by knowing a few things . . .

By understanding something about the forces exerted on the box and by having a good idea of where you wish to go, you could move the box in a predictable way.

The same is true in writing: by knowing something about the elements involved in the reading act you can predictably influence the outcome.
Who is the Reader?

What is the Message?

Who is the Writer?

Reading Act

Who is the reader?
What do they want to know?
What do they need to know?
What do they already know?

What is the purpose of writing?
- Inform
- Convince
- Persuade

What data / evidence is necessary to support this purpose?
Who is the writer?

What does the text say about the writer?

Every piece of writing produced, like it or not, presents the reader with a picture of the writer. This picture can leave a positive or negative impression on the reader.

What picture does the text present of the writer?

- Knowledgeable?
- Clear and Fluent?
- Authoritative?

Who is the writer?

What picture does the text present of the writer?

- Mechanical errors?
- Inconsistent tense
- Uneven or inappropriate tone?
- 1st or 2nd person (versus 3rd person)?
Rhetoric
HOW WRITING WORKS

Rhetoric = Symbolic Action
Rhetoric is how language gets work done.

Use this to your advantage

Report Format
STYLE AND FORMAT CONSIDERATIONS

How you say something and the manner in which you present your message is sometimes as important as the message itself!

Report Format
STYLE AND FORMAT CONSIDERATIONS

Unless otherwise directed, adopt a format style from a publication in your discipline:

Nearly every engineering discipline has authoritative journals. These publications have specific formatting styles either explicitly defined in a style guide or implicitly present in examples from the publication.
Report Format
STYLE AND FORMAT CONSIDERATIONS

Use a Journal Model for:
• Required Elements
• Citation Style
• Figure and Table Style

Report Format
STYLE AND FORMAT CONSIDERATIONS

A word about citations:
There are two kinds of citations
• In-text citations
• Out-of-text citation
  • Bibliographies
  • Works cited

Report Format
STYLE AND FORMAT CONSIDERATIONS

Another word about citations:
You must cite, document, and/or explicitly acknowledge every use of another person’s/organization’s thoughts or language!
Citations are a way of giving credit where credit is due AND helping your reader find your original sources.

Failing to cite properly is called . . . .
**PLAGIARISM!**

Plagiarism is a form of academic dishonesty punishable by expulsion.

Even ‘accidental’ plagiarism can get you expelled.

Whenever you use other’s thoughts or language by:
- Direct Quotation (either complete or partial)
- Paraphrasing
- Summary

You must cite that use!

**Components of a Technical Report**

- Abstract / Executive Summary
- Introduction
- Body
- Summary/Conclusion/Recommendations
Report Format

COMPONENTS OF A TECHNICAL REPORT

Abstract or Executive Summary

A distillation of the whole of piece of writing

How are they used?

What information can I expect to find in this report?

Examples are available at  www.eng.odu.edu/edservices.htm

Abstract

In this paper, a novel location management scheme, distributed mobile tracking (DMT), is proposed for routing improvement in Cellular IP networks. A mobile-tracking tree (MT-Tree) for each active mobile host is established by tracking the movement of the host in DMT. Two mechanisms, pruning process and growing process, are also proposed to improve DMT. Packet transmissions can follow the route on the MT-Tree instead of using the gateway route. Simulation results have shown that DMT has the advantages of shorter routing paths as well as load balance for wired links over the original gateway-based location management scheme. Moreover, three multicast protocols for Cellular IP are proposed: GBMP, GBMP-RO, and MTMP. In GBMP, the gateway is responsible for group management as well as multicast transmission. Multicast packets received by the base station are first forwarded to the gateway. The gateway then forwards the packets to each member of the group by multiple unicasting. GBMP-RO, a modified version of GBMP, adopts the idea of source routing for multicast transmission. MTMP is mainly based on the MT-Tree routing scheme. However, if not all group members can be covered by MT-Tree routing, MTMP will instead adopt GBMP-RO for multicast transmission. Simulation results demonstrate that MTMP has the advantages over GBMP and GBMP-RO in terms of load balance in the Cellular IP network.

Author Keywords: Location management; Cellular IP; Routing; Multicast

Executive Summary

The design project group at AMCE Engineering is involved in the design of a new widget to reduce the cost of our satellite communication system. The present version of the widget has been identified as the cause of the AMCE communicator’s low market share. The design group of which I am a member has been given the task of redesigning the widget to reduce its cost. The group has determined three different approaches to solving the problem:

1. Use less costly components in the D/A converter section of the receiver unit and redesign the control unit.
2. Go to an outside vendor and substitute an “off-the-shelf” controller unit, which may have marginal specifications.
3. Increase the size of the power supply system so that a single power supply can handle more than one receiver/transmitter unit. This reduces the number of power supplies and, hence, reduces the cost.

Evaluation of these options, including cost evaluation and technical assessments of each, results in the following recommendations:

Due to reliability and technical feasibility, it is recommended that AMCE Engineering accept solution 3. Solutions 1 and 2 should be rejected because the components needed for these solutions will not have sufficient reliability to make them cost effective.
# Abstract / Executive Summary

**What goes into it?**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What is your reason for writing?</td>
<td>- What solutions do you present to the reader to resolve the problem or issue in the piece?</td>
</tr>
<tr>
<td>- What is your main idea?</td>
<td>- Do you recommend action or change?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What is your focus in this piece?</td>
</tr>
<tr>
<td>- Where do you concentrate your attention?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What kinds of evidence do you provide?</td>
</tr>
<tr>
<td>- How do you try to convince the reader of the validity of your main idea?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What are the consequences of the problem or issue that you are discussing?</td>
</tr>
</tbody>
</table>

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# Report Format

**COMPONENTS OF A TECHNICAL REPORT**

Introductions and conclusions should be closely linked.

**Introduction**

Sets the context, poses the problems, and asks the questions that will be answered in the body of the paper. These questions may be implied or stated overtly.

**Conclusion**

Introductions ask the questions and pose the problems. Conclusions state the answers.
Introduction: What goes into it?

- Why are you presenting this work?
- Where does it fit in the engineering field?
- How does it relate to other work in the field?
- What are the aims and objectives of the project?

Set up context

Define scope

Foresighting / mapping

State problem/thesis/question
Conclusions

The conclusion answers the questions asked in the Introduction by connecting those questions with the data/evidence supplied in the body. Therefore, it should be closely related to the objectives that were stated in the introduction.

Report Format
COMPONENTS OF A TECHNICAL REPORT

Conclusions

- Summarize key points
- State Conclusion
- State Relevance
- Give recommendations for further actions

Repetition is necessary for cognition.
COMPONENTS OF A TECHNICAL REPORT

**Body**

The content of the body of your writing is determined by the assignment and purpose for doing the writing in the first place.

Possible elements include:

- Theory
- Review of literature
- Experimental method
- Results
- Discussion

**Summary**

How is a summary used? The summary is a distillation of the whole of your work. A summary restates and reemphasizes key points of the message. A good summary should guide the readers' understanding of the text.
Recommendations

A recommendation is a statement that some action be taken or not taken. These statements should be supported by the content of the paper. Recommendations tell the reader what they should do next.

Report Format
COMPONENTS OF A TECHNICAL REPORT

Abstract / Executive Summary
Introduction

Body

Summary/Conclusion/Recommendations

Where Do I Start?
FIRST, KNOW YOUR STUFF!

Strategies for beginning to write a technical report

- Arrange the results of your research (formulas, graphs, charts, etc) in a logical sequence. Write explanations for each element.
- FORM DRIVEN: Create a rough outline of the body of your report, “flesh it out” as best you can, and then work on the other parts.
- CONTENT DRIVEN: Write down each of the components and try to “fill in the blanks” by answering the questions provided in this presentation.
- CONTEXT DRIVEN: Clean your room! Take a walk! Open a window! (Physical activity may give your brain the freedom to work out what it’s going to write before you sit down at the computer.)
**Tips**

THINGS TO DO AND THINGS NOT TO DO

- **NEVER TURN IN A PAPER THAT HASN'T BEEN SPELL CHECKED!**
- Never trust your spell checker or your grammar checker! (hear/here, there/their, running/ruining, drafting/rafting)
- Invest in a good dictionary and thesaurus.
- Leave your final draft alone for 24 hours then come back to it with a fresh eye. (This means giving yourself plenty of time to complete the assignment. You can't wait 24 hours to review your report if you don't start writing until 2 a.m. the morning it's due.)

**Tech (Writing) Support**

WHAT DO I DO IF MY BRAIN EXPERIENCES A CATASTROPHIC FAILURE OF ITS WRITING SYSTEM (E.G., WRITER'S BLOCK)?

- Walk away. Give your draft and yourself a one- or two-hour break.
- Write anyway. Write about what you think about what your writing. Write about why you can't continue writing.
- Talk through your assignment. Read your draft aloud. Explain the project to someone.
- Review your assignment or purpose in writing.
- Talk to your instructor.

**Proofreading and Revision**

NO, THEY'RE NOT THE SAME!

The difference between proofreading and revision:

**Proofreading** is checking for mechanical (grammatical) problems and completeness. (DO THIS LAST, DO THIS ONCE)

**Revision** asks you to look at your work again (re-creation, re-view, re-envision) through the eyes of your audience. (DO THIS THROUGHOUT THE WRITING PROCESS, BUT DON'T LET IT GET YOU BOGGED DOWN)
Proofreading and Revision

Revision

WHY DO IT?

Does your writing say what you think it says?

Do the various parts of your writing fit together?

Do the various parts of your writing do their jobs?

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Proofreading and Revision

WHY DO IT?

SMALL TYPOS THAT CAN CHANGE THE MEANING:

"Education: College, August 1880-May 1984."

"Work Experience: Dealing with customers’ conflicts that arise."

"Develop and recommend an annual operating expense fudget."

"I’m a rabid typist."

"Instrumental in ruining entire operation for a Midwest chain operation."

Samples taken from Progressive Engineer web site

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Revision Strategies

TRY SOME OF THESE:

• Read your work out loud
• Cut up method
• Rewrite method
• Outline method
• Have a friend read it
### Proofreading Methods

**TRY SOME OF THESE:**

- Read your work out loud
- Read your work backwards (begin with the last sentence and read to the first) to check for mechanical errors
- Look for the 20 most common errors (see handout)

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### 20 Most Common Errors Identified by Instructors in Student's Writing

Based on a study by Andrea Lunsford and Robert Connors of errors marked by professors in 3000 undergraduate papers. These 20 errors represent 91.5 percent of all errors identified in student texts.

1. Most of these 20 errors are very simple to spot and to fix!
2. It is likely that most of you know the rules that these errors violate already!
   A. Proof your paper quickly for those errors with which you are familiar.
   B. Consult a writer's guide for those you're unsure of. Then Proof your paper for those.

20 Most Common Error hand out is available at www.eng.odu.edu/edservices.htm

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### 20 Most Common Errors Identified by Instructors in Student's Writing

1. Missing comma after an introductory element
2. Vague pronoun reference
3. Missing comma in a compound sentence
4. Wrong word
5. Missing comma(s) with a nonrestrictive element
6. Wrong or missing verb ending
7. Wrong or missing preposition
8. Comma splice
9. Missing or misplaced possessive apostrophe
10. Unnecessary shift in tense
11. Unnecessary shift in pronoun
12. Sentence fragment
13. Wrong tense or verb form
14. Lack of subject-verb agreement
15. Missing comma in a series
16. Lack of agreement between pronoun and antecedent
17. Unnecessary comma(s) with a restrictive element
18. Fused sentence
19. Misplaced or dangling modifier
20. *Its*/It's confusion
ASSIGNMENT: Define each of the following elements for your project for this class and identify how they will influence the piece of writing.

Who is the Reader?

Who is the Writer?

What is the Message?

Assignment Template available at www.eng.odu.edu/edservices.htm