IS MY WRITING *THAT* BAD?

Understanding Technical Writing Challenges in Civil Engineering
*Tori D. Rhoulac, Ph.D. * Department of Civil Engineering * Howard University*

ABSTRACT:

Are engineering students really as bad at writing as they are made out to be? What really is the problem?

With the ultimate goal of effectively preparing students to meet workplace writing expectations, this research project was Developed to begin assessing, quantitatively, the current proficiency of civil engineering students' technical writing. Using the work of a small group of civil engineering seniors, student writing samples were evaluated in three categories:
- ❖ grammar and syntax
- ❖ application of the scientific method
- ❖ conceptual understanding

Results of the study are expected to inform course development processes, so that emphasis can be placed on those areas of greatest need.

Students in the Traffic Engineering I course at Howard University submit technical reports as a part of standard course requirements. Selected reports from the Fall 2004 semester were anonymously assessed by the instructor, another student in the class, and a representative from the transportation industry.

Each report was assigned a numerical ranking in each of the three categories. The focus was on the perception of proficiency from the student, instructor, and industry perspectives.

At the 2004 Summer Summit, I…

…attended with only one year of experience in academia.

…had an interest, but no experience in engineering education research.

…proposed research topics based on my experiences in the classroom.

…selected one topic on which to focus.

…received invaluable feedback from others.

…formulated the topic into a formidable research question.

Immediately After the Summit, I…

…was motivated and went right to work.

…had my Traffic Engineering I students anonymously review 2 of the technical reports submitted for normal class requirements.

…collected 15 total reports for inclusion in the research project.

By the End of 2004, I…

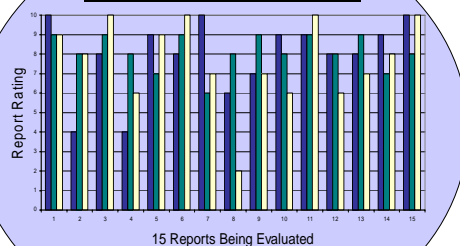…had so many other duties that the research "lost some steam."

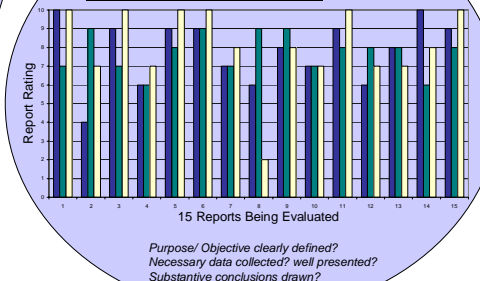…stopped taking advantage of the opportunities for discussion of projects with other ISEE scholars.

Between the Summer and Fall of 2005, I…

…resumed active planning to complete the research.

…completed my evaluations of the reports as instructor.

…secured an industry representative to evaluate the reports.

…analyzed the data from the student, instructor, and industry evaluations.
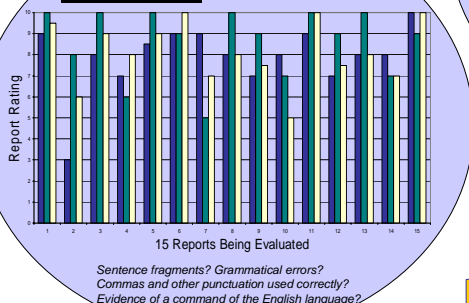
…prepared for preliminary dissemination of results.

CONCLUSIONS/ LESSONS LEARNED:

Concerning Engineering Education Research…
- ❖ *Select A Topic Of Personal Interest (provides motivation)*
- ❖ *Be Sure Data Can Be Relatively Easily Collected (provides encouragement through feasibility)*
- ❖ *Form A Community Of Similar Scholars (such as ISEE)*
  - • *Regular meetings keep you on track.*
  - • *Opportunities for collaboration on other projects result.*
  - • *Expertise of others can be invaluable for:*
    - – *Appropriately scoping your research question.*
    - – *Suggesting "tried and true" methodologies.*
    - – *Providing useful resources (like effective survey questions).*
    - – *Recommending related literature for review.*
- ❖ *Develop A Personal Schedule With Deliverables (provides structure to ensure project is actually completed)*

Concerning Technical Writing Research…
- ❖ *Lack of proficiency for student writing may be due more to lack of conceptual knowledge than to lack of skill in writing mechanics.*
- ❖ *Instructors may need to "grade harder" where grammar and syntax are concerned.*
- ❖ *Many students are prepared by their graduating year to meet workplace writing expectations.*

Demonstrated Conceptual Knowledge

Report Rating — 15 Reports Being Evaluated

Literature review relevant?
Fundamental computational errors found?
Discussion of results meaningful?
Rhetoric logical? necessary? effective?

Grammar & Syntax

Report Rating — 15 Reports Being Evaluated

Sentence fragments? Grammatical errors?
Commas and other punctuation used correctly?
Evidence of a command of the English language?

Application of Scientific Method

Report Rating — 15 Reports Being Evaluated

Purpose/ Objective clearly defined?
Necessary data collected? well presented?
Substantive conclusions drawn?

- ■ Student Ratings
- ■ Instructor Ratings
- □ Industry Representative Ratings

Research Results