ADDRESSING THOSE PESKY ABET EC2000 CRITERIA IN CAPSTONE DESIGN: USING COMMUNICATION ACTIVITIES TO MEET WORKPLACE EXPECTATIONS

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Abstract *— The capstone design sequence is often selected as the site for addressing ABET criteria* a *through* k. *Increasingly, capstone design is designated as writing-intensive, serving to fulfill students' baccalaureate writing requirements and address ABET criterion* (g). *Yet assigning capstone design the responsibility of fulfilling communication requirements presents the challenge of understanding what and how these future engineers will be writing. A study of current communication practices of working engineers, with particular focus on these engineers' capstone design communication experiences as preparation for engineering practice, was completed in 2001 and is currently being analyzed.*

Index Terms — ABET criteria, communication, senior capstone design, workplace, writing assignments.

INTRODUCTION

Over the last decade, drawing in part on the writing-across-the-curriculum movement of the 1980's, engineering curricula have increasingly focused on communication within engineering courses. These good intentions became mandated when the Accreditation Board for Engineering and Technology (ABET) issued their EC2000 criteria, including communication, as integral to engineering education. Engineering industry representatives have also demanded stronger communication skills in new engineering hires.

The authors have been faculty in an engineering department with a long commitment to and support for incorporating communication activities into engineering education, with department-specific courses in technical writing and oral presentation—the only such program at the university—as well as extensive writing activities in the senior year capstone laboratory and design courses. The technical communication courses and the plant design sequence had strong emphasis on and connections with industry practice. Yet interaction with and feedback from this department's graduates indicated some disconnect between these former students' academic communication activities and eventual workplace writing practices, needs, and learning, thus motivating investigation of these issues.

STUDY OF ACADEMIC PREPARATION FOR WORKPLACE WRITING

In 2001, a study was conducted of practicing engineers, with the goal of learning if and how their academic work in writing-intensive engineering courses had prepared them for the communication tasks they would face in the workplace. This study began with two surveys on common writing tasks, the characteristics of effective workplace writing, and academic preparation for that writing, using Likert scale, multiple choice, and open-ended questions, and other appropriate quantitative methods. Qualitative interviews to verify and expand on gathered data, as well as discourse-based analysis of actual working documents were also included in the study's methodology.

RESULTS OF WORKPLACE WRITING STUDY

This study yielded insights into engineering workplace writing practices, needs, strategies, and priorities. Of particular interest to this discussion are three areas:

- The characteristics identified as most valued in effective workplace writing, which are in some cases different from the priorities emphasized in coursework writing.
- The types and genres of documents typically in use in engineering practice, which in many cases do not parallel writing assignments in engineering design, despite the typically strong emphasis in design courses on "real world" writing.
- The ways in which writing-intensive university courses prepared—or didn't—study participants for engineering workplace writing.

The authors are continuing their evaluation of the study's results for specific application to capstone design activities. Final conclusions and recommendations from this study will be detailed at future engineering conferences. Those interested in additional background, literature review, specific results, and applications should contact the authors, who welcome discussion and development around these topics.

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