"Strategies for Improving Writing Outcomes in Engineering Technical Courses"

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Abstract **- ABET counts effective communication as one of the eleven student outcomes of an accredited engineering program. This workshop, delivered by writing instructors within the Department of Engineering Education at The Ohio State University, begins with an understanding of writing as both a means for students to document their knowledge of technical concepts and an opportunity for practicing effective communication. The two-part workshop will offer strategies for and practice with improving student writing assignments within their engineering-based curriculum courses.**

The first part of the workshop will share insights on developing assignment prompts that encourage students to practice an audience-based approach to communication. The second, "hands-on" part of the workshop asks participants to work in groups to workshop their own assignment descriptions in order to improve the learning outcomes and the quality of the work students produce.

Participants are encouraged to bring assignments or assignment ideas to work with during the second part of the workshop. Assignments can, but are not required to be writing or communication-based.

Index Terms - communication skills, knowledge transfer, student writing, writing in engineering courses.

Writing is an integral part of a successful engineer's career. Scholars have suggested that writing is a vital part of the day-to-day work of engineers, writing emails, reports, instructions, and proposals. They have also demonstrated that writing is vital to the process of building and establishing engineering concepts: that is, writing helps engineers not just communicate what they know to others, but, themselves to know what they know about engineering.

As instructors of technical communication within the Department of Engineering Education at OSU, we are committed to teaching students the fundamental skills and knowledge required to become effective communicators. Specifically, we use engineering-focused scenarios and assignments that train students to write documents that are sensitive to both audience needs and how the context in which information is communicated and received influences whether its purpose is effectively achieved.

While the Engineering Technical Communications program teaches a variety of courses tailored to helping students understand writing for a variety of situations and purposes (we teach research communications, technical presentations, and diversity and technical writing, among others), courses focusing only on technical communications, but not on the technical concepts themselves, tend to be viewed by students as compartmentalizing skills that do not carry over or relate to their technical coursework.

At the same time, anecdotal conversations with faculty members teaching fundamentals of engineering and other technical courses suggest that the importance of writing and communication skills are valued by professional engineers and instructors alike, but that students often fail to produce quality writing in these settings. We suggest that this may in part be because of a cultural disposition toward writing within engineering that is propagated when writing is not explicitly discussed, valued, or evaluated in technical engineering courses.

In this workshop, we aim to address both the product--engineering student writing--and the cultural disposition--engineering students' belief that writing is unrelated to the practice of engineering--through two avenues:

1. We will introduce participants to ways they can incorporate writing into their engineering courses

2. We will offer the opportunity for instructors of technical courses to workshop their existing assignments and write assignment descriptions that better achieve their assignment learning outcomes, as well as the overall quality of the writing/communication products students create in responding to those assignments.

WORKSHOP PART I

In the first part of the workshop, we will discuss how engineering technical communications courses introduce engineering scenarios that engage writing purpose, audience, and context; we will also discuss examples of assignments and lectures from technical courses both before

and after they have been modified to incorporate writing and writing-based skills and competencies in addition to technical abilities.

WORKSHOP PART II

During the second half of the workshop, participants will work in groups to workshop assignments they have brought in order to improve the learning outcomes and students products produced. These assignments may be, but are not required to be writing or communication based assignments.

Finally, participants interested in collaborating on a research project with the Engineering Technical Communications unit may sign up to participate in a study comparing SLOs and writing outcomes of sections of engineering that have not been subject to the workshopped assignment, versus those that have.

PARTICIPANTS

Participants should expect to come away with tangible strategies for incorporating writing into their lectures, labs, and assignments. They should also come away with assignments workshopped by technical colleagues as well as experts in technical communications and writing research.

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