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Student perceptions and attitudes towards a technical writing service course at Missouri S&T

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STUDENT PERCEPTIONS AND ATTITUDES TOWARDS A TECHNICAL WRITING SERVICE COURSE AT MISSOURI S&T

by

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ABSTRACT

In order to learn how STEM students perceive Missouri S&T's English 3560 Technical Writing class, I designed a research study to investigate how a sample population of 90 students viewed the class. Due to the nature of qualitative research, the results of this study cannot be generalized to a larger population. However, the results can and do provide insight into the situation of these Missouri S&T students in English 3560 classes and contribute to our collective understanding of the technical writing service course at Missouri S&T and other US universities. The study investigated whether the sample population of students who had completed internships and/or co-ops at the time of the survey viewed the course differently than students who had not completed internships and/or co-ops. The data revealed that most of the students (72 out of 90) believed the course would be valuable to their future careers in STEM fields. There was also little difference between the perceptions of students who had completed internships and co-ops and students who had not. 75% of students who had completed internships and 85% of students who had not completed internships believed that the writing skills learned in the English 3560 course would be valuable to them in industry. The study also revealed that all 90 students who took part in the survey believed that writing will be necessary in their future careers. With or without professional experience, the surveyed students were able to identify the value of learning technical writing.

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1. INTRODUCTION

I designed a study to learn about student perceptions of the technical writing service course (English 3560) at Missouri S&T, especially to determine whether students' experiences working in internships and co-ops impact their perceptions of the course. As a student pursuing a Master of Science (MS) degree in Technical Communication, I have taught English 3560 to undergraduate juniors and seniors at Missouri S&T for three semesters as a graduate teaching assistant (GTA) and thought I noticed a pattern in students' attitudes towards the course. In the first section of English 3560 that I taught during the spring semester of 2018, multiple students told me that they did not believe writing would be important to their future careers in engineering/STEM fields nor that they would write lengthy technical documents on the job. However, research shows that engineers spend a considerable amount of time writing while on the job, especially engineers in management positions (Donnell, Aller, Alley, & Kedrowicz, 2011).

According to Donnell et al. (2011), there is a disconnect between the writing tasks that engineering students learn in college and the writing tasks that they complete in industry. The authors suggested that "One step that could be taken is for engineering departments to conduct longitudinal studies about how well their instruction on writing and oral communication prepares students for later classes, for internships and co-ops, and for employment" (Donnell et al., 2011, p. 1). Propelled by this suggestion, I have designed a study that seeks to better understand whether my sample population of Missouri S&T students completed writing tasks in their internships and co-ops that are similar to the writing tasks that they learned in English 3560. I intend for this study to benefit future students in the course by prompting students and instructors to reach a

mutual understanding about how the course material will prepare the students for their future careers. To this end, I was also interested in learning about the types of documents and kinds of writing tasks that students completed in their internships and co-ops; I also collected data from students about the kinds of professional experiences they had completed and how writing played a role in those positions.

1.1. RESEARCH STUDY

Brady (2007) observed graduate students in a science and technical communication writing course and found that students with industry experience performed writing tasks differently than their peers. Similarly, I hoped to discover whether professional experiences had a measurable impact on my sample population's perceptions of the English 3560 technical writing course at Missouri S&T. I have developed a primary research question: "Do students who have completed internships and co-ops view English 3560 differently than do their peers who have not completed internships and co-ops?" Along with the primary research question, I also developed the following secondary research questions to guide the study:

- Do students who have completed English 3560 believe that they will use the writing skills gained in the course in industry?
- What types of documents did students complete in their internships and co-ops?

- Do students who have completed internships and co-ops see a parallel between the types of documents (i.e., emails, proposals, letters, reports, memos, etc.) used in their professional positions and the types of documents required in English 3560?
- Are students able to correctly identify the types of documents completed throughout the course?

While Missouri S&T students (the majority of whom pursue careers in engineering and STEM fields) are required to take a variety of courses designed to prepare them for their future careers, they are not required to take many courses that focus specifically on writing. Recently, the Accreditation Board for Engineering and Technology, Inc. (ABET) has placed a stronger focus on both written and oral communication skills as a goal for students graduating from accredited STEM programs (ABET, 2018; Passow, 2012; Rosales, Benally, Haines, & Siller, 2009; Shuman, Besterfield-Sacre, & McGourty, 2005). Missouri S&T's English 3560 course is intended to help students enter the workforce with written communication skills and prepare them to write a variety of technical documents, both formal and informal—proposals, reports, memos, and emails, for example.

1.1.1. Defining English 3560 Course Requirements. Donnell et al. (2011) mentioned that when they reviewed the literature, "writing skills of interest are themselves not sharply defined in most studies, nor is the relationship these skills might have with any activity or event outside of these particular classrooms" (p. 5). To avoid confusion, I would like to provide an overview of the writing skills taught in the English

3560 course at Missouri S&T. The course is offered to junior- and senior-level students at the university and is defined in the Missouri S&T undergraduate catalog (Missouri University of Science & Technology, 2018) as "the theory and practice of writing technical papers and reports in the professions." As of 2019, the course textbook is *Technical Communication* by Mike Markel (current edition published in 2018). In the course, students complete five major assignments: two resumes, a cover letter, and follow-up correspondence with a potential employer; a set of instructions; a proposal on usability testing; a progress report on collecting data/usability testing; and a recommendation report in which the author makes recommendations to the developer of the product being tested (see Appendix H for a complete course syllabus from fall 2018).

In order to determine the relationship between these types of documents and "any activity or event outside of these particular classrooms," I have asked students to identify the types of documents they completed in their internships and co-ops and to compare these to the types of documents they completed in English 3560 (Donnell et al., 2011). Donnell et al. (2011) established that two main issues preventing engineers from being prepared to write well when they enter the workforce are "1. differences in the goals for writing in the classroom and for writing on the job, and 2. differences in the audiences for whom reports are prepared in the classroom and in the workplace" (p. 9). In order to best serve students, it is crucial to connect writing tasks in English 3560 to the kinds of writing tasks that students will be doing in industry, with consideration of appropriate goals and audiences.

1.1.2. Defining Internships and Co-ops. For the sake of clarity, I would like to note that at Missouri S&T an internship is defined as a paid or unpaid professional

opportunity offered during the summer months with an industry partner, whereas a "Cooperative Education Program" (co-op) is defined as a short-term employment opportunity that takes place during the regular school year, is usually two or three semesters long, including the summer months, and provides 7-12 months of paid employment experience (Missouri University of Science & Technology, 2019a, 2019b, 2019c).

In a co-op, students are told that the "program is structured so that you can take a break from your studies and work full-time" (Missouri University of Science & Technology, 2019b). For the purposes of this study, I asked students if they had completed either an internship or a co-op to determine whether they had obtained professional experience outside of the classroom, as both opportunities provide students with professional experience that differs from academic experience. Some survey participants had completed both an internship and a co-op, while others had completed multiple internships.

While previous research has been done to explore the connection between educational and professional experiences and students' perceptions of their coursework, this study is important because no such research has been done specifically at Missouri S&T, and such information is crucial to understand how to better serve Missouri S&T students when they are pursuing an undergraduate degree. If students are to learn how to communicate effectively, they will need to participate in well-designed programs that have considered their needs after graduation.

The data gathered from this study helps define how Missouri S&T can better meet the needs of students who are enrolled in English 3560. The university benefits from the

study by having access to data that reveal how the study's population of Missouri S&T students perceive the technical writing service course and how those perceptions are shaped by their experiences in internships and co-ops. The data also show what types of documents the sample population of students completed in internships and co-ops and how instructors and the students who participated in the survey have different perceptions of the course material. The study contributes to the existing body of research about how undergraduate engineering students perceive the relevance of writing to their future careers and provides insight as to what types of documents undergraduate engineers complete in internships and co-ops. The understanding of this topic in a local context adds to our overall understanding of how engineering students interact with writing courses and what experiences influence their perception of writing. This idea is further developed in the next section, the literature review.

2. LITERATURE REVIEW

My study seeks to understand student perceptions of English 3560 Technical Writing at Missouri S&T. In order to understand how STEM students perceive writing courses and how those students learn to write effectively, I began to review the literature on these topics in technical communication and composition. When I was still in the initial stages of drafting research questions and reviewing the relevant literature, I read Julie Ford's (2006) study on how undergraduate engineers view communication. In her study, Ford made the distinction between how students learn to communicate in the classroom and how they learn to communicate in the workplace. Ford's study helped me develop an important research question: what impact, if any, did professional experiences have on Missouri S&T students' perceptions of communication?

Moving onward from Ford's study, I began to investigate the literature that studied STEM students' perceptions of writing; whether technical writing courses at STEM universities were effectively teaching students to write; ABET competencies for engineers; and how writing classes and experience writing in a professional environment develop the communication skills of undergraduate engineers.

I selected sources that are published in technical communication—related journals, such as the *Journal of STEM Education,* the *Journal of Business and Technical Communication,* and *IEEE Transactions on Communications.* I also selected work from conference proceedings and other sources that focused on how engineers learn to write effectively. My literature review begins with Ford's work, covering her studies published in 2003 and 2006, respectively, and then moves chronologically through the other studies. I analyze Kaczymarczyk's (2003) work after Ford's and move towards

Mokgwathi and Otlhomile's case study of a technical writing course for engineers (2015). Understanding this past research helped to lay a foundation for my study. I have collected and discussed these studies below.

Ford and Riley (2003) suggested that asking students to complete writing assignments within engineering courses (rather than keeping them only in separate technical writing courses) is one way for engineering and technical writing departments to work together to serve students and ultimately help them build stronger writing skills. Ford and Riley (2003) also gave examples of STEM schools that offered courses specifically focused on engineering writing or writing in industry. Their research was helpful to my study because it illustrates how STEM-based universities can successfully incorporate writing into their curricula and better prepare engineering students for the types of writing they will complete in industry. The results of this study showed that collaboration is key; technical writing departments must be willing to collaborate with engineering departments in order to best meet the students' needs.

Later, Ford (2006) conducted a small-scale study of ten undergraduate engineering students in a technical writing course at the New Mexico Institute of Mining and Technology. Her study sought to understand two key questions: what parts of a technical writing course did students view as most valuable and important, and did their perceptions change after completing the technical writing course? Ford's (2006) study provided a model for my study; like Ford, I chose to study a technical writing course at a STEM-based university. I drew from her study when designing my own, though I used surveys and a focus group, whereas she used surveys and interviews. She surveyed the students at the beginning of the course and again at the completion of the course. She also

conducted interviews with each student at the conclusion of the course to collect data about how they viewed the course and how technical writing would impact their future careers in engineering. In addition, she administered surveys to 16 technical writing instructors at the university to determine which concepts of technical writing the instructors believed to be most crucial.

Ford's (2006) study showed that the students' perceptions of the most important aspects of technical writing shifted from the beginning of the course to the end. For instance, students ranked "writing clearly" and "writing concisely" as very important at the beginning of the semester, but at the end of the semester they ranked these attributes as lower on the scale of importance. Instead, at the end of the semester, most students chose "viewing writing as a process" as the most important writing strategy (Ford, 2006, p. 37). This indicated that students learned how to plan, draft, and revise throughout the course of the semester. Students also ranked the types of writing tasks that they viewed to be important, and their rankings did not change from the beginning to the end of the semester (Ford, 2006, p. 37). During the interview portion of the study, students noted that they learned to write from "their technical communication course and talking with a boss or manager…also cited were talking to other employees and looking at examples from other employees" (Ford, 2006, p. 38). Ultimately, Ford (2006) found that "the participants' views of writing were shaped as much by classroom instruction as they were by experiences outside the classroom" (p. 38). This indicated that both the way technical writing is taught in the university and the way students learn to write in their internships and co-ops prepare students for their professional careers; the more in tune these two experiences can be with each other, the more prepared students will be. Given Ford's

observation that both classroom instruction and outside experiences shape students' views of writing, I asked the students that I surveyed what kind of writing tasks they completed in internships and co-ops and whether those tasks were similar to the ones taught in English 3560.

Ford (2006) also found that there was a difference in perception between the engineering students and the technical writing instructors; while the engineering students "tended to view writing as containing right and wrong answers," the instructors valued "rhetorical concepts" (p. 39). This finding of the study revealed a disparity in perceptions between technical writing instructors and STEM students. Another relevant finding was that students seemed to categorize writing in the classroom, writing in industry, and writing in internships and co-ops as three distinct actions, rather than similar actions that draw from one another. Ford's study (2006) called upon technical writing instructors to place a greater emphasis on rhetorical solutions than on rigid format guidelines; ask students to reflect on their writing processes and strategies; and teach students to view writing as an activity that works synonymously and collaboratively within engineering tasks (2006, p. 40-41).

Lisa Kaczmarczyk (2003) studied students' perceptions of a technical writing course at the University of Texas at Austin; I have designed a similar study at Missouri S&T. However, unlike my study sample of mainly engineering students, her student population was made up specifically of computer science undergraduates. Kaczmarczyk (2003) surveyed forty-three students at the beginning, middle, and end of a semester-long technical writing course designed for computer science majors; they were surveyed three times to discover if their perceptions of writing motivation, mastery, and self-efficacy had

changed during the course. She found that in general, students achieved an increase in perceived confidence and mastery in their writing skills over the span of the course, though it seemed that their levels of motivation did not change from beginning to end (Kaczmarczyk, 2003). Though Kaczmarczyk's (2003) study contains different methods than mine, such as surveying students at three points throughout the course rather than only at the end, it has served as a helpful model for my study. Kaczmarczyk (2003) mentioned that "this study is also a reminder of the importance of including student-centered analysis in assessments of teaching and learning" (p. 344). Kaczmarczyk (2003) showed how some of her hypotheses at the beginning of the study were proved wrong by student feedback, and how the student feedback was incorporated into the course. After implementing changes based on the student feedback, Kaczmarczyk (2003) said that the next two semesters revealed positive change in student participation and discussion. In a similar way, I hope that the results of my local study of Missouri S&T students will directly and positively impact student performance in future semesters of English 3560 Technical Writing.

Leydens (2008) studied the perspectives of engineers at a variety of points in their careers to discover whether they believed that rhetoric/writing were necessary for engineers to be successful in industry. He found that there was a variety of different perspectives; among those perspectives, some participants claimed that writing was not important at all, while others believed it was the key to success for engineers. In general, Leydens found that seniors in engineering programs viewed rhetoric with "simultaneous denial and acknowledgement" (p. 251); as the engineers graduated and began working in industry, they tended to move towards a more favorable view of the "importance of

rhetoric"; and experienced engineers had an "emphasis placed on the importance of rhetoric for successful engineering practice" (2008, p. 259). With experience, the engineers found that rhetoric was more and more important in their careers. Leydens (2008) expressed that "engineers in middle management write for 50% to 70% of their day; those in senior management reportedly spend over 70% and as much as 95% of their day writing" (p. 242). The reality of how often engineers write in the workplace was different from the perspectives of some of the engineers surveyed. Leydens' (2008) research shows a clear connection between workplace experience and perception of the importance of writing: the more experienced engineers in the study agreed that writing was crucial in their careers, while undergraduates generally did not view writing as important. This research has been helpful to me in determining how much engineers write in the workplace, as well as how graduate engineers from early to mid-career view writing tasks and the relevance of writing to a successful career in engineering.

The purpose of a study by Leydens and Schneider (2009) was to determine how composition programs in engineering and science programs have been revised in response to recent accreditation guideline changes (most significantly, updated ABET guidelines). Leydens and Schneider (2009) selected six technical universities as research sites and interviewed the composition program administrators at all six sites. They found that "strong cross-curricular communication programs are emerging in which composition faculty partner with technical faculty" (Leydens & Schneider, 2009, p. 255). In addition, the authors reviewed how communication has historically been taught to engineers, attended a conference to learn about current communication programs in universities around the country, and analyzed descriptions of those communication

programs (Leydens & Schneider, 2009). They found that composition programs revised according to ABET guidelines incorporated "written, oral, and visual components" and better collaboration between engineering departments and composition departments (Leydens & Schneider, 2009, p. 255). Similar to the other studies mentioned in this literature review, Leydens and Schneider (2009) found that fostering communication skills in engineers requires collaboration among writing instructors and engineering instructors. While my study only involves engineering students and technical writing instructors, it provides insight into the factors that influence undergraduate engineers' perceptions of writing.

Wolfe (2009) analyzed twelve of the most widely-used textbooks in technical communication courses and found that these textbooks often lack examples that apply directly to engineering students. Instead, most of the textbooks cater to general business writing or the humanities, including citation styles favored in the humanities or social sciences (Wolfe, 2009). Wolfe (2009) noted that many sources call for collaboration of engineering and technical writing programs in order to better teach students how to communicate effectively throughout the disciplines; if this is to be the case, technical communication textbooks must lay a foundation that serves engineering students as well as students in the humanities/social sciences. Wolfe (2009) explained that "technical communication modules tightly interwoven with an engineering curriculum are effective" (p. 351), even if "many engineering students (and engineering faculty) see these courses as irrelevant to their work" (p. 352). In Missouri S&T's English 3560 Technical Writing course, the engineering students use one of the textbooks mentioned in Wolfe's (2009) study. Her finding that technical communication textbooks are not geared towards an

engineering audience reveals that some of the disconnect that the undergraduate engineers experience in technical writing courses may be based in textbooks that do not support the students' needs, and as Wolfe (2009) noted, "rhetorical knowledge transfer appears to be much stronger when students can see the connection between the curriculum and the discourse genres in their community" (p. 372).

Donnell, Aller, Alley, and Kedrowicz (2011) reviewed a variety of sources that illustrate why students graduate from technical programs without the ability to communicate effectively. The authors focused primarily on studies that determine the expectations of writing courses for engineers and studies that evaluate the communication skills of students graduating from engineering programs (Donnell et al., 2011, p. 2). Donnell et al. (2011) found that there was a significant discrepancy between the kinds of communication and writing assignments that engineers learned to complete at their universities and the types of skills required in engineering industry. This discrepancy stems from different requirements for writing assignments, different definitions of concepts between the students and instructors, and "differences in the audiences" (Donnell et al., 2011, p. 9) for the writing assignments. Donnell et al. (2011) suggested "Industrially sponsored courses" (p. 10) as one potential solution for this disparity, or to incorporate courses which partner with a company to prepare documents that meet actual industry requirements and standards. The authors also suggested that having more specific communication benchmarks for students would be very helpful, as well as providing more specific definitions of the skills that students need to learn before graduating.

Over seven years of data collection, Passow (2012) collected 4,225 surveys from alumni of 11 different engineering majors from a Midwestern public university to determine which ABET competencies the alumni used most frequently in their professional careers. He found that the participants ranked communication skills between "quite important" and "extremely important," or between 4 and 5 on a 5- point Likert scale. The majority of the respondents worked in engineering, with a few others working in science/technology, marketing/sales, and undisclosed occupations (Passow, 2012). Passow (2012) found that the cluster of skills that the participants ranked highest included "teamwork, communication, data analysis, and problem-solving" (p. 106), all of which are included in most technical writing curricula, particularly the concept of working within teams to communicate and problem solve. The professional engineers in Passow's (2012) study rated communication skills to be among the most important of all the ABET competencies. In my own study, I collected data from undergraduate engineers rather than from graduate engineers; however, it is useful for the purposes of my study to juxtapose graduate engineer perceptions with undergraduate perceptions and to see how experiences in the workplace impact engineers' views of writing in industry.

Mokgwathi and Otlhomile (2015) studied the perceptions of engineering professors about a required technical writing course at Botswana International University of Science and Technology. The purpose of their case study was to learn whether the engineering professors believed that the required technical writing course had appropriately improved the writing and communication skills of their students. The study revealed that the professors strongly valued writing skills in their students and believed that the technical writing course was crucial for developing those skills. Mokgwathi and

Otlhomile (2015) suggested that, moving forward, it would be helpful for the university to cultivate "collaboration between the lecturers of Technical Writing and engineering lecturers" (p. 61). While my study is not a case study, I also chose to closely examine one research site: Missouri S&T. This research has been helpful because Mokgwathi and Otlhomile found that engineering professors placed a strong emphasis on the writing ability of their students. My study added another element to the investigation: what factors, especially professional experiences, influence undergraduate engineers' perceptions of writing?

The literature that I reviewed had several threads in common: the authors placed a strong emphasis on the need for collaboration between technical communication and engineering programs; the authors showed that there is a discrepancy between the kinds of writing students complete in technical writing courses and the kinds of writing they complete in engineering positions; and the authors called for technical writing courses and instructors to align themselves with the benchmarks for strong communication in industry. Keeping these concepts in mind, I would like to take a closer look at Missouri S&T's engineering students and how both their academic and professional experiences have impacted their attitudes and perceptions of English 3560. In the next section, I will explain the research methods I used to guide the study.

3. METHODS

In my study, I used mixed methods to collect both quantitative and qualitative data from the study demographic. According to Hughes and Hayhoe (2008), "the positive aspect of qualitative studies' looser structure is that they can 'go where the data takes them' in ways that quantitative studies cannot" (p. 82). Hughes and Hayhoe (2008) referred to this as a "pattern of evaluating the data during the study and then modifying the course of the study" (p. 83). I used two data collection tools: surveys and a focus group. In section 3, I will organize the discussion around these two data collection tools.

There were two samples used in the survey: 1. the sample of Missouri S&T students who completed the student survey and the subset of this sample who participated in the focus group, and 2. the sample of current and former instructors who completed the instructor survey. Both were samples of convenience (Hughes & Hayhoe, 2008). Given the time constraints of this study, I chose to survey each section of the English 3560 course during the fall semester of 2018. The focus group participants were selected from the pool of students who completed the survey (based on interest and availability). The sample for the instructor survey included all current instructors of English 3560 and ten former instructors of English 3560 who had taught the course within the past five years.

This study was formulated from a hypothesis: before collecting the data, I believed that students who had completed internships and co-ops take the writing assignments in English 3560 more seriously and perceive the work as directly relevant to their future careers, while students without professional experience believe that they will not use writing in their careers and therefore do not believe that English 3560 is relevant to them. The subsections in Section 3 include:

- 3.1 STUDENT SURVEY
- 3.2 INSTRUCTOR SURVEY
- 3.3 STUDENT FOCUS GROUP

3.1. STUDENT SURVEY

I administered a paper survey to students enrolled in all five sections of English 3560 offered during the fall semester of 2018 on the last week of the classes. I looked for trends among the data, particularly whether the group of students with professional experience had different answers than the group of students without professional experience.

Because I wanted a larger sample size than the single class of students interviewed in Ford's (2003) study, I surveyed all students in five sections of English 3560 during the Fall 2018 semester at Missouri S&T. There were about 20 students enrolled per section. I collected 95 surveys from a total of 104 students who were present on the day of the survey, garnering a response rate of 91.3%. However, I had to throw out five surveys because those surveys did not include a completed consent form, which decreased the final number of surveys used in this study to 90. I was able to use 87% of the surveys collected.

The survey that I developed (see Appendix A) asked students about their experiences in English 3560 as well as professional experiences outside of the university. The design of my survey was informed by Hughes and Hayhoe's chapter 6, "Conducting Surveys," in *A Research Primer for Technical Communication* (2008). The survey consisted of nine questions: a mix of multiple-choice and ranking questions. It was

administered in person, on paper, and included an informed consent form that explained to the students that their participation was voluntary and that neither their participation nor lack of participation would affect their grades in English 3560. It also explained that the students' names would only be seen by me and my thesis advisor, because the published thesis uses codes rather than names to identify individuals. I visited all five sections of English 3560 on the last week of classes, read a briefing script to participants (see Appendix B), and passed out paper surveys with information, a consent form, and the survey questions (see Appendix A). A few students chose to write additional comments within the blank space at the end of the survey; these comments are included in the results section.

I processed the data from the student surveys in three steps. First, I assigned a number to each participant in the student survey in order to remove names from the surveys before I analyzed the data. Next, I read through the surveys and separated them into two groups: students who had completed internships and students who had not. Interestingly, the number of students in each group was split almost equally: out of 90 fully completed surveys, there were 48 students who had completed internships and 42 students who had not. Finally, I looked for differences between the answers of the two groups. I have included this analysis in the results section.

3.2. INSTRUCTOR SURVEY

I processed and analyzed the instructor survey data by using SurveyMonkey's built-in analytic tools. The main data I was looking for is whether instructors have been told by students that the writing assignments in English 3560 are not relevant to their

future careers. Because I have been told this, I wanted to check whether other instructors of 3560 had noticed this trend. Toward this end, I developed a three-question online survey (see Appendix C). I sent the survey to a sample of 13 current and former instructors of English 3560; my sample included all current instructors of English 3560 and five former instructors of the course. The former instructors had taught the course within the past five years. The survey was completed by 8 of the instructors, giving a response rate of 61.5%.

The purpose of this survey was to determine whether other instructors of the course have encountered the same attitude from students that I have—the attitude that the writing assignments in the course are not relevant to the students' future careers. The first question asked for the instructor's name, while the second question asked for the number of semesters that the instructor has/had taught English 3560. The third question asked respondents to rate how frequently students have told them that the writing skills taught in English 3560 will not be relevant to the students' future careers. Before beginning the survey, the participants were required to complete a consent form ensuring that they understood that their names would be kept confidential from all but me and my thesis advisor and that the data would be used in my published thesis with names removed. As many of the former instructors of English 3560 are no longer in the city where the university is located, I administered this survey and consent form online through SurveyMonkey.

3.3. STUDENT FOCUS GROUP

I also conducted a focus group made up of students who had just completed the fall 2018 semester of English 3560 and had previously completed the paper survey, a subset of the larger survey group. These students indicated their interest in discussing the topic in further detail in a focus group and were invited to participate. I initially intended to hold two focus groups to determine differences in how students value the writing skills taught in English 3560 between the group that has professional experience and the group that does not. However, with one group I was able to ask the students to elaborate in greater detail on questions that were similar to the survey questions they had already answered.

I recorded the focus group conversation as it took place in a Zoom meeting room and later transcribed the recorded conversation. Because it was the end of the semester and students were busy with final exams, I chose to hold the focus group meeting online in a Zoom meeting room rather than in person, because many students leave campus on the last week of classes. An additional benefit of using Zoom was the built-in recording tool, which made it easy to record the discussion for later transcription.

After transcribing the responses, I looked for patterns and trends in the responses and started to code them based on emerging trends. When analyzing the focus group transcription, I let my codes come from the data rather than developing predetermined codes. Hughes and Hayhoe (2008) call this using "open codes" (p. 86). After seeing the emerging trends in the data, I compared the results to my initial research questions. With the focus group transcription, I used "*in vivo* coding," or using words that actually appeared in the data (Hughes & Hayhoe, 2008, p. 87).

I also developed focus group questions that were intended to expand on the questions in the student survey and initiate more detailed responses from the participating students. Initially, my intent was to recruit two separate focus groups from the sample of students who completed the survey: one focus group made up of students who had not yet gained any professional experience outside of the university, and one group of students who had completed internships or co-ops. However, because I recruited students and conducted the focus group during the last week of classes, few students were available or willing to participate, so I decided to conduct just one focus group rather than two.

On the day that I surveyed the English 3560 sections, I also recruited students for focus groups. To recruit students for the focus groups, I distributed a paper sheet in each class section that explained how the focus group would work and asked students to write down their names and email addresses if they were interested in participating. Next, I sent out an email to the students who indicated that they were interested and asked them for a few dates and times when they would be available. Based on Hughes and Hayhoe's (2008) suggestions for focus groups, I intended to recruit 5 to 10 participants for each group to achieve a variety of perspectives in the conversation. While 15 students indicated interest in the focus groups, only 8 had similar availability during the last week of classes.

Before beginning the focus group, I asked students to sign a consent form explaining that their participation was voluntary and that their participation or lack of participation would not affect their grades in English 3560. The consent form also explained that students' names would only be seen by me and my thesis advisor, because the published thesis uses codes to identify individuals rather than names (see Appendix E

for a copy of the focus group consent form). To provide an incentive to participate in the study, I offered the participants an entry into a drawing for three $20 Starbucks gift cards; three random winners were chosen out of the participant pool. After I collected the surveys and held the focus groups, I used Mini Web Tool's random name picker to select three names of students. I contacted the students via university email and arranged to give them the Starbucks gift cards.

The questions that I prepared ahead of time for the focus group were as follows:

1. Do you feel that the writing skills taught in English 3560 will be useful in industry, and why or why not?
2. Have your writing skills improved over the span of this course?
3. What other kinds of writing instruction have you had in college?
4. If you have completed an internship or co-op, did you use writing skills similar to those covered in English 3560?

While I intended for these questions to guide the structure of the focus group, I asked additional questions during the meeting in order to follow up on comments made by the participants or to clarify responses.

4. RESULTS OF THE STUDY

As was expected because of the general student body demographic at Missouri S&T, most of survey participants were male engineering students. Out of 90 total surveys, only 17 participants were female students, or roughly 19% of the participants. In addition, only 4 of the 90 students, or roughly 4% of the total number, were non-engineering majors: those four students were majoring in history, business, chemistry, and physics, respectively. The rest of the students were engineering majors, ranging from electrical engineering to mechanical engineering to aerospace engineering to chemical engineering.

Within the focus group, six students were male, two were female, and all were engineering majors. The students who took part in the surveys and focus group were also upperclassmen, with the exception of seven students: one student wrote “freshman” under the class level question, and six students were pursuing a master’s or a PhD. The rest of the students were juniors or seniors. While this demographic reflects the student population at Missouri S&T and might accurately reflect other STEM schools, it will certainly not reflect the demographic at every university. In order to preserve the confidentiality of the students’ identities, I have changed pronouns when discussing the students’ responses.

I have grouped the results of the study into three broad sections: results of the student survey, results of the instructor survey, and results of the focus group. These sections are further split into subsections as follows:

- Results of the Student Survey
    - Non-Internship/Co-op Group
        - Question eight.
    - Internship/Co-op Group
        - Question eight.
        - Questions six and seven.
        - Questions four and five.
    - Question One
- Results of the Instructor Survey
- Results of the Focus Group

4.1. RESULTS OF THE STUDENT SURVEY

I began analyzing the surveys by returning to the primary research question: *"Do students who have completed internships and co-ops view English 3560 differently than their peers who have not yet had any professional experience in their chosen field?"* The 90 completed copies of the survey were separated into two groups: students who have completed internships and/or co-ops (48) and students who have not completed internships and/or co-ops (42). After separating the copies into these two broad groups, I further separated both the internship/non-internship groups into three smaller groups: positive, negative, and undecided responses to question 8. I focused first on question 8, which asked whether the types of writing tasks in English 3560 prepared students for future writing tasks in industry, because this question revealed whether students perceived the course to be relevant to their future careers.

Only students who had completed internships and/or co-ops answered questions four, five, six, and seven. These questions asked students to describe their internship/co-op experiences, select the types of writing they completed during internships/co-ops, determine whether they believed the writing tasks they completed during their internships/co-ops prepared them for the writing assignments in English 3560, and determine whether they believed that the types of writing tasks completed during internships/co-ops prepared them for writing tasks they will likely encounter in industry.

I have divided this discussion into two different sections: questions four and five, and questions six and seven. In these sections, I analyze relevant patterns that emerged in the results. The analysis of questions six and seven is based on the research question: *"Do students who have completed internships and co-ops see a parallel between the kinds of writing (i.e. emails, proposals, letters, reports, memos, etc.) used in their professional positions and the kinds of writing required in English 3560?"* When analyzing questions four and five, I compiled a list of internships and co-ops that the students had completed. I also compiled a list of document types that students completed during their internships and/or co-ops so that I could answer the research question, *"What types of documents did students complete in their internships and/or co-ops?"*

Lastly, I analyzed students' answers to question 1 in both the internship/co-op and non-internship/co-op category, as this question applied to both categories. Question 1 was related to the last research question—*"Are students able to correctly identify the types of documents completed throughout the course?"*

While almost all of the students responded to all relevant questions on the survey, most of them did not write additional comments after completing the survey. Of the 90

students who completed the survey, only 3 students chose to make additional comments at the end of the survey: participants 16, 59, and 73. Participant 16 wrote at the bottom of the survey: “as formal as we were required to make our assignments, they were not presented in a form that would be recognizable to what an actual proposal would be like. We are proposing to do research on an app to fix it. As boorish as it may seem, it would probably benefit us more to learn how to read actual technical documents and codes and write like those than to do the confusing proposal assignment.” Participant 59 wrote: “I plan on doing industry research, so this course was very nice for preparing me to do so." Participant 73 wrote: “In my experience, the requirements and expectations of English 3560 have been very different from industry, most specifically related to formatting and grading criteria."

Overall, there was little difference between the group of students who had completed internships and/or co-ops and those who had not. 75% of the surveys of students with internships/co-ops and 85% of the students without internships/co-ops responded positively to question 8 (i.e., gave a 4 or a 5 on the Likert scale). Thus, the result of the surveys actually reflected the opposite of my initial hypothesis that students who had completed internships and/or co-ops would find the course more relevant to their future careers in engineering than students who had not completed internships and/or co-ops. In fact, the results of the survey showed that the percentage of students who responded positively to question 8 was slightly higher for students who had not completed internships.

4.1.1. Non-Internship/Co-op Group: Question Eight. Forty-two students who completed the survey had not completed an internship and/or co-op as of the fall semester

of 2018. These students were asked to skip questions 4, 5, 6, and 7, which asked for details about the internships/co-ops, such as the types of writing students completed and whether those types of writing were similar to the material taught in English 3560. Therefore, when discussing the non-internship/co-op group, I will only provide an analysis of the students' answers to question 8 on the survey.

Question 8 included a Likert rating scale from 1 to 5, with 1 representing strongly disagree, 2 representing disagree, 3 representing undecided, 4 representing agree, and 5 representing strongly agree (see Appendix A for a copy of the student survey).

Table 4.1: Responses to Question 8 from Students Without Internships.

Negative Responses (1-2 on Question 8)	1
Undecided (3 on Question 8)	5
Positive (4-5 on Question 8)	36
Total Number of Responses	42

An answer of 4 or 5 was coded as a positive response, a 3 as an undecided response, and a 1 or 2 as a negative response. In Table 4.1, I have listed students' answers to question 8 on the survey. As reflected in Table 4.1, the majority of the students who took part in the survey responded positively to question 8, indicating that they believed

the writing tasks that they practiced in English 3560 would be useful to their future careers. Among the non-internship/co-op students, 1 responded negatively to question 8, 5 were undecided, and 36 responded positively.

The single negative response in the non-internship category was from a graduate student in Nuclear Engineering (participant 85). The student had not completed any other writing classes at the college level and answered "1," strongly disagree, for question 8. However, on question 9, participant 85 circled "emails, memos, procedures, reports, proposals, and presentations" as the types of documents he will be likely to write in industry.

There were 5 undecided responses to question 8, or an answer of "3": participants 66, 70, 10, 12, and 16. Despite the students' undecided responses to question 8, all five students selected more than two types of documents on question 9. These students believed they would write a variety of documents in their future careers.

There were 36 positive responses (a 4 or a 5) on question 8 in the non-internship group. Among these responses, there were 17 "agree" responses and 19 "strongly agree" responses—an almost equal split. Although participant 74 selected "agree" on question 8, she added the following comment: "yes, but not to the extent I expected, quite disappointed actually." Apparently she believed that the English 3560 writing tasks would be useful to her future career, but not nearly as useful as she had hoped.

4.1.2. Internship/Co-op Group. As I have already stated, 48 of the survey respondents had completed internships and/or co-ops before or while taking English 3560. Forty-six of these students were engineering majors. The two non-engineering majors were a business major (participant 65) and a chemistry major (participant 76).

Only five participants in the internship/co-op group responded negatively to question 8; they did not believe the English 3560 writing tasks would be useful to their future careers.

In Table F.1 (see Appendix F), I have compiled a list of the internships and co-ops that students completed, based on student answers to question 4. Many students had completed multiple internships or both internships and co-ops before they completed the survey. There was a wide variety of experience represented within the internships and co-ops. The students' professional experiences will be discussed in more detail later in this section, when analyzing the results of question 5.

4.1.2.1. Question eight. Thirty-six participants in the internship group responded positively to question 8 (defined as a 4 or 5 on question 8), making up the majority of the responses. Twenty of the students responded with a 5 or "strongly agree," while the remaining 16 responded with a 4 or "agree."

Table 4.2: Responses to Question 8 from Students With Internships and Co-ops.

Negative Responses (1-2 on Question 8)	5
Undecided (3 on Question 8)	7
Positive (4-5 on Question 8)	36
Total Number of Responses	48

4.1.2.2. Questions six and seven. In order to determine whether students found parallels between the writing tasks completed in English 3560 and the writing tasks completed during their internships, I included question 6 and 7 on the survey. Question 6 asked students to rank their agreement/disagreement with the following statement on a 5-point scale: "The types of writing tasks I completed during my internship prepared me to complete the writing assignments in English 3560.**"** Similarly, question 7 asked students to rank their agreement/disagreement with the following statement on a 5-point scale: "The types of writing tasks I completed during my internship prepared me for future writing tasks I will be likely to encounter in industry." There were several patterns in the negative, undecided, and positive responses to questions 6, 7, and 8.

Participant 30, a student who had completed an internship that he wrote was "quality/reliability engineering in charge of creating new documentation for the lab, among other things," stated that he wrote "lab reports for internal/external use," "testing procedures to be implemented globally," and "a research report on a new type of reliability test" during his internship. While this student agreed with the statements in both questions 6 and 7, he selected "strongly disagree" on question 8, indicating that he did not believe the types of writing tasks he completed in English 3560 prepared him for future writing tasks in industry. This is an interesting data point; if the types of writing completed during his internship prepared him for the writing tasks he would complete in English 3560 as well as those he will do after graduation in industry, the writing tasks in English 3560 should prepare him for writing tasks in industry.

Participant 73 indicated that she had completed an internship as an automation engineer, and she circled emails, memos, procedures, reports, and proposals as types of

writing that she completed during her internship. She also selected “strongly disagree” on question number 8 and wrote “in my experience, the requirements and expectations of English 3560 have been very different from industry, most specifically related to formatting and grading criteria.” Based on her answers of 2 for question 6 and 5 for question 7, participant 73 seems to have experienced a disconnect between the kind of writing she did in her internship and the kind of writing she did in English 3560, even though English 3560 students complete emails, memos, procedures, reports, and proposals during the course, the same types of writing she completed during her internship.

Participant 36 completed an internship in mechanical CAD design at Schneider Electric. She selected a “1” on question 6, a “5” on question 7, and a “2” on question 8, indicating that she believes the writing tasks required in industry are different from those required in English 3560. She selected “emails” as the only type of writing completed during her internship, which is a possible reason for her disconnect between types of writing completed in English 3560 and those completed in industry.

Participant 48’s internship was in manufacturing engineering “with a company that manufactures fifth wheels, landing gear, and axles.” He “wrote work instructions, time studies, standard work, and power points.” He ranked question 6 at 2, question 7 at 5, and question 8 at 2; he felt that the kind of writing he completed in his internship prepared him for industry, but not for the writing tasks in English 3560.

Participant 26 worked as a system administrator for Missouri S&T’s supercomputer, though he did not provide a specific description of the types of writing he

did on the job. He ranked question 6 at 2, question 7 at 4, and question 8 at 2, agreeing that his internship writing experience prepared him for industry, but not for English 3560.

Of the seven internship/co-op students who were undecided about question 8, three of them ranked question 6 at 2 and question 7 at 5, and one student ranked question 6 at 2 and question 7 at 4, indicating that four of the seven students agreed or strongly agreed that their internship writing experiences accurately reflect the kind of writing they will do in industry, while all four disagreed that the types of writing tasks they completed during their internships prepared them for the writing assignments in English 3560. In fact, 5 out of 7 of the students disagreed with this statement, while one selected "strongly agree" and one selected "undecided." In general, it seems that the students who were undecided about whether English 3560 would be useful for their future careers experienced a disconnect between the kind of writing tasks they completed during their internships and the kind of writing tasks required in English 3560.

4.1.2.3. Questions four and five. On question 4, students were asked to briefly describe their internship/co-op experience. There was a wide variety of experience represented within the answers; I have compiled the responses in a list (see Table F.1 in Appendix F). With the exception of participant 65 (a business major) and participant 76 (a chemistry major), the remaining participants were majoring in an engineering discipline.

The experiences ranged from design engineering, project planning, and research to production, software development, and IT. The most common experiences were in coding and developing software (6 students) and in manufacturing engineering (4 students).

On question 5, students were asked to "select the types of writing completed during your internship." They were given a list of seven different document types, with the option of writing in additional document types:

- Emails
- Memos
- Procedures
- Reports
- Proposals
- Letters
- Presentations
- Other (Please explain): _____

While seven students selected only one type of document, the remaining 41 students selected two or more types of documents, indicating that most students completed a variety of document types during their internships and co-ops. In Figure 4.1, I have visually represented the answers to question 5: 42 students noted that they wrote "emails" during their internships; 26 students selected "reports"; 24 selected "presentations"; 19 selected "procedures"; 8 selected "memos"; 7 selected "proposals"; and one selected "letters."

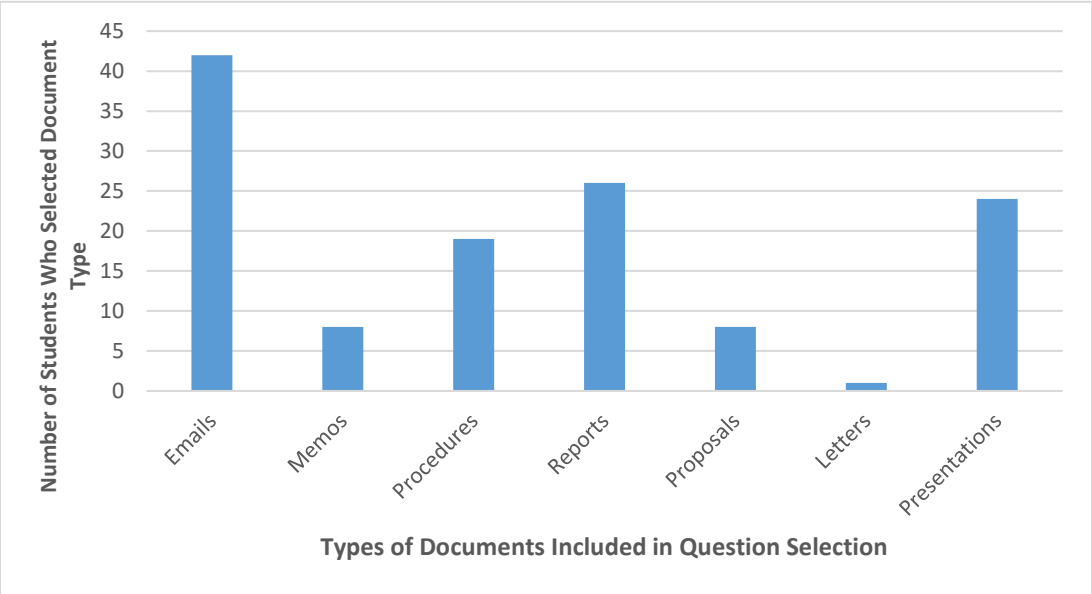

Figure 4.1: Types of Documents Completed During Internships/Co-ops. Students Completed Several Types of Documents During Internships and Co-ops, including emails, reports, presentations, procedures, memos, proposals and letters. This figure omits the answers to the open-ended question: "Other (please explain)".

When answering question 5, several students added types of documents to the list. These documents were:

- "Excel sheets"
- "Title blocks"
- "Legal documents"
- "Technical instructions for AutoCAD drawings"
- "Contracts"
- "Engineering change requests"
- "State regulation forms, resource order forms"
- "Visual aids"

- “Informal data”
- “Work instructions”
- “Time studies”
- “Standard work”
- “PowerPoints”
- “Research report on a new type of reliability test”
- “Standard operating procedures”
- “Lab reports for informal and external use”
- “Testing procedures to be implemented globally”

While some of these additions, such as AutoCAD drawings and resource order forms, reflect a different type of document than the choices I gave, some of them, such as “power points” and “research report,” could fall under my pre-defined types, such as “presentations” and “reports.”

4.1.3. Question One. Ford’s study (2003) of student perceptions of a technical writing course revealed a difference between the perceptions of engineering students and technical writing instructors; likewise, many of the students in this study answered question 1 in a variety of ways. Although all students completed the same major assignments, their answers when asked about those assignments were different, revealing that many of them perceived the assignments (or at least the terminology used to describe the assignments) differently.

Question 1 on the student survey asked, “What type of documents did you write during your English 3560 class? Circle all that apply.” The question included a list:

- Emails
- Memos
- Procedures
- Reports
- Proposals
- Letters
- Presentations
- Other (Please explain): _____

With the exception of presentations, students completed each of the writing tasks listed above in the major assignments taught in every section of English 3560 in Fall 2018, so the answers to this question should have all been the same, or at least very similar. However, there was significant disparity in the answers, revealing that the students' perceptions of the writing assignments were different than instructors' perceptions. In addition, students wrote resumes as part of the first major assignment, and several students added this to the list. Fifty-three of the students responded by circling all of the documents except for presentations and did not add anything. Two students answered by circling all the options, while one student left the question blank. Eighteen out of 90 students added documents to the list provided in question 1. The documents added included:

- Resume/Cover letter
- Resume

- Resumes/Cover letter
- Resume
- Instruction manuals
- Manuals
- Resumes
- Instruction manuals
- Instruction manuals (student wrote “not sure if that is procedures.”)
- Instruction manuals and career correspondence documents
- Resume
- Instruction manual and resume
- Instructions
- Instructions
- Resume, cover letter, letter of transmittal, consent forms
- Resume
- Resume
- Resume

The remaining 16 students who took part in the survey responded in a variety of ways. These responses were:

- Emails, procedures, reports, proposals, letters
- All selected except for letters and presentations

- All selected except for letters and presentations
- Procedures, reports, presentations
- Memos, procedures, reports, proposals
- All selected except for memos
- Emails, memos, reports, proposals
- Emails, memos, reports, proposals
- All selected except for presentations and procedures
- All selected except for memos and presentations
- All selected except for letters and presentations
- All selected except for procedures and presentations
- All selected except for memos and presentations
- All selected except for letters and presentations
- All selected except for but procedures and letters

It is significant that students had such different answers to this question; from an instructor's perspective, many of these answers are incorrect or incomplete. In Table G.1, (see appendix G), I have compared the results of questions 1, 5, and 9 for each survey participant. While question 1 asks students to select the types of documents that they wrote during English 3560 and question 5 asks students what types of writing they completed during their internships and co-ops, question 9 asks students to reflect on "what kind of writing will you likely do in industry once you have secured a position in your chosen field?" All three questions include the same list (emails, memos, procedures,

reports, proposals, letters, and presentations, with a space for “other: please explain.”) The purpose of comparing the answers to these questions is to determine

1. whether students believe that they will use the types of documents completed in English 3560 in their future careers;
2. whether students see a connection between the types of documents they completed in their internships/co-ops and the types of documents they will complete in their future careers;
3. whether there is a connection between the types of documents that students complete in their internships/co-ops and the types of documents completed in English 3560.

After comparing the responses to questions 1, 5, and 9, we can see that none of the students selected fewer than two different types of documents on question 9, with the exception of participant 62 (who wrote “no clue, not completely sure of my chosen field”). In fact, 29 of the students selected all the types of writing listed in the question. These answers indicate that the students believe they will need to write a variety of documents in their future careers in the STEM industry. In fact, the students selected types of writing taught in English 3560 (with the exception of presentations, selected by 82 students), and only 6 students added documents not taught in English 3560:

- Participant 74—"Data sheets"
- Participant 64—“Contracts”
- Participant 58— “Documentation”
- Participant 50—“Text”

- Participant 36—"CAD drawings"
- Participant 10— "Application notes"

4.2. RESULTS OF THE INSTRUCTOR SURVEY

I developed a three-question online survey (see Appendix C) that was completed by 8 instructors and former instructors of English 3560 via SurveyMonkey. The survey was sent out to 13 instructors and completed by 8, giving a response rate of 61.5%. Figure 4.2 provides a visual of the instructors' responses.

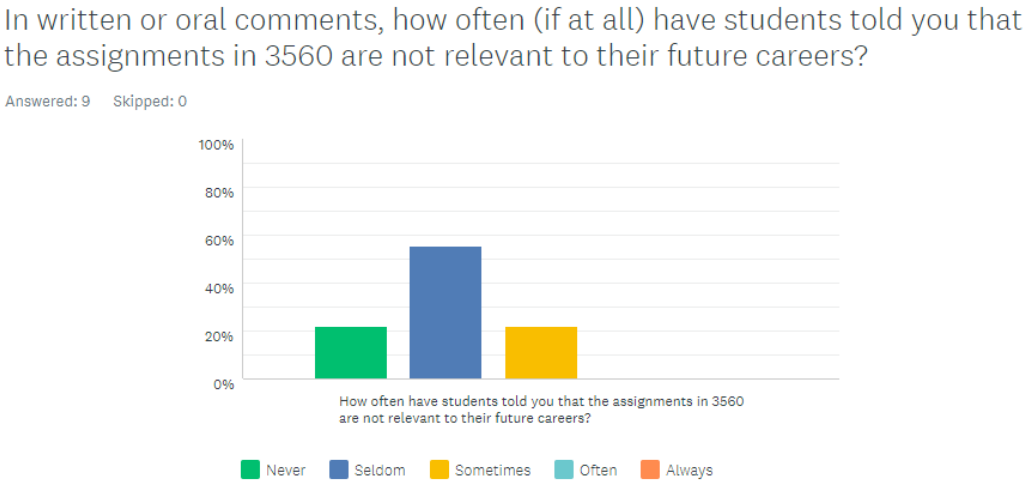

Figure 4.2: Instructor Survey Results. Results Showed that the Majority of the Instructors Had "Seldom" Been Told by Students in English 3560 that the Assignments Were Not Relevant to their Future Careers (SurveyMonkey, 2019).

The second question on the survey asked the number of semesters that the instructor has/had taught English 3560, while the third question asked them to rate how frequently students have told them that the writing skills covered in English 3560 will not be relevant to their future careers. The first question asked, "What is your name?" This

question has been removed from the analysis in order to provide confidentiality for the participants. Table 4.3 includes the data from all 8 instructors for both questions 2 and 3.

Table 4.3: Instructor Responses to Survey.

	Number of Semesters Teaching English 3560	Response to Question 2
Instructor 1	2018	Seldom
Instructor 2	Spring 2018, Fall 2018	Sometimes
Instructor 3	2011-2013	Seldom
Instructor 4	Spring 2015, fall 2015, spring 2016	Sometimes
Instructor 5	Spring 2015, fall 2015 (two sections), Spring 2016	Seldom
Instructor 6	Fall 2009-present	Seldom
Instructor 7	Spring 2016-fall 2017	Never
Instructor 8	Fall 2018	Never

Question 2 asked: “Which semesters/years did you teach English 3560 at Missouri S&T?” Question 3 asked: “In written or oral comments, how often (if at all) have students told you that the assignments in 3560 are not relevant to their future careers?” “Seldom” was the most common answer, with other instructors answering “sometimes” or “never.”

Although “often” and “always” were also responses on the survey, none of the instructors chose these responses. Based on the experience of these eight instructors, the

students in English 3560 have sometimes shared that they do not believe the assignments will be relevant to their future careers, but it has not happened very frequently.

4.3. RESULTS OF THE FOCUS GROUP

There were 8 focus group participants: 6 participants who had previously completed at least one internship or co-op or had previously worked in a full-time engineering position (as was the case with one of the participants), and 2 students who had not completed any kind of professional experience. These 8 focus group participants are referred to in this section as participants A-H, respectively.

I began the focus group by reminding participants that our online Zoom meeting was being recorded and that I would transcribe the responses later, but that the participants would not be identified by name in the published thesis. I also reminded participants not to share the conversation with others outside of the focus group, as the discussion was confidential. I reminded them that a focus group is meant to be a conversation, and as a moderator my role is to ask questions and facilitate conversation. Participants filled out a consent form indicating that they understood that the data would be published in this thesis with their names removed (see Appendix D for a copy of the consent form). After asking if they had any questions about the structure of the focus group, I then posed the first planned question: *Do you believe that the writing skills that you've learned and the assignments you completed in English 3560 will be useful in industry, and why or why not?*

In response, participants A, B, and C all noted that they believed that the writing skills and assignments completed during the course would be useful when pursuing a career in an engineering field. However, participant B shared the following:

> "I don't feel like the documents that we actually created outside of career correspondence were documents that I feel accurately reflected what a large majority of engineers will be doing. A lot of the portfolios that I've seen student engineers have when they leave undergrad is a research paper or case study and presentation that they wrote, very few project proposals or something like that. In industry, having worked for small and large companies over the past three years, [I found that] they usually have their own form/guideline that they have you fill out for proposals, or they have a technical document writer that will actually do that for you, and all they want from you is an informal document. So I don't think I will actually be writing all of these documents, and I haven't seen any engineer in industry tell me otherwise."

I followed up this comment by asking **"***Does anyone have anything to add to that? Do you have examples of writing different kinds of documents in your internships/co-ops?"* Again, participants A, B, and C shared their thoughts. Participant A said,

> "I haven't had an internship or co-op but I did work in industry for a while, and I was responsible for writing a major portion of a technical manual. I thought I did a really good job of it and then we wrote our instruction manual [in English 3560] and I found out how bad it really was. At least that part of it showed me

> the value of this course. It's not going to happen every time, but a lot of the most valuable things you learn aren't everyday practices, they might be a once in a while kind of thing."

Participant B agreed with participant A, and participant C elaborated that, during both his co-op and internship, he had used skills similar to those used in class projects in English 3560. He said that during his internship, he wrote simple instructions and worked with an engineer who was writing a proposal/recommendation report.

I followed up again: *"It sounds like even if your experiences in industry aren't exactly what you're doing in class, maybe these skills are transferrable. What do you all think?"* Participant C agreed, and participants A, B, D, and E commented. Participant D said that during an internship with AT&T,

> "When I was leaving my internship this summer, I was helping someone with little to no coding knowledge take over my programming project and knowing some of the audience practices that we went through throughout the class, that would have helped immensely. Definitely, the practices and skills we learn in the class would be transferrable."

Participant A explained that the concept of emphasizing important information first in technical writing "is kind of a critical element in industry." Participant B agreed that the skills were transferrable but offered a suggestion regarding the assignments that guide the course:

> "What we learned and why we learned it is good, but in terms of providing a portfolio of work, what they chose could potentially be changed a little bit, because it seemed really heavy on somebody who is going to be writing

> instruction manuals or project proposals. I think if you subbed out one of those for a case study, that would be a little more useful, because we're also asked to do that, depending on your degree. If it's technical writing for anyone, then they need a broader audience, because this one would be very technical for specifically training and manufacturing, it seems like."

Participant E, one of the two participants without internship experience, shared the following: "I know this because my dad hires a lot of people at Boeing, he says that you guys need to be looking for a lot of team and group activities. A lot of the class is focused towards individual writing assignments, but I think it'd be helpful to try to sit down and do a group project or something." Participant A agreed that a group project would "benefit the overall experience" of the course.

As the course does require students to work in groups frequently for smaller class assignments, I asked the following question to clarify: *"Do you feel that group discussion posts or smaller group assignments wouldn't have the same benefit as a larger scale group project?"* Participants E and B confirmed that they believed a larger scale group project would allow them to practice different skills, and Participant F said,

> "I agree that a group project might be beneficial, just because the internship that I worked, we had 6 or 7 people collaborating on one document, and making sure everyone was aware of the edits as well as making sure that the tone of the paper stayed consistent throughout was kind of difficult, so it would be nice to have a class where we got to practice that."

Next, I wanted to hear from the students who have had professional experiences: *"What assignments do you believe would be applicable to what you did in industry*

through your professional experiences?" To this question, participants responded as follows:

- *Participant F:* "Having to write reports where we take data from an excel sheet and have to present it in a professional manner would be beneficial, because a lot of us are engineers and a lot of work we do is in Excel."
- *Participant B:* "I second that. I mentioned case studies previously, that's huge for like half of engineers that don't go straight into manufacturing, so any type of report like that is important, especially when it's learning how to concisely take data from Excel and not just flood them with a table that no one knows how to read."
- *Participant D:* "I would third that notion. Towards the end of my internship we had to do a technical presentation with some of the executives and they don't really care about how specifically you wrote your code, they just want to see your results and how you explain that. Having practice with how to display results without describing in depth the process you went through to get that data would be pretty beneficial."
- *Participant H:* "I think a presentative assignment would be very beneficial to us when we graduate. At my co-op, that was the main type of work that was asked of me."

I moved on to the next planned question: *"Do you feel that from the beginning to end of the course that your writing skills improved, and if so, what improved your writing skills the most? Readings, textbooks, discussion posts, major assignments?"* Participants E, A, B, G and H responded to this question. While participant E and participant A

agreed that their writing skills had improved, participant B and participant E did not agree, and participant G had mixed feelings, stating that "I learned new things I didn't know before. I wouldn't say there was a great improvement, but I did learn a good amount. It was really beneficial, but there could definitely be some additional writing assignments to help us learn the concepts."

To follow up on this question, I asked: "*What assignment or activity was the most helpful in developing new skills or practicing old skills?"* Participant A said that the most helpful assignment was the executive summary, which is included in multiple assignments. Participants F and C both said that the progress report was most helpful, while participant B mentioned the workshop days, saying that "knowing how to bring a document forward to be reviewed is also a skill… you have to know what to bring so that people can edit it well." Participant D agreed that the workshops were the most helpful activity, explaining that "knowing how to take feedback from somebody else, not being offended by it, and knowing how to use it to your advantage was a pretty nice skill to use in industry."

Next, I asked, "What kind of writing have you done in internships and co-ops?" Participants B, D, A, and F responded:

- *Participant B:* "business plan for e-commerce business; case studies; process orders; presentations"
- *Participant D:* "informal emails; informal instruction manual with code; presentation on the project"
- *Participant A:* "emails; short form instruction manual"

- *Participant F:* "data analysis; purchase orders; recommendation reports; user stories; and test cases"

Next, I asked: *"What other writing courses have you taken in college, and what were the similarities/differences to this course?"* Participants A, B, E, and D responded:

- *Participant A*: Literature courses. "I have a lit minor, and I have done a lot of analysis of literature pieces, and in that writing, being concise is not as important as getting all of the little bitty details in there. So I think those two are kind of at odds for my writing. Analysis and creative writing are more free form; they tell somebody a story and take them away in it. With the technical communication, it's very separated."
- *Participant B:* No other writing courses at S&T.
- *Participant E:* Composition 1 and 2 at community college, "Both of those focused on personal narratives."
- *Participant D:* "I have the most experience with literature writing as well. There is some overlap, like in AP lit analysis we learned to be persuasive in your argument, showing the reader why your evidence shows that you understood the document. In tech writing, you also need to show that you're a reliable source, your knowledge is persuasive. There's a little bit of overlap, but besides that not too much."

4.3.1. Focus Group Codes. To code the focus group responses, I used what Hughes and Hayhoe (2008) referred to as "*in vito*" coding or using words from the data itself. I looked for trends in the data, which resulted in the following codes: emails, group project, and audience.

Participants A, B, C, D, and F mentioned "emails" during the focus group.

Participant A:

- "A majority of the writing we'll do in industry will be emails."
- "[In industry] emails was a big thing, and professional communication outside of the company. I wouldn't say many of us are going to be communicating outside of our company very often in the same way that I did…but it was mostly email communication."

Participant B:

- "In industry, I'm going to write twenty emails or more for every report that I send out."

Participant C:

- "At my co-op, I sent anywhere between 10-20 emails a day between people in the company, either asking for supplies, asking for help on a project, or giving them help on a project."

Participant D:

- "[In my internship] not too much writing, just informal emails and an informal instruction manual with my code, and a presentation at the end of the semester."

Participant F:

- "I did data analysis, putting data in reports and emailing them off."

In both the survey results and the focus group, students focused on "emails" as a key form of communication that they had completed in their internships and that they believed they would complete in their careers. In the focus group, students even

suggested that assigning multiple emails per week in the course would be helpful to prepare them for writing professional emails in industry.

Mentioned by participants A, B, E, and F, "group project" also recurred in the discussion.

Participant A:

- "I've been communicating back and forth with engineers as a technician and you can tell when people are getting info secondhand, when they're not used to communicating with others, and then putting info out. I think a group project in that fashion would benefit the overall experience."

Participant B:

- "I think it would be good to do a larger group project, such as the proposal or even the usability testing that we did."

Participant E:

- "I think it'd be helpful to try to sit down and do a group project."

Participant F:

- "I agree that a group project might be beneficial, just because the internship that I worked, we had 6 or 7 people collaborating on one document, and making sure everyone was aware of the edits as well as making sure that the tone of the paper stayed consistent throughout was kind of difficult, so it would be nice to have a class where we got to practice that."

Based on this trend, the focus group students seemed to agree that technical writing can be a collaborative event.

"Audience" was mentioned twice by participant A and once each by participant B and participant D.

Participant A:

- "[The feedback was helpful to tell me] these are things that you need to do in order to broaden your audience."
- "I think learning how to talk to your audience and being concise…I think that's what I've seen is kind of a critical element in industry."

Participant B:

- "That's too much of a blanket statement to say the class improved my writing skills. It's more like it raised questions about how to present writing to people who are our audience."

Participant D:

- "When I was leaving my internship this summer, I was helping someone with little to no coding knowledge take over my programming project, and knowing some of the audience practices that we went through throughout the class, that would have helped immensely."

4.3.2. Focus Group and Research Questions. In the introduction of this thesis, I introduced five research questions meant to guide the study. In this section, I intend to address four of these questions in relation to the focus group. The fifth research question, *"Are students able to correctly identify the types of writing completed throughout the course?"* was not addressed during the focus group.

Do students who have completed internships and co-ops view English 3560 differently than their peers who have not yet had any professional experience? In general,

the students in the focus group were positive about the course content and how it will relate to their future careers. While there were only two participants (E and G) who had not completed an internship, co-op, or worked in industry, there did not seem to be a significant difference between the attitudes of those with experience and those without. Participant B, the student who had the most professional experience (3 internships), expressed more expectations for and critique of the course than the other participants did. While most the students stated that they believed the course would be relevant to their future careers, participant B was an exception.

Do students who have completed English 3560 believe that they will use the writing skills gained in the course in industry? Many of the students in the focus group believed they would use the writing skills in industry. However, several offered suggestions for alternate assignments (case studies, group work, more practice writing emails, and practice writing and giving presentations) that would be even more applicable to their future work. In particular, students mentioned that taking data from Excel sheets and presenting it in a professional manner, or making presentations in general, would be extremely useful practice for the work they will do after graduation.

What kinds of documents and writing tasks did students complete in internships/co-ops? The four students who had completed internships and/or co-ops provided information about the types of documents they had created on the job:

- A business plan
- Case studies
- Process orders

- Presentations
- Informal emails
- Informal instruction manual with code
- Short form instruction manual
- Data analysis
- Purchase orders
- Recommendation reports
- User stories
- Test cases

When comparing this list to the types of writing students reported completing during internships and/or co-ops (question 5), I found that “emails,” “reports,” and “presentations” are present in both lists.

Do students who have completed internships and co-ops see a parallel between the kinds of writing skills required in their professional positions and the kinds of writing skills required in English 3560? The majority of the students saw some parallels between the kind of writing completed in internships and the writing skills required in English 3560, but a few did not. Participant B, the student with the highest number of internships, disagreed that the documents created in the course were relatable to his future in industry, citing his experience and the experience of other engineers he knows. He also believed the documents created in the course were very specific to an audience of students who will go on to work in training and manufacturing and mentioned that the audience for the course should be broadened.

5. CONCLUSION AND BENEFITS OF THE STUDY

In order to prepare Missouri S&T's students for success in the workplace, it is necessary to ensure that they have developed strong communication skills, "one of the primary factors required of new graduates ultimately affecting their success in the workplace" (Ford & Riley, 2003, p. 325). While some researchers suggest that writing be included in engineering courses rather than only as a separate class and discipline (Yalvac, Smith, Troy, & Hirsch, 2007), collaboration between engineering and technical writing departments is key for effective teaching of technical writing, as urged by Leydens and Schneider (2009). The results of this qualitative study cannot be generalized to a larger population due to the nature of qualitative research; however, the results can provide insight into the situation of Missouri S&T's STEM students in English 3560 classes and contribute to our collective understanding of the technical writing service course at Missouri S&T and other US universities. As Ford (2006) stated, "Viewing engineering communication through the students' eyes provides feedback that can enhance our future assessment efforts" (p. 34). Only by a close examination of our students can we understand what our students need from us as educators and representatives of the technical communication field.

I collected data by surveying students enrolled in the fall semester of English 3560 and instructors of the course. The instructor survey sample was made up of all instructors who had taught English 3560 during the fall semester of 2018, excluding me, and ten instructors who have taught English 3560 within the past five years. The data from the instructor survey revealed that these instructors had rarely been told by students in English 3560 that the writing assignments in the class were not relevant to the

students' future careers. The data from the instructor survey helped provide some context for the student survey data. While the sample size of the instructor survey was small, it would appear that the Missouri S&T students who were enrolled in English 3560 over the past five years did not, in general, complain to their instructors that writing would not be relevant to their future careers. During my first semester of teaching English 3560 at Missouri S&T, in the spring semester of 2018, several students mentioned to me that they did not believe the writing assignments in English 3560 were relevant to their future careers. As I was a new graduate teaching assistant, I believe that the students felt that they could more freely express their thoughts about the course to me. While these comments sparked my motivation to measure student perceptions of the course, the study quickly grew into a broader investigation. How exactly, if at all, did professional experience impact students' perceptions of the course? What kinds of documents did students complete in internships and co-ops? What kinds of documents do students believe they will complete in industry? This study provides insight into each of these research questions.

This study was guided by a primary research question: "Do students who have completed internships and co-ops view English 3560 differently than do their peers who have not completed internships and co-ops?" The results of the study showed that most of the 90 students who participated were positive about the course. Most of the responses reflected that the students believe the writing tasks they completed in English 3560 have prepared them to write in industry. In addition, the results of the survey actually suggested that my initial hypothesis was wrong: there was little difference in perception

between the group of students who had completed internships and/or co-ops and the group of students who had not completed internships and/or co-ops.

The results of the student survey showed that 85% of students who had not completed internships and/or co-ops and 75% of students who had completed internships and/or co-ops believed that the writing skills taught in English 3560 prepared them to write in industry. In fact, only one student in the non-internship category responded negatively to question 8, which asked students whether they felt that the writing tasks they completed in English 3560 had prepared them for industry. These results are encouraging for technical communication instructors; the engineering students who participated in this study were able to connect the writing tasks they completed in English 3560 to the kinds of writing tasks they expect to complete in industry after their graduations. It is significant that with or without professional experience, the surveyed students were able to identify the value of learning technical writing.

When developing my research questions for the study, I asked: "Do students who have completed internships and co-ops see a parallel between the types of documents (i.e., emails, proposals, letters, reports, memos, etc.) used in their professional positions and the types of documents required in English 3560?" Comparing students' answers to questions 1, 5, and 9 displays an important point: the students believed that, once in industry, they will be required to create a variety of documents. Based on these results, the students did not need to be convinced of the importance of writing in their future careers. They simply needed to be shown the connection between the types of documents and writing tasks assigned in English 3560 and the types of documents and writing tasks that they are likely to complete in industry. For instance, there were significant patterns in

the answers of students who responded negatively when asked whether they believed the writing skills they learned in English 3560 would be relevant in their future careers. Only six students responded negatively (a 1 or a 2 on the 5-point Likert scale) to question 8. One of these students had not completed an internship and/or co-op, and the other five had completed internships and/or co-ops. One student who experienced a disconnect between the types of documents she completed during internships/co-ops and the types of documents she completed in English 3560 noted that formatting requirements and grading criteria in the class were different from the expectations of her writing in industry. Another student who disagreed that English 3560 had prepared him to write in industry expressed that he wrote documents such as time studies, contracts, and presentations during internships/co-ops. As these documents are not taught in English 3560, this disconnect is understandable. Perhaps future instructors could connect with students in similar situations by developing the concept that technical writing is a transferable skill. When this concept was discussed in the focus group, five out of eight of the students agreed that the writing skills learned in the course were transferable. This discussion could benefit students in all sections of the course. Learning to write a proposal may very well prepare a student to write a contract in the future, as they learn to use clear, concise, formal language. Similarly, practicing writing memos in English 3560 may allow students to confidently correspond with supervisors about their progress on various projects once they are in industry.

About half of the students—48—who completed the survey had completed an internship and/or co-op, and these students wrote a variety of documents during their professional experiences. Emails, reports, and presentations each received more than 20

selections when students were asked to select the types of documents they completed in their internships and/or co-ops. While students do practice writing emails and reports during English 3560, they do not learn to prepare or give presentations. During internships and co-ops, students also completed several types of documents that are not taught in 3560, such as Excel sheets, contracts, AutoCAD drawings, title blocks on drawings, and research forms. This is helpful information to gather, as it can help bridge the gap between the types of documents students create during internships and/or co-ops and the types of documents students create in English 3560. When answering question 9, 41 students selected two or more types of writing when asked to select the types of documents they will likely complete in industry. The students who participated in the survey were certain that they will be required to prepare a variety of different types of documents in their engineering careers.

Question 9 on the survey helped me answer my research questions, *"Do students who have completed English 3560 believe that they will use the writing skills gained in the course in industry?"* and "*What kinds of writing tasks and documents did students complete in their internships and co-ops?"* None of the students selected fewer than two different types of writing on question 9, with the exception of participant 62 (who wrote "no clue, not completely sure of my chosen field"). In fact, 29 of the students selected all of the types of writing listed in the question. These answers indicate that the students believe they will need to write a variety of documents in their future careers in the STEM industry. The documents listed on the survey were emails, memos, procedures, reports, proposals, letters, and presentations. With the exception of presentations, each of these types of documents is taught in English 3560. The extent to which the list of documents

on the survey influenced the students' responses is unclear. There was a write-in option to specify other types of documents, but only six students added types of documents to the list.

It is significant that the students also believe that they will need to write various types of documents in industry. In fact, most students selected more types of writing on question 9 than they did in question 5; there was not always a direct correlation between the two answers. For instance, even students who only wrote emails in their internships, such as participants 20, 29, 32, and 34, still selected several different types of documents in question 9. Participants 29 and 34 selected six types of documents from the list of documents they will likely write in industry, and participants 32 and 23 selected five types of documents. It seems that these students' perceptions of the types of documents they will write in industry are not necessarily defined by the types of documents they completed in internships/co-ops. Ford (2006) found that students categorized writing in the classroom, writing in industry, and writing in internships and co-ops as three distinct actions; this may be why students had such different answers on questions five and nine. Following Ford's (2006) suggestion to teach students to view writing as a process and emphasize rhetorical strategies rather than to follow a fill-in-the-blank formula is crucial for helping students understand that the kinds of writing they complete in internships/co-ops, in English 3560, and in industry all draw from one another.

Within the focus group, students maintained positive attitudes about the course material in English 3560. Several of the participants mentioned that they believe the writing skills they learned in the course will be useful in industry; five out of eight of the students agreed that the writing skills they learned were transferable from the class into

industry. Despite this positive outlook, the students had several suggestions for improving the course. For example, some students mentioned that they would like additional practice writing different kinds of documents that are not included in the course, such as case studies. Most of the students mentioned that they would like to have more scenario-based practice writing emails. Others noted that learning to write documents collaboratively would connect with writing experiences they had in their internships/co-ops. Overall, the most commonly mentioned concepts during the focus group were emails, audience, and group projects. Students mentioned "emails" frequently when discussing types of documents they completed during internships and co-ops. They also enthusiastically discussed how helpful it would be to include more email-based assignments throughout the semester of English 3560. Students frequently brought up "audience" as a key concept they learned in English 3560. "Group project" was also mentioned by several students, as they mentioned they believed they would write collaboratively with peers once in industry.

My last research question was, *"Are students able to correctly identify the types of writing completed throughout the course?"* Based on the answers to question 1 in the survey, the survey data also revealed that students and instructors have different perceptions of the material that is taught. There was a variety of answers to question 1, which asked what kind of writing students completed in the course. However, these answers should have been very similar to one another, as the students in every section of the course completed the same major assignments. This is consistent with Ford's (2006) findings: students and instructors have different perceptions of the material that is taught.

Studying STEM students' perceptions of writing in the Fall 2018 sections of English 3560 lays a helpful foundation as Missouri S&T seeks to improve writing instruction for engineering students and to help them meet ABET competencies as skillful communicators. The study also provides a snapshot of the types of documents Missouri S&T students have completed in internships and co-ops. This is helpful because many of the same companies seek Missouri S&T students year after year (at the spring and fall career fairs, for example). Both the survey student data and the focus group data indicate that students value presentations, believe they will be doing presentations in industry, and would like for a presentation assignment to be offered in English 3560. Gathering this student feedback is important in order to improve the course in the future. For instance, Kaczmarczyk (2003) incorporated student feedback she received from surveying students in a writing course and found positive change in the students after shaping the course according to some of the student suggestions. When students feel that they have agency, their learning opportunities are optimized. In this study, the students who participated in the focus group eagerly took the opportunity to strategize about how to make the course even more effective. Donnell et al. (2011) wrote "What we need is a study that mines down to determine what important things about communication we are teaching well and what we are failing to teach, based on students' needs and professional activities beyond the classroom" (p. 10). This study explored how a group of engineering students at Missouri S&T perceive the technical writing course at the university.

APPENDIX A.

STUDENT SURVEY AND CONSENT FORM

Student Survey, English 3560

I consent to take part in Hannah Coffman's research study based on student perceptions of English 3560 by completing the survey that has been provided to me. I understand that my consent is voluntary, that I may choose to opt out of the survey at any time, and that the data will not be attached to my name but will be reported anonymously. I understand that my survey answers will be used to determine whether or not professional experiences outside of the classroom impact student perceptions of English 3560, and that the data will be reported and published anonymously in Hannah Coffman's thesis. I understand that my participation in this study in no way impacts my grade in the English 3560 course.

If you should have any questions about this research project, please feel free to contact Dr. Ed Malone at malonee@mst.edu. For additional information regarding human participation in research, please feel free to contact the Missouri S&T Campus IRB Chair, Dr. Kathryn Northcut, at (573) 341-6498.

It is not the policy of the University of Missouri to compensate human subjects in the event the research results in injury. The University of Missouri does have medical, professional and general liability self-insurance coverage for any injury caused by the negligence of its faculty and staff. Within the limitations of the laws of the State of Missouri, the University of Missouri will also provide facilities and medical attention to subjects who suffer injuries while participating in the research projects of the University of Missouri. In the event you have suffered injury as the result of participating in this research program, you are to contact the Missouri S&T IRB to report the incident. This statement is not to be construed as an admission of liability.

Participant's Printed Name:

Date:

Signature:

Survey Questions:

Thank you for your participation. Please answer the following questions to the best of your ability. You may opt out of this survey at any time by choosing not to complete the survey, or you may choose not to submit it after completion.

- Date:
- Name:
- Email address:
- Gender:
- Major:

Class level at Missouri S&T:

- Freshman
- Sophomore
- Junior
- Senior
- Other:

1. What types of documents did you write during your English 3560 class? Circle all that apply.
    - Emails
    - Memos
    - Procedures
    - Reports
    - Proposals
    - Letters
    - Presentations
    - Other (Please explain): _____

2. What other writing classes have you taken at the college level, whether at S&T or another institution? Please circle all that apply:
    - ENGL 1120 Exposition and Argumentation at S&T or freshman comp I or equivalent at another school
    - ENGL 1160 Writing and Research at S&T or freshman comp II or equivalent at another school
    - Other:

3. Have you ever completed an internship or co-op? If yes, please answer questions 4-7. If not, skip ahead to question 8.
    - Yes
    - No

4. Please give a brief description of your internship experience:

5. Please select the types of writing you completed during your internship (circle all that apply):
        - Emails
        - Memos
        - Procedures
        - Reports
        - Proposals
        - Letters
        - Presentations
        - Other (Please explain): _____

6. On a scale of 1-5, please rate your agreement/disagreement with the following statement:

    The types of writing tasks I completed during my internship prepared me to complete the writing assignments in English 3560:

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

7. On a scale of 1-5, please rate your agreement/disagreement with the following statement:

   The types of writing tasks I completed during my internship prepared me for future writing tasks I will be likely to encounter in industry:

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

8. On a scale of 1-5, please rate your agreement/disagreement with the following statement:

   The types of writing tasks I completed in English 3560 prepared me for future writing tasks I will likely encounter in industry:

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

9. What kind of writing will you likely do in industry once you have secured a position in your chosen field? (Circle all that apply):

- Emails
- Memos
- Procedures
- Reports
- Proposals
- Letters
- Presentations
- Other (Please explain): _____

APPENDIX B.

SOLICITATION/BRIEFING SCRIPT FOR STUDENT SURVEY

Hello, my name is Hannah Coffman, and I am a graduate student pursuing my MS in Technical Communication at Missouri S&T. As part of my degree program, I have designed a research study that will guide my thesis. I am studying student experiences in English 3560 and would like to learn whether professional experiences outside of the classroom (such as internships and co-ops) impact student's perceptions of this class and the writing assignments that they complete as part of the course. Your input as currently enrolled students will give me valuable insight into this topic. As a thank you for your time and participation, I would like to offer each participant the opportunity to participate in a drawing for three $20 Starbucks gift cards. After I have surveyed each section of English 3560, all participant's names will be entered into the drawing, and three winners will be selected at random. Your participation is completely voluntary—you may choose not to complete the survey at all or to stop the survey at any time. You may also choose not to turn in the completed survey once you have completed it.

Whether you choose to participate in the survey or not, it is important to know that your grade in this course will not be affected in any way by your participation, lack of participation, or the answers that you give on the survey. In addition, your name will be kept confidential, and the data will not be attached to you in any way. When reporting the data in my thesis, I will remove names and identify participants only by codes. I will also remove any salient characteristics that may lead to identification of individuals, such as gender. I will now distribute a survey and a consent form to you and then exit the room as you fill it out. Filling out the survey should take about 10-15 minutes. Thank you again for your attention!

APPENDIX C.

INSTRUCTOR CONSENT FORM AND SURVEY

I consent to take part in Hannah Coffman's research study based on student perceptions of English 3560 by completing the online survey questions. I understand that my consent is voluntary, that I may choose to opt out of the survey at any time, and that the association between my responses and my identity will be kept confidential from everyone except Hannah Coffman and her thesis advisor, Dr. Ed Malone. I understand that my survey answers will be used to determine whether instructors of the English 3560 course at Missouri S&T have received student opinions (in written or verbal form) about the applicability of the writing assignments in English 3560 to the kind of work the students expect to do after graduation.

1. What is your name?
2. Which semesters/years did you teach English 3560 at Missouri S&T?
3. In written or oral comments, how often (if at all) have students told you that the assignments in 3560 are not relevant to their future careers?

   1—Never

   2—Seldom

   3—Sometimes

   4—Often

   5—Always

APPENDIX D.

FOCUS GROUP QUESTIONS

Focus Group Questions:

1. Do you feel that the writing skills taught in English 3560 will be useful in industry, and why or why not?
2. Have your writing skills improved over the span of this course?
3. What other kinds of writing instruction have you had in college?
4. If you have completed an internship or co-op, did you use writing skills similar to those covered in English 3560?

APPENDIX E.

FOCUS GROUP CONSENT FORM

I consent to take part in Hannah Coffman's research study based around student perceptions of English 3560 by taking part in an online focus group with other students. I understand that the focus group, conducted in the Zoom meeting room, will consist of other students who have completed English 3560 and will be used to determine whether or not professional experiences outside of the classroom impact student perceptions of English 3560, and that the data will be reported and published anonymously in Hannah Coffman's thesis.

I understand that the Zoom meeting will be recorded and transcribed in order for Hannah Coffman to report relevant patterns and trends in the discussion. I understand that my consent is voluntary, that I may withdraw from the focus group at any time if I choose to do so, and that the data will not be attached to my name but will be reported anonymously. I understand that my participation in this study in no way impacts my grade in the English 3560 course.

If you should have any questions about this research project, please feel free to contact Dr. Ed Malone at malonee@mst.edu. For additional information regarding human participation in research, please feel free to contact the Missouri S&T Campus IRB Chair, Dr. Kathryn Northcut, at (573) 341-6498.

It is not the policy of the University of Missouri to compensate human subjects in the event the research results in injury. The University of Missouri does have medical, professional and general liability self-insurance coverage for any injury caused by the negligence of its faculty and staff. Within the limitations of the laws of the State of Missouri, the University of Missouri will also provide facilities and medical attention to subjects who suffer injuries while participating in the research projects of the University

of Missouri. In the event you have suffered injury as the result of participating in this research program, you are to contact the Missouri S&T IRB to report the incident. This statement is not to be construed as an admission of liability.

Participant's Printed Name:

Date:

Signature:

APPENDIX F.

STUDENT INTERNSHIPS AND WRITING EXPERIENCE

Table F.1: Student Internships and Writing Experience.

Participant Number	Internship or Co-op Experience	Document Types Completed
Participant 1	"Manufacturing plant working on software."	• Emails • Procedures • Reports • Presentations
Participant 4	"Co-op w Ameren IL as a design engineer."	• Emails • Reports • Proposals • Presentations
Participant 6	"Schlumberger- field work on offshore rig; Ameren, project planning on gas storage well improvements; Accenture, management consulting."	• Emails • Reports • Letters • Presentations
Participant 7	"Project engineering/estimating intern for a subcontractor. Did a lot of requests for information and submittals."	• Emails • Reports
Participant 8	"I worked at Husky a breed apart in their quality department."	• Emails • Memos • Procedures • Reports • Proposals • Presentations
Participant 15	"Worked in a metal shop."	• Left blank
Participant 18	"Aviation design engineer, designed electrical PCBs."	• Emails • Procedures • Reports • Presentations
Participant 19	"System protection with electric power systems."	• Emails • Reports • Presentations

Table F.1: Student Internships and Writing Experience (cont.).

Participant Number	Internship or Co-op Experience	Document Types Completed
Participant 20	"Worked in design and production at a cabinet making company."	• Emails
Participant 23	"Systems engineer intern at Leonardo DRS."	• Emails • Reports • Presentations
Participant 25	"Analyzed lateral BHA drilling trends and gave a presentation on how to improve drilling efficiency."	• Emails • Presentations
Participant 26	"I was a system administrator for Missouri S&T's supercomputer."	• Emails • Procedures • Reports • Presentations • Documentation
Participant 27	"I got a lot of hands on experience working with controls."	• Emails • Procedures
Participant 29	"Co-op at wolf creek nuclear operating plant."	• Emails
Participant 30	"Quality/reliability engineering in charge of creating new documentation for the lab among other things."	• "Lab reports for informal and external use" • "Testing procedures to be implemented globally" • "Research report on a new type of reliability test" • Emails • Memos • Procedures • Reports • Presentations
Participant 32	"Software developer internship working on a team of full-time developers."	• Emails

Table F.1: Student Internships and Writing Experience (cont.).

Participant Number	Internship or Co-op Experience	Document Types Completed
Participant 34	"I wrote a software benchmarking utility for a flight simulator company."	• Emails • Presentations
Participant 37	"I was working on developing some of the PLC programs for my company."	• Reports
Participant 38	"Hands on product development and professional communication."	• Emails • Procedures • Reports • Presentations
Participant 41	"Providing assistance with IT and engineering."	• Instructions • Procedures • Emails
Participant 42	"3 internships at manufacturing facilities covering tasks ranging from project management to supply chain to commercial development."	• Emails • Presentations • "Informal data"
Participant 48	"Manufacturing engineering with a company that manufactures fifth wheels, landing gear, axles."	• "Instructions" • "Time studies" • "Standard work" • "PowerPoints" • Emails • Procedures • Presentations
Participant 49	"I worked as a mech intern for 8 months at a valve company in Fenton."	• Emails • Reports • Presentations
Participant 52	"Process engineer, Ford motor company."	• Emails • Procedures • Presentations • "Visual aids"
Participant 54	"Process engineer co-op at true manufacturing and process engineer co-op at Harley Davidson."	• Emails • Memos • Procedures • Reports • Presentations

Table F.1: Student Internships and Writing Experience (cont.).

Participant Number	Internship or Co-op Experience	Document Types Completed
Participant 56	“I worked for Monsanto Global Engineering. I was part of an engineering team that installed a new factory. There was a ton of writing: emails, proposals, reports, notes, new procedures.”	• Emails • Memos • Procedures • Reports • Proposals • Letters Presentations
Participant 51	“Processing engineer.”	• Reports • Proposals
Participant 60	“Lab work, design work, TONS of communication required within the company and outside.”	• Emails • Procedure • Presentations • "Engineering change requests"
Participant 61	“I have had electrical engineering internships, where I focused on substation design, and completed all manner of tasks in reviewing physical design."	• Emails • Procedures • Reports • Proposals Presentations
Participant 63	“Coded firmware for a small company (less than 120 employees)”	• Emails • Reports • Presentations
Participant 64	“I worked in the administrative department of a civil engineering, landscape architecture & surveying firm"	• Emails • Memos • Proposals • "Contracts"
Participant 65	“2017- manufacturing engineering intern at Springfield Remanufacturing Corps 2018, global customer service intern at Mastercard"	• Emails • Memos • Reports • Presentations • "Technical instructions for AutoCAD drawings"

Table F.1: Student Internships and Writing Experience (cont.).

Participant Number	Internship or Co-op Experience	Document Types Completed
Participant 73	"Automation engineer"	• Emails • Memos • Procedures • Reports • Proposals
Participant 75	"Environmental research experiences at Vanderbilt, UPenn, and Argonne National Laboratory."	• Emails • Procedures • Reports • Presentations
Participant 76	"Develop quality control dept., analyzed samples, ran stats, wrote procedures."	• Emails • Procedures
Participant 77	"Olsson Associates, dealt with title blocks. Holland 1916--presentation, memo, report. Weidenhammer New Packaging-catalog."	• Emails • Presentations • Reports • "Title Blocks"
Participant 78	"bridge design and construction."	• Procedures • Reports
Participant 80	"Coding for flight simulators."	• Emails
Participant 81	"I was a network engineer for Brewer Science."	• Emails
Participant 86	"Lean improvement design and implementation in a manufacturing facility."	• Emails • Procedures • Reports • Presentations
Participant 87	"Mostly programming, with a slightly technical presentation at the end."	• Emails • Presentations
Participant 88	"Performed relevant work to my field, spent a lot of time working with Excel."	• Emails • Reports • Presentations
Participant 89	"Working in an office environment, filling out reports."	• Emails • Reports • "Excel sheets"

APPENDIX G.

COMPARISON OF SURVEY QUESTIONS ONE, FIVE, AND NINE

Table G.1: Comparison of Survey Questions One, Five, and Nine.

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 1	Emails Memos Procedures Reports Proposals Letters	Emails Procedures Reports Presentations	Emails Memos Reports Proposals Letters Presentations
Participant 2	Emails Procedures Reports Proposals Letters		Emails Memos Reports Proposals Letters Presentations
Participant 3	Emails Memos Procedures Reports Proposals Letters		Emails Procedures Reports
Participant 4	Emails Memos Procedures Reports Proposals	Emails Reports Proposals Presentations	Emails Reports Proposals Presentations
Participant 5	Emails Memos Procedures Reports Proposals Letters		Emails Memos Reports Proposals Presentations
Participant 6	Emails Memos Procedures Reports Proposals Letters Resume Cover letter	Emails Reports Letters Presentations	Emails Reports Proposals Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 7	Emails Memos Procedures Reports Proposals Letters	Emails Reports	Emails Memos Reports Proposals Letters
Participant 8	Emails Memos Procedures Reports Proposals	Emails Memos Procedures Reports Proposals Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 9	Emails Memos Procedures Reports Proposals Letters	"Standard operating procedures"	Emails Procedures Presentations
Participant 10	Emails Memos Procedures Reports Proposals Letters		Emails Memos Reports Letters Presentations
Participant 11	Procedures Reports Presentations		Emails Memos Procedures Reports Presentations
Participant 12	Memos Procedures Reports Proposals		Emails Memos Reports Letters

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 14	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 15	Emails Procedures Reports Proposals Letters Presentations	Left blank	Emails Memos Reports Presentations
Participant 16	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 17	Emails Memos Procedures Reports Proposals Letters	Emails Memos Procedures Proposals Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 18	Emails Memos Procedures Reports Proposals Letters	Emails Procedures Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations “Application notes”

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 20	Emails Memos Procedures Reports Proposals Letters	Emails	Emails Memos Procedures Reports
Participant 21	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 22	Emails Memos Procedures Reports Proposals Letters Resume		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 23	Emails Memos Procedures Reports Proposals Letters	Emails Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 24	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 25	Procedures Reports Proposals Resume Cover Letter	Emails Presentations	Emails Memos Reports Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 27	Emails Memos Reports Proposals	Emails Procedures	Emails Reports Proposals Presentations
Participant 28	Emails Memos Reports Proposals		Emails Procedures Reports Presentations
Participant 29	Emails Memos Procedures Reports Proposals Letters	Emails	Emails Memos Procedures Reports Proposals Presentations
Participant 30	Emails Procedures Proposals Letters Instruction manuals	"Lab reports for informal and external use" "Testing procedures to be implemented globally" "Research report on a new type of reliability test" Emails Memos Procedures Reports Presentations	Emails Memos Procedures Reports Letters Presentations
Participant 31	Emails Memos Procedures Reports Proposals Letters "Manuals"		Emails Procedures Reports Proposals Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 32	Emails Memos Procedures Reports Letters	Emails	Emails Memos Procedures Reports Presentations
Participant 33	Emails Memos Procedures Reports Proposals Letters Presentations Resumes		Emails Memos Reports Proposals Presentations
Participant 34	Emails Memos Reports Proposals Letters "Instruction manual"	Emails Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 35	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Letters
Participant 36	Emails Memos Procedures Reports Proposals Letters	Emails	Emails "CAD drawings"
Participant 37	Emails Memos Reports Proposals Letters	Reports	Emails Reports Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 38	Emails Memos Procedures Reports Proposals Letters	Emails Procedures Reports Presentations	Emails Procedures Reports Proposals Letters Presentations
Participant 39	Emails Memos Reports Proposals Letters “Instruction manuals (not sure if that is procedures)"		Emails Memos Reports Letters
Participant 40	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Presentations
Participant 41	Emails Procedures Reports Proposals Letters	Instructions Procedures Emails	Emails Reports Presentations
Participant 42	Emails Memos Procedures Reports Proposals Letters	Emails Presentations “Informal data”	Emails Memos Presentations
Participant 43	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 44	Emails Memos Reports Proposals Letters "Instruction manuals" "Career correspondence"		"Probably all, honestly"
Participant 45	Emails Memos Procedures Reports Proposals Letters Resume		Emails Memos Procedures Reports Letters Presentations
Participant 46	Emails Memos Procedures Reports Proposals Letters		Emails Reports Letters Presentations
Participant 47	None selected		Emails Reports Proposals Presentations
Participant 48	Emails Memos Procedures Reports Proposals	"Work instructions" "Time studies" "Standard work" "PowerPoints" Emails Procedures Presentations	Emails Procedures Reports
Participant 49	Emails Memos Reports Proposals Letters	Emails Reports Presentations	Emails Memos Reports Letters

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 50	Emails Memos Procedures Reports Proposals Letters		Reports Presentations Text “easy and simple and fast”
Participant 51	Emails Memos Reports Proposals Letters “Instruction manual” “Resume”		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 52	Emails Memos Procedures Reports Proposals Letters “Instructions”	Emails Procedures Presentations “Visual aids”	Emails Procedures Proposals Letters Presentations
Participant 53	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 54	Emails Memos Procedures Reports Proposals Letters	Emails Memos Procedures Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 55	Emails Memos Procedures Reports Proposals Letters Instructions	"State regulation forms, resource order forms."	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 56	Emails Procedures Reports Proposals Letters	Emails Memos Procedures Reports Proposals Letters Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 57	Emails Memos Procedures Reports Proposals Letters		Emails Reports Proposals Letters
Participant 58	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures "Documentation"
Participant 59	Emails Memos Procedures Reports Proposals Letters	Reports Proposals	Emails Memos Procedures Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 60	Emails Memos Procedures Reports Proposals Letters	Emails Procedure Presentations "Engineering change requests"	Emails Memos Procedures Reports Proposals
Participant 61	Emails Memos Procedures Reports Proposals Letters	Emails Procedures Reports Proposals Presentations	Procedures Proposals Presentations
Participant 62	Emails Memos Procedures Reports Proposals Letters		"No clue, not completely sure of my chosen field."
Participant 63	Emails Procedures Reports Proposals Letters	Emails Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 64	Emails Memos Procedures Reports Proposals Letters	Emails Memos Proposals "Contracts"	Emails Memos Procedures Reports Proposals Letters Presentations “Contracts”

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 65	Emails Memos Procedures Reports Proposals Letters “Resume, cover letter, letter of transmittal, consent forms"	Emails Memos Reports Presentations "Technical instructions for AutoCAD drawings"	Emails Memos Reports Proposals Letters Presentations
Participant 66	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Presentations
Participant 67	Emails Memos Procedures Reports Proposals Letters		Emails Memos Reports Proposals Presentations
Participant 68	Emails Memos Procedures Reports Proposals Letters Resume		Emails Memos Reports Proposals
Participant 69	Emails Memos Procedures Reports Proposals Letters	Emails Memos Proposals “Legal documents”	Emails Memos Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 70	Emails Memos Procedures Reports Proposals Letters Presentations		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 71	Emails Memos Procedures Reports Proposals		Emails Memos Presentations
Participant 72	Emails Memos Procedures Reports Proposals Letters		Memos Reports Presentations
Participant 73	Emails Memos Procedures Reports Proposals Letters	Emails Memos Procedures Reports Proposals	Emails Memos Procedures Reports Proposals Letters
Participant 74	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Letters "Data sheets"
Participant 75	Emails Memos Procedures Reports Proposals Letters Resume	Emails Procedures Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 76	Emails Memos Procedures Reports Proposals Letters	Emails Procedures	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 77	Emails Memos Procedures Reports Proposals Letters Resume	Emails Presentations Reports “Title Blocks”	Emails Memos Reports Proposals
Participant 78	Emails Memos Procedures Reports Proposals Letters Presentations	Procedures Reports	Reports Proposals
Participant 79	Emails Memos Procedures Reports Proposals Letters		Emails Reports Letters Presentations
Participant 80	Emails Memos Procedures Reports Proposals Letters	Emails	Memos Reports Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 81	Emails Memos Procedures Reports Proposals Letters	Emails	Emails Procedures Reports Presentations
Participant 82	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 83	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 84	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations
Participant 85	Emails Memos Reports Proposals Presentations		Emails Memos Procedures Reports Proposals Letters Presentations

Table G.1: Comparison of Survey Questions One, Five, and Nine (cont.).

Participant #	**Question One**	**Question Five**	**Question Nine**
Participant 86	Emails Memos Procedures Reports Proposals Letters	Emails Procedures Reports Presentations	Emails Memos Procedures Reports Proposals Letters Presentations
Participant 87	Emails Memos Procedures Reports Proposals Letters	Emails Presentations	Emails Procedures Reports Letters Presentations
Participant 88	Emails Memos Procedures Reports Proposals Letters	Emails Reports Presentations	Emails Procedures Proposals Presentations
Participant 89	Emails Memos Procedures Reports Proposals Letters	Emails Reports “Excel Sheets”	Emails Procedures Reports Proposals Presentations
Participant 90	Emails Memos Procedures Reports Proposals Letters		Emails Memos Procedures Reports Proposals Letters Presentations

APPENDIX H.

ENGLISH 3560 SYLLABUS (SECTION D) FALL SEMESTER 2018

Note: I have italicized sections of this syllabus that were common to all sections of English 3560 during the fall semester of 2018.

English 3560 Syllabus Fall Semester 2018

Course: English 3560: Technical Writing Fall 2018, Section 1D

Time: T/TH 9:30-10:45 AM

Instructor: Hannah Coffman

Location: CSF 114

Office: HSS Building Room 233

Office Hours: T/TH 11 AM - 12 noon and by appointment

Phone: (573) 341-4681 (dept)

Email: hcc84w@mst.edu

Course Description:

The theory and practice of writing technical papers and reports in the professions.

Prerequisites: Freshman composition and junior standing.

Contacting the Instructor:

Please email me at hcc84w@mst.edu if you have any questions about course material, assignments, or concepts that we discussed in class. You are also welcome to stop by my published office hours or make an appointment to meet with me to discuss coursework.

Textbook:

Markel, Mike. Technical Communication, 11th Edition. Bedford/St. Martin's. 2014.

ISBN-13: 978-1457673375

This edition is required, not optional, but it can be purchased, used, or rented. Please bring your book to class every session, as we will often use it during class discussions or in-class assignments.

Accessibility and Accommodations:

It is the university's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please contact Student Disability Support Services at (573) 341-6655, sdsmst@mst.edu, visit http://dss.mst.edu/ for information, or go to mineraccess.mst.edu to initiate the accommodation process.

**Please be aware that any accessible tables and chairs in the classroom should remain available for students who find that standard classroom seating is not usable.*

Section Enrollment:

The course section number is 75130. You must be enrolled in this section to attend this class.

Attendance Policy:

Technical communication requires physical presence and the ability to work effectively as a member of a team. Students in this course are expected to attend class unless they

have an obligation that prevents them from doing so, in which case the student can email in advance to request an excused absence.

Examples of excused absences: away games, job interviews, conferences, and site visits for other courses.

Examples of unexcusable absences: vacations, weddings, missed alarms, and car trouble.

Excused absences cannot be given after the fact under any circumstances. Please be proactive and contact me in advance.

If an absence is excused in advance, points missed during the absence can be made up by doing equivalent work. Workshops must be completed online before the deadline to earn credit. If you are on co-op, you cannot take this section. Class cannot be re-taught for individuals missing class.

If you are significantly late to class or leave early, you will be counted absent.

If you miss class (whether for an excused or an unexcused absence) I expect you to catch up on the material you missed during the class session. You can do this by contacting a classmate and reviewing their notes as well as reviewing discussion posts on Canvas to see what information was covered during the class period.

Absence Penalties:

- 0-2 absences—No penalty
- 3 absences—5% reduction in final course grade
- 4 absences—10% reduction in final course grade
- 5 absences—15% reduction in final course grade
- Six or more absences—I will strongly recommend that you drop the course

If the class session is canceled due to weather or an emergency, an email will be sent to you through Canvas, as far in advance as possible, to provide your alternative assignment for the session.

Online Resources:

This course is conducted through Canvas; thus, internet access outside of class is required. Internet access is available at the S&T library and many other sites on campus. In addition, S&T email access is required. Other web resources will be used in class and the links made available as needed.

Decorum:

Any student perceived to be causing a distraction will be asked to leave. Students who are asked to leave may return to class after speaking with me outside of class about the classroom environment. I will determine what is considered distracting. Serious distractions that violate the student code of conduct will result in your removal from the course. Distractions include, but are not limited to:

- Social media use
- Use of computers or personal electronic devices for purposes unrelated to class
- Belittling other students
- Coming to class intoxicated
- Racist, sexist, or otherwise inflammatory language and actions

The classroom is my workplace. Please come to class prepared to participate in a professional working environment.

Course Grading:

This technical communication course involves demonstration of specific skills in reading and writing as well as visual and verbal communication. If you do not have time outside class to complete homework and projects, please take the course during a different semester. This course is offered every semester in a variety of formats (online, distance, etc.). Your midterm grade will be based on less than 50% of points. Assignments must be submitted to the appropriate location in Canvas to be graded; emailed assignments will not be graded.

All work submitted for this course must be unique and original to this course. Work created previously for any reason will not be accepted. Any work submitted that is not unique and original to this course will be considered and treated as plagiarism.

Course Grading

1000 points

Course points total 1000

Grade:

- 900-1000
- 90-100
- A

- 800-899.9
- 80-89.9
- B

- 700-799.9
- 70-79.9
- C

- 600-699.9
- 60-69.9
- D

- Under 600
- Under 59.9
- F

Extra credit will raise total available points to over 1000 but final percentages will be calculated out of 1000.

Assignment Schedule:

Refer to the calendar on the registrar's website for academic deadlines, holidays, and finals week schedules. Specific due dates will be given in class when each assignment is assigned and posted on Canvas. Updated calendars will be sent via Canvas.

Assignments:

Postings, graded activities

- *Various. Must be present.*
- *150 (15%)*

Career Correspondence (CC)

- *Résumé (2 versions), Cover Letter, Follow-up Correspondence*
- *Sunday, September 9th*
- *100 (10%)*

Instructions

- *Sun, September 23rd*
- *100 (10%)*

Proposal with workshop

- *Sunday, October 28th*
- *200 (20%)*
- *Workshop: 50 (5%)*

Progress Report

- *Sunday, November 11th*
- *100 (10%)*

Formal Report with workshop

- *Sunday, December 2nd*
- *200 (20%)*
- *Workshop: 50 (5%)*

Final Portfolio

- *Thursday, December 13th*
- *50 (5%)*

Total: 1000 (100%)

Late Work:

Late work will not be accepted for full credit. Postings, workshops, or homework assignments that are late may be given a 0. Major assignments that are more than 2 hours late but less than 12 hours late will be 5% off. You will lose a further 5% for each day your assignment is late. If you have obtained permission from me to revise and resubmit an assignment, a new due date for the revised submission will be assigned.

The final cannot be submitted late and any late final will automatically receive a 0.

Time Late/Percent Off:

- 2-12 Hours--5%
- 1 Day--10%
- 2 Days--15%
- 3 Days--20%
- 4 Days--25%
- 5 Days--30%
- 6 Days--35%

- 7 Days--40%
- 8 Days--45%
- 9 Days--50%

Revision Policy:

If you receive a grade of a C or below on an assignment, you will have the option to revise and resubmit. You will need to contact me and we will set a due date for the assignment. However, please be aware that the new due date will be set within a week of the date that you received the original grade. In addition, you will not be able to receive higher than a 95% on an assignment that is resubmitted, and it may only be resubmitted with express permission from me.

Extra Credit:

This course will offer extra credit opportunities. However, it will not be given on an individual basis. The extra credit opportunities will be offered throughout the semester, and there will be no extra credit available after the last week of classes. Extra credit given over the course of the semester will not total more than 50 points (5% of the total points available).

Workshops:

Workshops will require you to review a peer's assignment and offer them helpful feedback. Your workshop draft should be complete and represent your best effort. I will

read both your draft and the comments you give to your workshop partner to determine if you have understood and completed the assignment.

You will use track changes in Word in order to make your comments to your workshop partner. You may comment on spelling or grammatical errors, but I will also expect to see comments that help the writer develop more effective content. Rather than only focusing on one area, you should refer to the assignment rubric to make sure that the draft meets each of the criteria for a quality assignment.

Discussion Posts:

Over the course of this class, you will be asked to complete several discussion posts. These discussion posts will determine your understanding of the material covered in class. To achieve a high score, answers must be correct, complete, and thorough. In addition, I will expect you to practice your technical writing skills when composing discussion posts; in other words, you must write in complete, correct sentences and avoid grammatical and mechanical errors. Each discussion post should reflect the tone and style of effective technical writing.

Cheating and Plagiarism:

If you plagiarize or cheat on any assignment, you will receive a zero on the assignment and may fail the course. If you sabotage another student, you will be penalized. The student honor code is located on the S&T website. If you violate expectations of honesty, you may also be subject to disciplinary action by the university. Please read rule 200.010.B and 200.020 in the University of Missouri's Collected Rules and Regulations.

To avoid being accused of dishonesty in this course, do the following:

- Don't cut and paste material off of the internet. If you don’t cite the source correctly, you have plagiarized.
- Don’t wait until the last minute to start any of the major assignments because a last-minute rush often leads to cheating.
- Read assignment descriptions and textbook chapters thoroughly before working on a draft outside of class and make sure you understand the assignment well, because if you don’t, the assignment will appear to have been written for another course.
- Know that if you share work for individual assignments, you will be accused of plagiarizing. Do not copy workshop documents of other students.
- Never write sections of a document as a group unless the assignment is a group project because typically if two students submit the same part of a document, it is plagiarized.
- Cite all information that you use in a document that isn’t already known by all high-school students; cite both in-text and in references section of document as allowed by the genre.
- Do not misrepresent your ideas, sources of information, or your work to me. Do not lie or take shortcuts. Avoid “gaming” the system to prevent a breach of ethics.
- Please be aware that copying information from your own assignments without citation is also a form of plagiarism. For example, you cannot copy and paste information directly from your proposal and use it in your recommendation report.

Resources:

University Writing Center

The University Writing Center is a peer consulting service for undergraduate writing. You need to set up an appointment by calling the WC or visiting their website at http://writingcenter.mst.edu. Peer writing consultants offer objective feedback and help you gauge audience reaction. They also provide useful tools and information to help you generate ideas, make revisions, or add finishing touches.

Burns & McDonnell Student Success Center

The Student Success Center is a centralized location designed for students to learn about and use campus resources. The Student Success Center was developed as a campus wide initiative to foster a sense of responsibility and self-directedness to all S&T students by providing peer mentors, caring staff, and approachable faculty and administrators who are student centered and supportive of student success. Visit the B&MSSC at 198 Toomey Hall; 573-341-7596; success@mst.edu

Title IX/anti-discrimination policy

If you report an incident to me, I am a mandated reporter and must inform the appropriate administrator(s) even if you request privacy. If you would like to make a report with confidentiality guaranteed, you should report the incident to S&T's counseling office.

Missouri University of Science and Technology is committed to the safety and well-being of all members of its community. US Federal Law Title IX states that no member of the university community shall, on the basis of sex, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any education program or activity. Furthermore, in accordance with Title IX guidelines from the US Office of Civil Rights, Missouri S&T requires that all faculty and staff members report, to the Missouri S&T Title IX Coordinator, any notice of sexual harassment, abuse, and/or violence (including personal relational abuse, relational/domestic violence, and stalking) disclosed through communication including but not limited to direct conversation, email, social media, classroom papers and homework exercises.

Classroom Egress Maps

Please familiarize yourself with the classroom egress maps posted on-line at: http://designconstruction.mst.edu/floorplan/

UCARE

Missouri S&T's University Committee for Assistance, Response, and Evaluation (UCARE) was formed to address the need for greater communication and preparedness regarding students facing difficulty through prevention and amelioration strategies. With the increasing number of students with various health concerns and learning challenges attending college, it is inevitable that more difficulties in functioning will be observed.

When a need exists, UCARE offers consultation, assistance and response using a multidisciplinary approach in order to make our campus the safest environment possible. UCARE's website can be found at: http://stuaff.mst.edu/ucare/

Complaints:

If you are unhappy with your assignment or activity grade, please wait 24 hours, double check the assignment and the grade, and then email me. We will set up a meeting if necessary, and we can discuss your grade and opportunities for revision, if any. I will not discuss grades during class time.

If you are dissatisfied with your overall course grade, you should wait until the end of the semester. When final grades are posted, you should contact me first if you have a grade dispute. If you and I do not resolve the dispute, you may appeal to our department chair, Dr. Kristine Swenson, at kswenson@mst.edu. She will assist you with your complaint or give you the name of the administrator you will need to contact.

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