Collaboration Literacy in Technical Communication: Using Workplace-Based Teamwork Practices and Technologies to Teach Distributed Knowledge Work

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ABSTRACT

COLLABORATION LITERACY IN TECHNICAL COMMUNICATION: USING WORKPLACE-BASED TEAMWORK PRACTICES AND TECHNOLOGIES TO TEACH DISTRIBUTED KNOWLEDGE WORK

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Northern Illinois University, 2022
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Workplace changes and the continuing evolution of how we define and practice technical communication require that we consider collaboration in ways we may not have imagined ten, five or even two years ago. The unexpected COVID-19 pandemic pushed our world and collaboration into additional and unanticipated directions. Since one of our responsibilities as educators is to prepare our students for success in the workplace and beyond, we must take a closer look at how we understand and teach collaboration in our classrooms. While collaboration appears in existing technical communication pedagogical models, it has been viewed as an element of social literacy or proficiency and is primarily focused on document creation. In order to meet the changing dynamics of the workplace, evolving technologies and the expanding influence of our field, we need to consider collaboration literacy beyond its social elements and assemble a teaching framework that enhances our students' actions related to collaboration and their beliefs and behaviors when engaging in collaborative activities.

In this dissertation, I examine collaboration in the technical communication classroom in order to suggest a pedagogical approach which addresses this changing landscape and empowers students to achieve their future goals. Drawing on my academic and professional background and
embracing the interdisciplinary nature of technical communication, I integrated workplace-based collaboration concepts into the classroom and examined my own classroom practices and the pedagogical approaches of others in the technical communication academic community.

This dissertation includes three distinct research efforts and I have dedicated a chapter to each one. Chapter 2 presents a case study of three undergraduate technical writing courses to examine how workplace-based teamwork approaches can be used to teach collaboration. In this case study, I viewed collaboration through the lens of teamwork and studied how workplace-based collaboration approaches can contribute to teaching distributed, remote and virtual work. Chapter 3 studies how technical communication teachers and textbooks define, integrate, discuss and teach collaboration. This chapter presents the results of a survey of 28 technical communication teachers and an analysis of 10 technical communication textbooks. In Chapter 4, I study how incorporating a workplace-based communication platform (Slack) into an undergraduate technical communication course can contribute to students' collaboration literacy. The concluding chapter brings together my various research efforts and offers a framework for teaching the skills and competencies that are important for collaboration literacy. While this framework was constructed from a limited study, I believe it offers a structure for teaching the skills and competencies that are valuable for technical communication students to become literate in collaboration and teamwork.
COLLABORATION LITERACY IN TECHNICAL COMMUNICATION:
USING WORKPLACE-BASED TEAMWORK PRACTICES
AND TECHNOLOGIES TO TEACH DISTRIBUTED
KNOWLEDGE WORK

BY

MARCY BOCK EASTLEY
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Jessica Reyman
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DEDICATION

For my mother, who left my life too soon - your passion for learning and helping others achieve their dreams is reflected in every word on these pages
TABLE OF CONTENTS

LIST OF TABLES .................................................................................................................. viii
LIST OF FIGURES ............................................................................................................... ix
LIST OF APPENDICES ....................................................................................................... x

CHAPTER 1: A CALL FOR COLLABORATION LITERACY ................................................. 1
  The Role of Technical Communicators .............................................................................. 4
  Distributed Knowledge Work ............................................................................................ 5
  Collaboration as Teamwork ............................................................................................... 7
  Collaboration and the Workplace ....................................................................................... 8
  Collaboration in Technical Communication Pedagogy ..................................................... 10
  Collaboration Literacy ..................................................................................................... 12
  Constructing a Teaching Framework Based on Teamwork .............................................. 15
  Research Questions ......................................................................................................... 18
  Methodology .................................................................................................................... 19
  Chapter Organization ....................................................................................................... 21

CHAPTER 2: USING WORKPLACE-BASED PRACTICES TO TEACH COLLABORATION
  LITERACY: A TECHNICAL COMMUNICATION CLASSROOM CASE STUDY ............ 25
  The Study ......................................................................................................................... 28
  The Course ....................................................................................................................... 31
  Data Collection ................................................................................................................. 36
  Results ............................................................................................................................... 45
  Conclusions and Implications ........................................................................................... 80
# CHAPTER 3: SHAPING THE COLLABORATION LITERACY OF STUDENTS: CURRENT TEXTBOOK AND CLASSROOM APPROACHES

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>85</td>
</tr>
<tr>
<td>Methodology</td>
<td>88</td>
</tr>
<tr>
<td>Important Collaboration Skills</td>
<td>98</td>
</tr>
<tr>
<td>Teaching Collaboration</td>
<td>110</td>
</tr>
<tr>
<td>Collaboration Technology</td>
<td>124</td>
</tr>
<tr>
<td>Virtual Collaboration</td>
<td>127</td>
</tr>
<tr>
<td>Impacts of COVID-19</td>
<td>128</td>
</tr>
<tr>
<td>Collaboration and Teamwork in Technical Communication Textbooks</td>
<td>129</td>
</tr>
<tr>
<td>Key Themes about Collaboration and Teamwork</td>
<td>132</td>
</tr>
<tr>
<td>Teamwork and Collaboration Content Analysis</td>
<td>138</td>
</tr>
<tr>
<td>Conclusions and Implications</td>
<td>152</td>
</tr>
</tbody>
</table>

# CHAPTER 4: TEAMWORK EMERGING FROM EMERGING TECHNOLOGY: USING SLACK TO TEACH COLLABORATION IN THE TECHNICAL COMMUNICATION CLASSROOM

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Collaboration Technologies</td>
<td>162</td>
</tr>
<tr>
<td>Technology in the Technical Communication Classroom</td>
<td>165</td>
</tr>
<tr>
<td>Using Slack in the Classroom</td>
<td>167</td>
</tr>
<tr>
<td>Methodology</td>
<td>172</td>
</tr>
<tr>
<td>Slack and Other Technology Use</td>
<td>177</td>
</tr>
<tr>
<td>Teamwork Emerged from Slack Interactions</td>
<td>181</td>
</tr>
<tr>
<td>Coordinating is not Collaboration</td>
<td>206</td>
</tr>
<tr>
<td>Slack and the Elements of Teamwork</td>
<td>209</td>
</tr>
<tr>
<td>Why Use Slack?</td>
<td>212</td>
</tr>
</tbody>
</table>
Conclusions............................................................................................................................................. 220

CHAPTER 5: A FRAMEWORK FOR TEACHING COLLABORATION LITERACY ...... 225

Collaboration Literacy .............................................................................................................................. 227

Determining the Elements of Collaboration Literacy ............................................................................ 229

Framework for Teaching Collaboration ................................................................................................. 236

Influential Factors .................................................................................................................................. 238

Foundational Elements ............................................................................................................................ 242

Collaboration Skills ................................................................................................................................. 243

Teaching Collaboration and Teamwork .................................................................................................... 244

Future Research Opportunities .............................................................................................................. 254

Concluding Thoughts ............................................................................................................................... 258

REFERENCES ........................................................................................................................................... 260

APPENDICES .......................................................................................................................................... 269
LIST OF TABLES

Table 1: Case Study Team Names ................................................................. 38
Table 2: Team Composition ........................................................................... 39
Table 3: Team Success Ratings ................................................................. 46
Table 4: Contributors to Team Success or Failure .................................... 48
Table 5: Team Rules for Case Study Teams ............................................. 62
Table 6: Individual Contribution Ratings (includes self-ratings) ............ 64
Table 7: Individual Contribution Ratings (Fall 2020) ................................ 66
Table 8: Ten Textbooks Analyzed ................................................................ 92
Table 9: Categories for Coded Collaboration Skills ................................... 95
Table 10: Teaching Modalities ...................................................................... 111
Table 11: Collaboration and Collaboration Skills in Course Syllabi ............ 113
Table 12: Types of Collaboration Assignments ........................................ 120
Table 13: Types of Collaborative Work Products ...................................... 121
Table 14: Collaboration Technology ............................................................ 125
Table 15: Skill Categories in Paragraphs and Breakout Items .................... 139
Table 16: Team use of Slack for Project ..................................................... 178
Table 17: Other Technologies Used for Projects ...................................... 180
Table 18: Thematic Coding for Paragraphs .............................................. 289
Table 19: Thematic Coding for Breakout Items ........................................ 290
LIST OF FIGURES

Figure 1: Word Cloud of Collaboration Terms ................................................................. 99
Figure 2: Slack Workspace ............................................................................................. 169
Figure 3: Slack Channels and Direct Messages ............................................................. 170
Figure 4: Pinned Messages in Slack .............................................................................. 171
Figure 6: Document Sharing in Slack ........................................................................... 187
Figure 7: Desktop Notification in Slack ........................................................................ 203
Figure 8: Document Sharing in Slack ........................................................................... 214
Figure 9: Slack Search Feature ..................................................................................... 215
Figure 10: Calling within Slack ..................................................................................... 216
Figure 11: Responding in Slack .................................................................................... 218
Figure 12: Handy Reactions in Slack .......................................................................... 218
Figure 13: Comparison of Slack Interface and LMS Discussion Interface .................... 220
Figure 14: Framework for Teaching Collaboration ....................................................... 237
LIST OF APPENDICES

APPENDIX A: Blog Post Assignment Prompts ................................................................. 269
APPENDIX B: Pre-Project Team Creation Questionnaires .............................................. 273
APPENDIX C: Post-Project Team Assessments ............................................................... 276
APPENDIX D: Teacher Survey Questions ...................................................................... 280
APPENDIX E: Collaboration Terms ................................................................................ 286
APPENDIX F: Textbook Coding by Terms ..................................................................... 288
CHAPTER 1: A CALL FOR COLLABORATION LITERACY

*Life is a group project.* I utter this phrase repeatedly in my technical communication classroom in response to the inevitable deep sighs, eye rolls and withdrawn body language that accompany any mention of collaborative group projects. Regardless of students’ reactions, collaborative activities permeate our personal lives, education and work. According to one study, collaborative work “has risen 50% or more over the past decade to consume 85% or more of people’s work weeks” (Cross et al., 2021). In the workplace, collaboration is viewed not only as a differentiator of organization success, but also as a critical means to address increased digital technology use and redefinitions of global economies (Bughin et al., 2018; Harvard Business Review Analytic Services, 2018). Within the field of technical communication, collaborative activities and collaboration-related skills are prominently featured in role definitions, job descriptions and daily work. Since one of our responsibilities as educators is to prepare our students for success in the workplace and beyond, we must take a closer look at how we understand and teach collaboration in our classrooms.

Workplace changes and the continuing evolution of how we define and practice technical communication require that we consider collaboration in ways we may not have imagined ten, five or even two years ago. A 2018 study of global business leaders across a variety of industries highlighted the importance of increasing agility, creativity and collaboration leading to a new workplace approach that is “organized around teams of highly engaged people, creating an open environment where all can contribute and add value, implementing technology to handle rote
tasks to free people up to innovate and empowering employees to collaborate inside and outside the company” (Harvard Business Review Analytic Services, 2018, p. 3). In this workplace, technical communicators will participate in a greater variety of teams, engage with new types of technology and have more significant opportunities to contribute to organizational activities. Additional studies forecast specific critical skills for the future. Linking the rise in new technologies, automation and artificial intelligence with expanding globalization and ways for connecting people, these studies predict continual shifts to more cross-functional team-based work and organizational structures that incorporate more independent contractors and freelancers (Bughin et al., 2018; Davies et al., 2011). These changes will require increased collaboration skills, and specifically skills in virtual collaboration. Thus, collaboration is more relevant to our students' futures and new types of collaboration have become important.

The unexpected COVID-19 pandemic pushed our world and collaboration into additional and unanticipated directions. In mid-March 2020, California issued the first Coronavirus stay-at-home order requiring that all residents stayed in their homes unless they worked an essential job or were shopping for essential needs. Within two weeks, 31 additional states followed and by April 7, 2020, 43 states had mandatory stay-at-home orders in place (Kaiser Family Foundation, 2020). Most daily activities including school and work instantly changed and many became remote or virtual. An early study of COVID-19 and remote work indicated that “between February and May 2020 over one-third of the labor force switched to remote work, resulting in about half of American workers working from home” (Brynjolfsson et al., 2020, p. 24). This movement to remote work also resulted in a significant increase in physically distributed teams. While official stay-at-home orders were lifted, many people have continued to work remotely
and the workplace, including how we collaborate, has likely changed forever. As we prepare technical communication students for the future, we have a pressing need to reconsider how we look at teaching collaboration in our classrooms.

In this dissertation, I examine collaboration in the technical communication classroom in order to suggest a pedagogical approach which addresses this changing landscape and empowers students to achieve their future goals. I draw on my academic and professional background spanning the humanities, business and technology, and embrace the interdisciplinary nature of technical communication. I have integrated workplace-based collaboration concepts into the classroom to gain a different perspective and find new opportunities to address collaborative work. I believe that the synergies brought by combining the classroom, workplace, research and practice can enhance both our teaching and the collaborative capabilities of our students.

The goal of my research was to begin developing best practices for teaching collaboration in technical communication. I examined my own classroom practices and the pedagogical approaches of others in the technical communication academic community. My methodology for this project was two-fold:

- A case study in which I incorporated workplace-based collaboration practices and technology into an undergraduate technical communication course
- A survey of current materials and practices for teaching collaboration in technical communication, for which I surveyed technical communication instructors, collected their collaboration-related syllabi and assignments, and examined the content of popular technical communication textbooks
Through the case study, I wanted to know what collaboration skills and competencies students should learn in the technical communication classroom, and how workplace-based practices can be used to teach collaboration and teamwork. In addition, I was interested to learn how workplace-based technology, created specifically for teamwork and collaboration, can contribute to developing the collaboration literacy of technical communication students. My survey of teachers and textbooks was then aimed at learning more about the contemporary strategies of others. Specifically, I wanted to understand how technical communication teachers and textbooks define, integrate, discuss and teach collaboration in technical communication classrooms and materials. Across my research, my efforts focused on examining both broad collaborative activities and the collaboration specifically necessitated by distributed, remote and virtual teams.

The Role of Technical Communicators

Since technical communication is not a solitary activity and occurs through interactions with others, technical communicators are often defined by the work that they do and their roles in relation to the roles of others. Outside the field of technical communication, technical communicators have been described as writers or scribes who support or act in service of other disciplines. Within the field however, scholarship has demonstrated that technical communicators do more than simply transcribe information. Rather, technical communicators rearticulate meaning, create understanding and bring a critical and human perspective to technology (Johnson, 1998; Miller, 1979; Slack et al., 1993).
In his foundational work, Johnson-Eilola (1996) examines technical communication through the lens of Robert Reich’s prescient book about a global economy. According to Reich (1991), the movement from a national production-based economy to a global information-based economy requires that we shift our thinking about jobs and work-related skills. He presents three new classifications of workers including symbolic analysts who engage in “problem-solving, problem-identifying and strategic-brokering activities” (p. 177). Rearticulating Reich’s concept of symbolic-analytic work, Johnson-Eilola submits that “symbolic-analytic work mediates between functional necessities of usability and efficiency while not losing sight of the rhetorical and social contexts in which users live and work” (p. 245). Analyzing the work of professional practitioners against this concept, Johnson-Eilola argues that technical communication is symbolic analytic work. This reframing supports the view that technical communication is more than merely a supporting role. Johnson-Eilola also highlights that “Reich outlines four key areas of education for symbolic analysts we can use to reinvent technical communication education in a post-industrial age: collaboration, experimentation, abstraction, and system” (p. 257). His work reinforces the importance of collaboration within the technical communication classroom and that as symbolic analysts, our students should experience collaboration beyond collaborative writing and creating documentation.

**Distributed Knowledge Work**

Peter Drucker (1959) created the term *knowledge worker* to describe individuals who work with information. Over the years, knowledge work has been defined as acquiring, analyzing, creating, using, transforming, and sharing information or knowledge (Reinhardt et al.,
Technical communicators are clearly knowledge workers, but I want to also consider how and where technical communicators engage in their work. As noted earlier, technology, globalization and a global pandemic have changed the structure of the workplace and how work is completed. People are no longer located in a single physical location. According to a workplace analytics report before the COVID-19 pandemic, “over the last 10 years remote work has grown 91% as 3.4% of the total U.S. workforce are remote workers” (Reynolds, 2019). Due to the pandemic, more people have moved to working outside the confines of traditional physical locations with approximately half of American workers working remotely in early 2020. Furthermore, one report of work trends indicates that almost 75% of employees want remote work options to continue and employers are responding by redesigning their workplaces for hybrid work (Microsoft, 2021). It appears that even as individuals have the opportunity to return to their traditional workplaces, they will still be working with other people who are located elsewhere, at least some of the time.

Beyond separate physical locations, the way work occurs has also changed. Increasingly, individuals are working outside the confines of conventional full-time, single employer models. A study found that “more than one third (36 percent) of U.S. workers are in the gig economy, which works out to…approximately 57 million people” (McCue, 2018). In addition, technology is changing the way that people work. Technical communication research has examined how social media and other technologies have influenced work (Pigg, 2014; Spinuzzi, 2015). In his book, All Edge: Inside the New Workplace Networks, Spinuzzi (2015) argues that information and communication technologies (ICT) have created the potential for organizations to become all-edge adhocracies where individuals are “able to rapidly link across organizational boundaries,
combine into temporary work groups, swarm a project with a team of specialists, and disperse at the end of the project, often to re-form in a different configuration, with some different members, for the next project” (p. 2). This means that beyond working in multiple separate locations, technical communicators need to be nimble and able to work on a variety of projects with changing groups of people.

In an introduction to a special issue of *Technical Communication Quarterly*, distributed work is defined as “coordinative, poly contextual, cross disciplinary work that splices together divergent work activities (separated by time, space, organizations, and objectives) and that enable the transformations of information and texts that characterize such work” (Spinuzzi, 2007, p. 266). Thus, in many respects, we can view the practice of technical communication as *distributed knowledge work*. This definition highlights that technical communication requires working among and between various people, contexts, disciplines and activities. With the increasing frequency of work being distributed across individuals and organizations, the rapid surge in remote work, and the fluid nature of who makes up work teams, we must focus on the importance of effective collaboration.

**Collaboration as Teamwork**

When teachers, students and professionals are asked to define *collaboration*, they may view collaboration as synonymous with participation, group work, joint efforts, working together and teamwork. In many classrooms, collaborative practices are primarily referenced as group work, while in the workplace collaboration is more frequently associated with teamwork. If we consider collaboration as merely a group of individuals working together, we may miss taking
into account elements that can come from viewing collaboration as teamwork. According to *The Wisdom of Teams*:

A team is not just any group working together…teamwork represents a set of values that encourages behaviors such as listening and constructively responding to points of view expressed by others, giving others the benefit of the doubt, providing support to those who need it, and recognizing the interests and achievements of others…teamwork values help teams perform…a team is a small group of people with complimentary skills committed to a common purpose and set of specific performance goals. Its members are committed to working with each other to achieve the team’s purpose and hold each other fully and jointly accountable for the team’s results. (Katzenbach & Smith, 1993, p. 21)

In other words, a team includes values, beliefs, behaviors, skills, commitments and results. As we determine how to address collaboration in the technical communication classroom, defining collaboration through the lens of teamwork allows us to extend the scope of our thinking beyond groups of people working on joint efforts to include shared behaviors, commitments and outcomes. Furthermore, drawing on teamwork concepts and practices established in the workplace can help expand the view of collaboration in technical communication to include much more than collaborative writing. We can advance the perception of technical communicators as knowledge creators, influencers and agents of change.

**Collaboration and the Workplace**

As discussed earlier, the changing workplace has expanded the need for collaboration and the amount of time people spend on collaborative work is increasing. In a study of employers’ views about what matters most to workplace success, the ability of students to work effectively in teams has consistently ranked as one of the most essential learning outcomes from college. The current results show that teamwork is the most important skill with more than 90% of the employers in the study indicating its importance (Finley, 2021). Working on teams is not only
important to employers, but to employees as well. A global study of employee engagement showed that individuals “who say they are on a team are 2.3 times more likely to be fully engaged than those that are not” (Hayes et al., 2019, p. 23). Thus, successful teamwork and collaboration in the workplace extend outside the organization and influence individuals’ job satisfaction and happiness.

Regardless of the negative reactions we may observe when introducing group projects or collaborative work in the classroom, college students also rate the ability to work effectively on teams as one of the most important learning outcomes from their college education. Unfortunately, there is a discrepancy between how well students believe college has prepared them for teamwork and employers’ views of the same. One study indicates that almost 65% of students believe that college has prepared them to work on teams in the workplace, while only slightly more than 35% of employers feel students join the workplace prepared for teamwork (Hart Research Associates, 2015). Although this is only one study, my personal experiences in the workplace show that these sentiments are not unusual. As we strive to empower our students for success beyond college, we must be mindful of the gap in perceived preparedness for collaboration and working within teams.

The importance of teamwork and collaboration and the capabilities of students in these areas are reflected similarly in technical communication scholarship. Research has shown that employers, teachers and practitioners believe that collaboration competencies are an essential part of technical communication (Ede & Lunsford, 1990; Jones, 2007; Rainey et al, 2005). Although, much of this work has focused on collaboration within the context of collaborative writing. Scholars and teachers have also recognized the gap between the expectations of
employers and the skills of students. Service learning projects in technical communication
courses have been used to build students’ collaboration capabilities and reduce the perceived
skill gaps. Client projects have been used to simulate workplace writing and teach students
relevant genres and technologies. (Blakeslee, 2001; Boles & Newmark, 2011; Walsh, 2010).
Within these efforts however, collaboration is still addressed from a collaborative writing
perspective and/or defines technical communication in a supporting role. I believe that in order
to equip our students to step outside the bounds of collaborative writing and supporting roles in
the workplace, we must expand our view of collaboration and incorporate an understanding that
collaboration equates to teamwork.

**Collaboration in Technical Communication Pedagogy**

So, how does collaboration fit into technical communication pedagogy? In their research
of U.S. undergraduate technical communication programs, Meloncon and Henschel (2013) found
that only 9% of the programs in their study require a collaboration course and just 15% offer
collaboration as an elective (p. 50). While this research indicates that collaboration is not an
explicit program requirement or course, the study does not account for how collaboration is
addressed in other technical communication courses. Regardless of whether or not collaboration
is a distinct course, the changing nature of technical communication and the increase of
distributed work requires that we place a greater emphasis on collaboration in our pedagogy.
Furthermore, the interdisciplinary nature of technical communication and strong connections
between the classroom and workplace offer opportunities to expand our pedagogical practices
when teaching collaboration.
In calling for a change in the way we educate students to act as symbolic analysts, Johnson-Eilola (1996) suggests a greater connection between our teaching and practice. This includes looking to research and work in other disciplines. Other scholars have called for pedagogical responses to the changing nature of collaborative activities and emphasize the integration of multiple disciplines, the workplace and currently-used technologies. Jennifer Bay (2010) argues for pedagogical approaches that move from situated learning to networked learning. According to Bay, networked learning is horizontal, peripheral, nomadic and independent in order to connect classroom activities to student lives, reflect current economic and technological situations, and link the academy and workplace. Research efforts have also examined collaborations connecting the classroom with workplace organizations, replicating global distributed work collaborations between groups of students, and using virtual collaboration to teach cross-disciplinary concepts (Estes Brewer et al., 2015; Getto et al., 2014; Paretti et al., 2007). This work supports teaching collaborative skills by incorporating interdisciplinary and workplace concepts into classroom; however, we are not using these intersections to their fullest potential.

As technology has evolved, new fields have emerged, globalization has increased and collaborative opportunities have expanded, collaboration in technical communication pedagogy has changed as well. Classroom studies in technical communication have focused on collaborative technologies such as using Google Docs and other online tools for collaborative writing (Behles, 2013; Mehlenbacher et al., 2018). Collaboration has moved beyond the walls of a single classroom to include collaboration between disciplines, with other institutions, and across the globe (Brown & Chao, 2010; Cleary et al., 2019; Flammia et al., 2010; Robey et al.,
While interdisciplinary work has been used to teach collaboration, the focus is still on the role of technical communication students as document creators. For example, in a collaborative service-learning assignment between a technical communication course and a software development course, the primary goal of the collaboration was to create usable documentation for student-developed software (Brown & Chao, 2010). Virtual collaboration has also been receiving increased focus in technical communication pedagogy and virtual team collaboration between technical communication students at different universities has been studied. Even in these cases, however, the emphasis of this collaboration and the goal of the interdisciplinary work was to create instructional documents (Cleary et al., 2019). I believe that embracing the interdisciplinary nature of our work, integrating workplace practices into our teaching, and viewing collaboration through the lens of teamwork offer opportunities for technical communication pedagogy to expand and continue to evolve technical communicators beyond support roles for other fields.

**Collaboration Literacy**

Now that I have established the importance of collaboration in technical communication and the value of considering interdisciplinary and workplace-based collaboration approaches in our teaching, I want to examine the notion of collaboration literacy. Education scholarship discusses literacy in terms of abilities and actions for a socially-defined role. This means literacy focuses on mastering or being fluent in speaking, writing and thinking in a way that others will recognize (Gee, 1989). Thus, collaboration literacy should encompass the practices and capabilities that society associates with a collaborator or someone who effectively works with
others to accomplish shared goals. Literacy also includes viewpoints and values that enable an individual to apply and expand actions in multiple contexts (Gee, 1989). Therefore, collaboration literacy must also include beliefs and behaviors associated with collaborative activities. Within technical communication scholarship, technical, digital, global and community literacy have been discussed in terms of skills, practical applications and societal values (Higgins et al., 2006; Rush Hovade & Renguette, 2017; Selfe & Hawisher, 2002; Starke-Meyerring, 2005).

Collaboration is not absent from existing technical communication literacy frameworks. Kelli Cargile Cook’s (2002) layered literacies framework for technical communication pedagogy includes social literacy. In this model, social literacy stresses the importance of collaboration in the writing process and draws on Aristotle to look at collaboration as occurring between an audience, writer and the broader social context of writing. When this model was created, developing social literacy skills focused on working with other students “as members of a document cycling team…or as individual collaborators who support writer’s inventive processes through email correspondence… [and recognizing] discourse communities’ social conventions and expectations for document design and graphical display of information” (Cargile Cook, p. 12). In other words, collaboration in the classroom was aimed at the role of technical communicators as documentation creators.

In the two decades since the inception of this framework, scholars have expanded its purview and reexamined its application. Henschel and Meloncon (2014) combine Cargile Cook’s framework with Reich’s description of symbolic analysts. Their work resulted in five conceptual skills that technical communicators need to be successful. As they assessed and merged these two models, Henschel and Meloncon observed that collaboration appeared in both. Reich
explicitly identified collaboration as a necessary skill while Cargile Cook included it as an element within social literacy. Although no explanation was provided, Henschel and Meloncon decided to “merge social literacy and collaboration into a conceptual skill [of] social proficiency” (2014, p. 8). While this updated model continues to reflect collaboration as an important practical skill for technical communication students, collaboration is still relegated to a secondary role within the context of social skills.

More recently, Lawrence and Hutter (2021) examined how technical communication teachers are using the layered literacies framework and suggest an alternate approach to define important literacies in the future. Their work recognizes that we are continually adding to or deepening the literacies within Cargile Cook’s framework. They argue that this expansion will eventually become unmanageable. Based on the continual growth and changes within the field of technical communication, Lawrence and Hutter suggest that “we need a framework that is responsive, multidimensional, and sustainable” (p. 107). As a result, they raise questions about how we determine technical communication literacies and account for emerging ones. While I am not attempting to answer these questions, I believe that if we want a responsive framework for teaching technical communication, we need to consider collaboration literacy. In order to meet the changing dynamics in the workplace, evolving technologies and the expanding influence of our field, we must look to assemble a teaching framework that enhances our students’ actions related to collaboration and their beliefs and behaviors when engaging in collaborative activities.
Constructing a Teaching Framework Based on Teamwork

In order to begin constructing a framework for teaching collaboration literacy in the technical communication classroom, we can create a foundation by considering workplace-based principles related to collaboration. This foundation draws on teamwork and team effectiveness theories primarily from the fields of business management and organizational behavior, and my own experiences with workplace teams. Research spanning psychology, sociology, organizational behavior, management and other fields seeks to better understand how groups of individuals interact and to identify factors that define and differentiate successful teams from those who are not. By using commonalities among the more well-known theories from this research, I have identified important elements of teamwork and team behaviors as well as measurements of team effectiveness.

In early teamwork research, scholars attempted to understand how teams develop, how people behave within teams and how individuals progress on the continuum from acting independently to performing as an effective team. In an effort to understand general group development, Bruce Tuckman (1965) conducted a literature review of group development studies. Through his research, Tuckman identified a four-phase model of team development: forming, norming, storming and performing. This model is a sequence of individual and team behaviors in which concerns, interactions and goals evolve as the team progresses toward achievement of goals. Revisiting this model more than a decade later, Tuckman suggested adding a fifth stage of terminating or adjourning the team (Tuckman & Jensen, 1977). Current industry and academic literature support the continued relevance and reliance on Tuckman’s model.
Building on Tuckman’s work, team effectiveness models began to emerge. These models provide characteristics and elements or factors which influence the success of individuals working together as a team. One of the oldest team effectiveness models, the GRPI model, was introduced by Richard Beckhard in 1972. The GRPI model focuses primarily on the elements required for effective team formation and offers a guide for the initial work within a team. GRPI is an acronym representing goals, roles, processes and interactions (Tang & Wenzlik, 2013). In the 1990’s, theories began to identify specific personal qualities and other factors that can influence successful team outcomes. Research of teams and team behaviors identified three qualities of individual team members that contribute to a team’s success – skills, accountability and commitment. (Katzenbach & Smith 1993). The T7 Model of Team Effectiveness identifies seven factors (each starting with the letter “T”) that can influence team effectiveness. The model includes seven factors categorized as internal (within the team) or external (outside the team). The five factors (or “T’s”) that reside within a team which contribute to its success are thrust, trust, talent, teaming and task skills. The two external influences are team-leader fit and team-support from the organization (Lombardo & Eichinger, 1995).

Additional details have been added to team effectiveness models offering descriptions of how these characteristics and factors can be applied. LaFasto and Larson (2001) researched more than 6,000 team leaders and identified five elements of a team. According to their research, team members, relationships, problem-solving, leadership, and the organizational environment must be clearly understood and actively managed in order to achieve successful team outcomes. In a more recent model, J. Richard Hackman (2002), identified five conditions which influence team effectiveness. According to Hackman, a team must be a real team with compelling direction. In
addition, the team must have a structure that enables teamwork, operating within a supportive context and reinforced with expert coaching.

Business organizations are not the only resource for team effectiveness requirements or models. Academic institutions have also identified elements which contribute to effective collaboration and teamwork. At my current institution, the five criteria used to assess whether a student has successfully learned to collaborate with others include determining how well the student is able to facilitate team members’ contributions, contribute to the team, communicate clearly and listen actively, foster a positive team, and manage group interactions (Northern Illinois University, 2021).

Drawing on these theories, factors, and requirements as well as more than two decades of experience managing teams, I have identified four core elements of teamwork:

- Responsibility
- Accountability
- Relationship building
- Communication

In my research, I use these core elements as a foundation for studying collaboration literacy and examining workplace-based collaborative practices and technologies in the classroom.

I also use various team effectiveness theories to determine how to measure team results. While some models do not offer much definition for measuring success, other models provide more implicit and even explicit direction. Katzenbach and Smith (1993) explicitly incorporate performance results, personal growth, and collective work product as success indicators within their model. Similarly, Hackman (2002) defines team effectiveness and expands his three high-
level success indicators to provide specific outcome measurements. According to Hackman, team effectiveness can be measured based on how well a team serves stakeholders, how the team grows in capabilities over time, and the learning of individual team members. Based on this work, I chose to measure team effectiveness using a combination of performance results and growth. Performance results included a team’s work products, how a team served the needs of stakeholders and whether a team had achieved its goals. When looking at growth, I considered growth of both individual and team capabilities.

**Research Questions**

My research was aimed at defining best practices for teaching collaboration in the technical communication classroom. More specifically, I wanted to create a potential blueprint for teaching skills and competencies to support the collaboration and teamwork literacy of technical communication students. I used current scholarship and my own experiences with collaboration in the workplace and the classroom, and approached this project as an opportunity to merge my diverse areas of interest and expertise. Using workplace-based collaboration expectations, concepts, practices and technology as the foundation for my research, I wanted to learn:

- What collaboration skills and competencies should students learn in the technical communication classroom?
- How can workplace-based collaboration practices be used in the technical communication classroom to teach collaboration and teamwork?
• How can workplace-based technology, created specifically for teamwork and collaboration, contribute to developing technical communication students’ collaboration literacy?
• What contemporary strategies are being used to teach collaboration and how do they align with the future collaboration needs of our students?

Based on the changing global and technical landscape and a greater reliance on the distributed knowledge work of technical communicators, my research efforts also attempted to answer these questions specifically within the context of virtual, remote and distributed work.

Methodology

My research began with a classroom case study of an undergraduate technical writing course at a 4-year public institution. As a result of the COVID-19 pandemic, I was able to study three semesters of the same course where the primary difference was the physical location of students. In one semester, students met face-to-face for the entire semester. During the next semester, the students began the course face-to-face and then unexpectedly moved online in the middle of the course. The third semester occurred in a completely virtual environment. My goal was to learn more about how we might teach collaboration in these different circumstances. I used the four core elements of teamwork discussed earlier to guide my classroom activities and implemented workplace-based collaboration practices related to each one. For each semester, I collected student blog posts related to collaboration and teamwork, team assessments that students completed before and after team projects, and my observations recorded in a teaching journal. I analyzed this data from multiple vantage points in order to study the influence of
workplace-based collaboration practices in specific class situations, and to compare results across the semesters. Thus, I examined data at a course-level and for two specific student teams I selected to study each semester.

I also studied two semesters of this same course to learn how incorporating technology, specifically designed for the workplace, can contribute to the collaboration literacy of students. I examined how students used the team communication platform, Slack, as they collaborated on team projects. Since I wanted to study collaboration in remote and distributed team, I analyzed data for the two semesters when students completed their team projects virtually rather than face-to-face. I collected data from post-project team assessment questions to understand how students said they used technology in their collaborative activities. The majority of my data collection, however, was the students' Slack conversations. I analyzed these interactions posted in the Slack environment to identify collaboration skills and behaviors. In addition, I wanted to identify any specific affordances in the Slack technology platform that may have contributed to supporting and developing the collaboration competencies of students.

My research in this project also included a survey of technical communication teachers and popular technical communication textbooks. I collected online survey responses from 28 teachers and gathered data from ten of the most popular textbooks. In the survey, I asked teachers to define collaboration, describe challenges they face when teaching collaboration, and share collaboration skills that they believe are important for today's technical communication students. I also asked teachers to choose one of their introductory technical communication courses and answer questions about how they represent collaboration in their syllabi,
assignments and classroom instruction. The survey then asked teachers to share examples of the syllabi and collaboration-related assignments, if they were willing to do so.

In order to learn how current technical communication textbooks are discussing and teaching collaboration and teamwork, I gathered brief and detailed tables of contents, indices and all chapters and sections with references to collaboration and/or teamwork. When I noticed that many of these textbooks discuss teamwork or collaboration in their introductory chapters, I gathered those as well. I analyzed the structure of the textbooks related to collaboration. In addition, I conducted a detailed content analysis of the chapter or section dedicated to collaboration within each textbook. I combined the data I gathered from the textbooks with data from the teachers' survey responses and created a list of thirty terms (words or short phrases) related to collaboration and teamwork. I then coded the collaboration chapters or sections from each textbook for these terms. From this data, I was able to determine how these teachers and textbooks define, discuss and teach collaboration and teamwork. In the final step of my analysis, I compared data from the teacher survey to data from the textbooks to identify synergies and gaps.

**Chapter Organization**

This dissertation includes three distinct research efforts which I combined to develop a proposed framework for teaching collaboration literacy in the technical communication classroom. I have dedicated a separate chapter to the results of each of these efforts and the final chapter puts forth a summary of my findings and details of my proposed framework.
Chapter 2 presents a case study of three undergraduate technical communication courses. The purpose of this case study was to examine how workplace-based teamwork approaches can be used to teach collaboration in the technical communication classroom. I also used this case study to learn how viewing collaboration as teamwork in the classroom can help identify important collaboration skills and competencies. In addition, the unexpected changes to course delivery caused by the global pandemic allowed me to study how workplace-based collaboration approaches can contribute to teaching distributed, remote and virtual collaboration. I incorporated pedagogical activities aligned with the four core elements of teamwork\(^1\) into this course. In this chapter, I present my findings in the context of these core elements. I describe my pedagogical approaches and follow them with related data points. The chapter provides examples of how specific workplace-based practices can be used in the technical communication classroom and the influence of these approaches on students’ knowledge of collaboration and teamwork. The case study also confirms that the four core elements of teamwork can be used as a foundation for creating a framework to teach collaboration literacy.

Classroom and Textbook Approaches Shaping Collaboration Literacy

In chapter 3, I studied how technical communication teachers and textbooks define, integrate, discuss and teach collaboration and teamwork. I surveyed teachers and gathered examples of syllabi and assignments specifically focused on teamwork and collaboration in order

\(^1\) Responsibility, accountability, relationship building, and communication.
to understand how teachers think about the terms *collaboration* and *teamwork* and how they represent these concepts in grading, course syllabi, assignments and instruction. Next, I examined how popular technical communication textbooks present collaboration and teamwork by conducting a thorough analysis of the structure and content of each book. Then, I combined this information to determine how textbook content aligns with the expectations of teachers and their approaches for teaching collaboration in the classroom. Through this analysis, I identify three categories of collaboration and teamwork skills that contribute to my proposed teaching framework. In addition, I suggest opportunities to examine how the viewpoints of teachers and textbooks about collaboration and teamwork can influence what and how we are teaching, and the benefits of emphasizing certain collaboration skills over others in our classroom instruction and materials.

**Using Slack to Develop Collaboration in the Technical Communication Classroom**

For chapter 4, I studied how incorporating a workplace-based team communication platform (Slack) into an undergraduate technical communication course can contribute to students’ collaboration literacy. As noted earlier, I conducted a case study of two technical communication courses in semesters when students completed their team projects virtually. Specifically, I examined students' written interactions in the Slack technology environment. As I studied the content of these interactions, I identified six competencies related to collaboration which seemed to emerge organically as the students worked together using this technology platform. I recognized how the skills and behaviors of students in Slack reflected the four core elements of teamwork and I was able to determine specific aspects of the Slack environment that
I believe contributed to how students interacted using the technology. In this chapter, I present detailed examples of how the competencies emerged, discuss how these competencies reflect the elements of teamwork, and suggest features of Slack that I believe supported and helped developed these competencies.

**A Framework for Collaboration Literacy**

The concluding chapter brings together my various research efforts and offers a framework for teaching the skills and competencies that are important for collaboration literacy. I am proposing this framework for teaching collaboration as a starting point for additional conversations and research. While this framework was constructed from a limited study, I believe it offers a structure for the skills and competencies that are valuable for technical communication students to become literate in collaboration and teamwork.
CHAPTER 2: USING WORKPLACE-BASED PRACTICES TO TEACH
COLLABORATION LITERACY: A TECHNICAL COMMUNICATION CLASSROOM

CASE STUDY

The field of technical communication is continually evolving to address the needs of increased globalization, changing work structures and new technology. As a result, researchers and practitioners frequently examine the roles of technical communicators to adapt to these changes as well as to expand the field’s influence in academic and workplace contexts. As I discussed in Chapter 1, scholarship has stressed that technical communicators can do more than write. For example, technical communicators can provide a humanistic point of view, create meaning and critically manage information (Johnson-Eilola, 1996; Miller, 1979). In one effort to enhance the understanding and power of technical communicators’ roles, Henning and Bemer (2016) suggested revisions to the Bureau of Labor Statistics Occupational Outlook Handbook’s definition of technical communication that incorporate a wide range of practical, conceptual and adaptable skills. This scholarship and my own experiences demonstrate that technical communicators are not simply document creators or individuals in service of other disciplines. As educators, we need to continually reinforce this point by adapting and enhancing classroom activities to address changes in the practice of technical communication and expand students’ capabilities both within and outside the workplace. The approach we take to teaching collaboration is an important aspect of these efforts.
In Chapter 1, I demonstrated the importance of collaboration in the workplace and other facets of our lives. I also discussed how the unexpected pandemic has changed the ways people collaborate and increased a need to collaborate in remote, virtual and distributed environments. As a result, I argued that we need to rethink how we define and teach collaboration in the technical communication classroom. Drawing on Cargile Cook’s (2002) layered literacy framework and scholarship that has expanded and reexamined its application in the years since its inception, I proposed that we reconsider how collaboration is represented in our pedagogy (Henschel & Meloncon, 2014; Lawrence & Hutter, 2021). I have submitted the idea that if we want a framework for teaching technical communication that is responsive to the field’s evolution, we need to consider collaboration literacy. I believe a teaching framework that explicitly enhances our students’ skills and competencies related to collaboration will enable students to address changing workplace structures, adapt to new technology and expand their influence in the workplace and other contexts.

As I began thinking about the skills and competencies necessary to demonstrate collaboration literacy and a teaching framework to support them, I brought together my unique experiences spanning the classroom and the workplace. I chose to use workplace-based principles related to collaboration as a foundation for my work and integrated my professional management experiences into my pedagogical practices. Through my research, I wanted to address the following questions:

- What collaboration skills and competencies should students learn in the technical communication classroom?
• How can workplace-based collaboration practices be used in the technical communication classroom to teach collaboration and teamwork?

The unexpected COVID-19 global pandemic altered and accelerated the prevalence of distributed work and changed the way people collaborate. It also changed the learning experience for technical communication students. In March 2020, over 1,300 U.S. higher education institutions transitioned to online learning and over one-third of employed individuals moved to virtual work (Davidson College, 2020; U.S. Bureau of Labor Statistics, 2021). Since the pandemic increased the predominance of distributed technical communication work in the workplace and schools, I took this opportunity to compare using workplace-based collaboration practices in varying combinations of face-to-face and remote teamwork in the college classroom. Consequently, I added a third question to my study:

• In classroom settings requiring different types of distributed teamwork, how do workplace-based collaboration practices contribute to team effectiveness?

With this additional research question, I conducted a case study of three undergraduate technical writing courses spanning three different semesters. The primary difference between semesters was students’ physical locations.

Since this case study explores one course taught across three sections over 18 months, it is not meant to provide generalizations. Rather, the data gathered in the context of this case study demonstrates that incorporating workplace-based collaboration practices into the technical communication classroom can enhance students’ collaboration literacy. I plan to use what I have learned from this case study to inform how I teach this particular course in the future. The results also suggest additional research opportunities. For example, we can determine and examine other
opportunities to use workplace-based practices to teach additional skills to technical communication students that go beyond document creation and/or acting in roles simply supporting other people.

This case study confirms that equating collaboration to teamwork can provide a solid foundation to a framework for teaching collaboration. In addition, the results suggest a distinct priority for the types of collaboration skills we teach. Typically, instructional strategies in the technical communication classroom include some combination of people, processes and technology skills. This case study highlights the importance of prioritizing interpersonal or people proficiency, followed by technology competence, and then process skills when teaching collaboration. I will discuss this distinction further in Chapter 3 when I examine contemporary teaching approaches through a survey of technical communication teachers and content from popular technical communication textbooks. In this chapter, I discuss how using workplace-based teamwork practices to teach collaboration offers students experience with responsibility, accountability and relationship building. This approach also provides students with insights into communication outside academic settings. The case study in this chapter demonstrates an opportunity to expand students’ capabilities and further position technical communicators as knowledge creators, leaders and change agents.

The Study

I studied a 16-week undergraduate technical writing course at a 4-year public state university. Initially, I had planned to study this course for a single semester (fall 2020); however, the COVID-19 pandemic presented an opportunity to compare data from different types of
distributed work situations. The unexpected changes we experienced as classes abruptly moved from meeting in-person to meeting online mirrored changes occurring in the workplace. The unprecedented world situation allowed me to observe students’ collaboration and teamwork when their interactions closely reflected the distributed work experiences of technical communicators in the workplace.

Suddenly, the need for remote, distributed and virtual work increased and the ways people had to collaborate in both the classroom and the workplace changed simultaneously. Therefore I was able to look at the same course across multiple semesters where the most significant difference was students’ physical locations. In fall 2019, the entire course occurred face-to-face on campus. The spring 2020 course began face-to-face and then moved to virtual delivery mid-semester. In fall 2020, the course took place solely in a virtual environment. Throughout this chapter, I will refer to the fall 2019 course as *face-to-face (F2F)*, the spring 2020 course as *split* and the fall 2020 course as *virtual*. My goal in examining these three different semesters was to observe how integrating specific workplace-based collaboration practices into the classroom could be used to teach collaboration and teamwork when students’ classroom situations mirrored the distributed experiences of the workplace. I was not studying different teaching modalities. Therefore, I looked at the delivery mode simply as the means in which students engaged in collaboration and teamwork and I was not comparing online learning and face-to-face teaching approaches. By looking at students’ experiences in these three different circumstances, I hoped to learn more about how remote, distributed and virtual situations might influence the ways that we teach collaboration.
In addition to examining how workplace-based collaboration practices can be used to teach collaboration to technical communication students, I also wanted to determine the benefits of equating collaboration with the workplace-based concept of teamwork. Specifically, I wanted to learn how viewing collaboration as teamwork in the classroom can help identify the competencies and skills important for students’ collaboration literacy. As I discussed in Chapter 1, I used cross-discipline team effectiveness theories, academic learning outcomes and my own experiences with distributed workplace teams, to identify four core elements of teamwork:

- Responsibility
- Accountability
- Relationship building
- Communication

In this case study, I used these four elements as a guide for my teaching strategies and classroom activities. I also used them as a foundation to identify skills (abilities) and core competencies (a combination of abilities, knowledge and behaviors) which may contribute to students’ collaboration literacy. Thus, this case study details specific pedagogical activities related to each element and examines data through the lens of these core aspects of teamwork.

I also used teamwork theories to inform how I measured team effectiveness. As I indicated in the previous chapter, I considered these theories and chose to measure team effectiveness using a combination of performance results and growth. Teams’ performance results included their work products, how the teams served the needs of their projects’ stakeholders, and how well the teams achieved their goals. As I examined team effectiveness through the lens of growth, I considered the growth of a team as a whole and the growth of the
individuals within the team. My data analysis included team project performance, students’ perceptions about their learning and collaboration/teamwork experiences within the context of their teams, and students’ self-reflections about teamwork and collaboration.

The Course

The course is a 300-level technical writing course in the English department. Undergraduate students may take this course to meet a general education upper-division writing-infused course requirement. In addition, this course can satisfy a professional writing requirement for engineering and environmental studies students. For English majors, this course meets multiple writing course requirements and is a required course for students pursuing a professional communication minor.

As noted earlier, this case study examines this course over three semesters. The significant difference between the three semesters was the students’ learning environment. In fall 2019, the course had traditional face-to-face class meetings two times per week on campus. During the spring 2020 semester, the course began as a traditional twice weekly face-to-face class. Due to the COVID-19 pandemic, students were given an additional week of spring break mid-term and then class resumed virtually for the remainder of the semester. Finally, the fall 2020 course occurred virtually with only seven required full-class synchronous meetings. All other coursework in fall 2020 was asynchronous or in virtual small group meetings. Section enrollment was capped at 25 students, so each semester in this case study included approximately 50 students.
The course objectives, structure and assignments were relatively consistent across the three semesters. Coursework included four multi-component comprehensive projects and a personal blog with eight required posts throughout the semester. The first two projects were individual assignments and the other two were team projects. Fall 2019 was the fourth semester I taught this particular course, so while I refined my pedagogical approaches using students’ feedback, my instructional activities were generally the same throughout the 18-month case study. Since I had originally designated the fall 2020 semester as the focus of this case study, I modified a few assignments to gather additional data; however, these changes occurred within the context of existing coursework.

I was intentional in my choice of workplace-based collaboration practices and how I applied them. I drew on my professional experiences and selected collaboration activities that I personally found successful in multiple workplace environments. Recognizing that the classroom is not meant to replicate the workplace, I considered learning transfer theory as I integrated these collaboration and teamwork practices into my teaching. Specifically, I referenced Brent’s (2011) review of transfer theory and how it can be related to technical communication pedagogy. In his synthesis of rhetorical genre studies, activity theory, situated learning, and learning transfer theory, Brent concluded that transfer includes, “an emphasis on learning fundamental principles, on being mindful, on explicitly cuing learners to help them make connections that might otherwise elude them, and on mentoring and providing scaffolding to help [students] survive the shock of boundary crossing” (p. 416). As such, I integrated activities and assignments focused on the foundational elements of collaboration and teamwork. I scaffolded collaborative work throughout the course and the coursework culminated in comprehensive team projects.
Furthermore, self-assessment and reflection played an integral role in the class with students writing personal blogs and completing pre-project questionnaires and post-project assessments. These activities made students more aware of the relationship between teamwork and collaborative activities and the role students can personally play in both.

**In-Class Work**

Almost every class meeting for this course incorporated some type of small group work and students participated in these in-class collaborative activities for the entire semester. During the first half of the semester, groups continually changed with either pre-determined members or members randomly assigned during class. Once team projects began, students worked on small group activities with their assigned project teams. In fall 2019, all small group activities occurred face-to-face. During the split semester (spring 2020), students participated in class activities with different groups of people face-to-face. In addition, these students had two class meetings with their assigned Project 3 teams face-to-face prior to moving unexpectedly online for the remainder of the semester. Although fall 2020 students attended class online, they participated in synchronous full-class meetings and I required students to attend virtual small group meetings throughout the semester. Similar to previous semesters, fall 2020 students worked with various combinations of team members for small group work during synchronous class meetings and in their required small group meetings during the first half of the course. Once fall 2020 students were working on team projects, their required virtual small group work converted to their project teams.
Team Projects and Assessments

Team projects started at the course midpoint. In Project 3, teams used persuasive digital communication strategies and techniques to launch a new product. With their assigned teams, students created a product\(^1\) to address a specific problem experienced by college students and developed a communication plan and product launch website to support the plan. For Project 4, students worked in teams to create a recommendation report to solve an issue or challenge for a real organization. I assigned students to their Project 3 teams and then assigned students to new teams for Project 4. Before each team project began, students completed a pre-project online questionnaire. Then at the end of each team project, students completed a detailed team assessment evaluating the performance and experiences of their team, their teammates and themselves. The team projects included a team and an individual grade and the team assessment information contributed to determining students’ grades. In addition to contributing to individual grades, these assessments also provided an opportunity for students to reflect on their experiences as part of a team and their personal development as effective collaborators.

Personal Blog Assignments

Students created personal blogs using the Blogger technology platform and completed eight blog post assignments throughout the semester. Each assignment required that students write a 600-word post as well as read and comment on a minimum of two classmates’ blogs. I began using blogs as a means for students to critically reflect on course content and self-reflect

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\(^1\) Students were not required to actually build the product; however, the product they imagined had to be something that could realistically be built with a reasonable amount of money.
on their work in the course. I chose blog posts instead of journals or reflective essays for multiple reasons. First, incorporating blog posting into the course offered students experience with this genre of digital writing. Second, the personal and conversational nature of blogs allowed students to share their reflections with an audience and engage in conversations about these reflections within the classroom community. I also found that through the informal and personal writing style of blogs, students were more likely to focus on sharing their ideas rather than the mechanics of their writing. Finally, I believed that creating and posting to these blogs could increase students’ abilities to transfer their learning from the classroom to the workplace. Writing studies and technical communication scholarship emphasize the role of deliberate and ongoing reflection in learning transfer (Adler-Kassner et al., 2017; Brent, 2011). By asking students to write blog posts throughout the semester, I was able to make reflection a consistent part of students’ learning in a manner that aligned with course content. I hoped that as students wrote their blog posts they would learn how to write blogs and would get in the habit of reflecting and being more mindful of their learning. I implemented this instructional approach when I was teaching the course fully face-to-face and continued to use it through the transition to a virtual learning environment in other semesters. Although the assignment prompts were slightly different, each semester included three of the eight blog post assignments asking for students’ thoughts, reactions and ideas about teamwork and collaboration.

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2 Students had the option of making their blog sites non-searchable by search engines so that the audience was limited to their classmates who were provided with a link to the blog.
Data Collection

I studied the influence of incorporating workplace-based collaboration and teamwork practices into technical communication pedagogy from multiple vantage points. In order to explore both class-specific and comparative contributions of workplace-based collaboration practices, I analyzed course-wide data as well as more specific data for two teams from each semester. First, I examined data at a course-level for each semester and compared collaboration and teamwork in face-to-face, split and fully virtual situations. Next, I selected two specific teams from each semester and analyzed similar data points to understand the relationship between my pedagogical approaches and team effectiveness. Finally, I gathered and analyzed additional data from the fully virtual semester (fall 2020) to study teamwork and collaboration nuances when students were physically distributed.

My data collection included student blog posts related to collaboration and teamwork, team assessments completed by students prior to and at the end of team projects, and observations I recorded in a teaching journal throughout a semester. I selected these data collection methods to reflect more authentic experiences where students did not feel observed or assessed beyond what usually occurs in a classroom setting. I intentionally did not implement methods such as student interviews, focus groups or research-specific surveys that could potentially change the classroom experience or bias students to behave or assess teamwork and collaboration differently. I also chose methods which relied on consistent course elements, allowing for comparisons across multiple semesters. Specifically, I analyzed three blog posts, Project 3 and Project 4 pre-project questionnaire responses, and Project 4 post-project team
assessment responses from each semester. In addition, I consulted entries from the teaching journal I wrote during the fall 2020 semester.

Each semester included two distinct course sections taught back-to-back, however I chose to examine data by semester rather than by section. While researcher bias is inevitable, I attempted to minimize the influence of my personal knowledge about individual students by creating coded identifiers for every student. These unique identifiers combined term, section, project team, and a random learner number to create a 15-digit alphanumeric code for each student. The codes allowed data filtering by term, section and team while still making it extremely difficult to identify a specific student. I replaced student names on all artifacts with these unique identifiers prior to analyzing them. While I was able to identify a few students by their writing or assessment responses, I still believe this approach helped reduce the influence of my personal knowledge about specific students.

**Case Study Teams**

I wanted to examine team effectiveness as part of my data analysis, so I selected six specific teams – two from each semester. Since team effectiveness models include performance results and collective work product as success indicators, I used team project grades to select these teams (Hackman, 2002; Katzenbach & Smith, 1993). For each semester, I ranked the teams’ final Project 4 grades. While grades for Project 4 included a group component and an individual component, I only looked at the team-graded components. In addition, I used percentage rather than numeric grades in order to minimize the impact of any assignment or grading differences between semesters. After I ranked the teams from 1 to 10 based on their
Project 4 percentage grades, I chose the 2nd and 9th ranked teams each semester to eliminate potential anomalies of high or low performance extremes. Therefore, within each semester, I examined one team demonstrating high success and another team whose success was deemed low. (See Table 1).

Table 1: Case Study Team Names

<table>
<thead>
<tr>
<th>Semester:</th>
<th>Fall 2019</th>
<th>Spring 2020</th>
<th>Fall 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Delivery:</td>
<td>All face-to-face</td>
<td>Face-to-face switched to virtual</td>
<td>All virtual</td>
</tr>
<tr>
<td>High Success Team:</td>
<td>F2F-A</td>
<td>Split-A</td>
<td>Virtual-A</td>
</tr>
<tr>
<td>Low Success Team:</td>
<td>F2F-B</td>
<td>Split-B</td>
<td>Virtual-B</td>
</tr>
</tbody>
</table>

In order to have a better understanding of these six teams, I looked at the composition of each team. Specifically, I gathered the number of members, class standing, identified gender and declared majors for each team. In addition, I also identified any previous experiences the various team members had working with each other. (See Table 2).
Table 2: Team Composition

<table>
<thead>
<tr>
<th>Team</th>
<th>Members</th>
<th>Gender</th>
<th>Class</th>
<th>Majors</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2F-A</td>
<td>5</td>
<td>2 female</td>
<td>4 senior</td>
<td>Engineering, Public Health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 male</td>
<td>1 junior</td>
<td></td>
</tr>
<tr>
<td>F2F-B</td>
<td>4</td>
<td>4 male</td>
<td>1 senior</td>
<td>Engineering, Mathematics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 junior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2 sophomore</td>
<td></td>
</tr>
<tr>
<td>Split-A</td>
<td>4</td>
<td>3 female</td>
<td>3 senior</td>
<td>English, Environmental Studies, Actuarial Science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 male</td>
<td>1 junior</td>
<td></td>
</tr>
<tr>
<td>Split-B</td>
<td>5</td>
<td>1 female</td>
<td>1 senior</td>
<td>Engineering, Software Development, Statistics, Public Health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 male</td>
<td>3 junior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 sophomore</td>
<td></td>
</tr>
<tr>
<td>Virtual-A</td>
<td>5</td>
<td>2 female</td>
<td>4 senior</td>
<td>Engineering, Technology, Psychology, Chemistry, Public Health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 male</td>
<td>1 junior</td>
<td></td>
</tr>
<tr>
<td>Virtual-B</td>
<td>4</td>
<td>2 female</td>
<td>1 senior</td>
<td>Public health, Industrial Technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 male</td>
<td>2 junior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 sophomore</td>
<td></td>
</tr>
</tbody>
</table>

Face-to-Face Teams (F2F-A and F2F-B)

These teams participated in a face-to-face course for the entire fall 2019 semester. Team F2F-A (the more successful face-to-face team) had five members, two identified as female and three as male. Four of the five team members were seniors and one was a junior and their majors included engineering and public health. Within this team, two team members had worked together on a team for the previous course project and the three other members had worked together on a different team. Team F2F-B (the less successful face-to-face team) had four members all identifying as male who were engineering majors and one mathematics major. The team included two sophomores, one junior and one senior.
Split Teams (Split-A and Split-B)

These teams participated in the spring 2020 course where the first half of the course met face-to-face and the remainder of the course occurred virtually due to COVID-19. They completed Project 4 virtually. Split-A (the successful team) had four members including two English majors, an environmental studies major and an actuarial science major. Three team members identified as female and one as male, and the team had three seniors and one junior. Two team members had worked together on Project 3 but the other two had not. The less successful team (Split-B) had five members with four identifying as male and one as female. The team consisted of one sophomore, three juniors and one senior with majors including engineering, software development, statistics and public health.

Virtual Teams (Virtual-A and Virtual-B)

The virtual teams completed their projects in fall 2020 during a fully virtual course which included seven synchronous class meetings. The more successful team (Virtual-A) had five members, three who identified as male and two as female. Team members were seniors except for one junior and their majors included engineering, technology, psychology, public health, and chemistry. Two team members had worked together on the previous team project, two others worked together on a different team and one team member had not worked formally on a team with the others. The less successful four-member team (Virtual-B) was evenly split with two individuals identifying as male and two as female. The team had two public health majors and two industrial technology majors. The team included one sophomore, two juniors and one senior and nobody on the team had ever formally worked together prior to this project.
Student Blog Posts

To gather students’ perceptions about teamwork and collaboration in the technical communication classroom, I analyzed student blog posts. I selected blog assignments addressing teamwork or collaboration either in the assignment title, overview or topic description. As a result, my study included nine total blog assignments – three from each semester. For each semester, I examined content from the first, last and one mid-semester blog post. While there were minor differences in the first and last blog assignments, the mid-semester blog assignment differed the most between semesters. First, the timing of the mid-semester blog post related to teamwork and collaboration varied. In fall 2019 and spring 2020, this assignment occurred near the end of the semester, while I assigned the collaboration and teamwork blog post closer to mid-semester in fall 2020. Consequently, students had the opportunity to participate in one of the course’s team projects prior to writing their collaboration and teamwork-related blog posts in the earlier semesters, while fall 2020 students could only draw on formal team experiences outside our course.

In addition to the timing, the collaboration and teamwork blog assignment titles and prompts also varied. (See Appendix A for blog assignment prompts). In fall 2019 (face-to-face), “Teamwork and Collaboration” was the title of blog post assignment #7. In spring 2020 (split), Blog #7 also included teamwork; however, the assignment title did not include collaboration and instead combined teamwork and decision-making. In fall 2020 (virtual), the teamwork and collaboration blog assignment occurred earlier in the semester and was titled “Teamwork and Collaborative Projects.” The prompt differences were even more significant. Face-to-face students (fall 2019) had a choice of watching and reflecting on TED Talk videos about teamwork
or writing about their personal experiences with teamwork and collaborative projects. Students in the split course (spring 2020) had these same options plus an additional option to share their personal decision-making experiences. In fall 2020, the blog assignment prompt did not include any TED Talk videos. Instead, students had the option to share their personal teamwork and collaboration experiences or the option to discuss their thoughts about the relationship between collaboration and teamwork in professional and educational contexts. This new option asked specific questions about important teamwork skills, how teamwork experiences in school have prepared students for the future, and what teamwork and collaboration activities students believe should occur in the classroom and why.

Because of these variables, I did not analyze blogs posts at a course-level and instead only examined blog posts from the selected teams for each semester. Since fall 2020 most closely reflected current distributed work situations and the blog assignment prompts specifically focused on perceptions about collaboration and teamwork, I also examined the three relevant blog posts from all students in the fall 2020 semester. My goal with this more expansive examination was gathering common themes when students experienced completely distributed work within the context of their learning.

**Teaching Journal**

In order to record observations from a course reflecting the experiences of distributed work, I kept a weekly teaching journal during the fall 2020 semester. I began the journal in
August as I was preparing the unique class delivery. My journal entries continued through the entire semester. I recorded observations and thoughts three times each week, typically on Tuesdays, Thursdays, and Sundays. Using this schedule, I captured data for synchronous class meetings, students’ activities during the week and course planning for the next week. This journal of approximately 40 entries averaging 500 words each was primarily self-reflective and was not meant to capture detailed observation notes.

**Pre-Project Team Creation Questionnaires**

Both team projects included pre-project questionnaires. (See Appendix B for questions). The first project (Project 3)’s, pre-project questionnaire asked students to rate their strengths for a pre-defined skill list, indicate their level of commitment to the project and note any concerns they had about their skills and abilities. Students were also asked to provide scheduling conflicts and thoughts about how the team should handle missed deadlines and poor-quality contributions. Finally, the questionnaire asked students to explicitly indicate anyone in class they wanted or did not want for a teammate. Project 4’s pre-project questionnaire was similar; however, students also voted to select class-wide project topics based on proposals each student presented to the class. In addition, the Project 4 questionnaire asked students more specific questions about project-related skills including team collaboration. Similar to Project 3, Project 4’s questionnaire also asked students to explicitly indicate anyone in class they wanted or did not want as a teammate. In both cases, I used students’ questionnaire responses when determining project team

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3 The course was a combination of asynchronous delivery and seven scheduled synchronous class meetings that met for 75 minutes every other week.
assignments. For this case study, I specifically analyzed skills ratings and named teammate requests in these questionnaires.

**Post-Project Team Assessments**

Students completed a post-project team assessment for each project. (See Appendix C for questions). The assessment, administered via Qualtrics, was customized for each team and included specific team members’ names. The assessment asked students to reflect on individual efforts (including their own) as well as the actions of the team as a whole. Assessments were confidential and I did not share specific responses with students’ teammates. Some questions requested free-form text responses, while others had defined options. In this case study, I examined students’ responses to questions about the team’s overall success, contributions to success or failure, team obstacles and how they were overcome, how well individuals met their primary responsibilities, advice to improve teamwork skills and whether students would be willing to work with each individual team member again including why or why not. For the questions with defined options, I was interested in average ratings on a 10-point scale. Since the original questions did not include a numeric scale, I weighted responses to determine average ratings. For example, the assessment asked students to rate the success of their team by choosing either “extremely successful,” “successful enough to get the job done,” “not so great,” or “we were a train wreck.” To determine the average ratings, I assigned these options numeric weights of 10, 7, 4 and 1 points respectively. I then used these numeric weights to calculate an average response by team and for the entire course.
Results

I began with students' perceptions about overall team effectiveness and then categorized data by the four core elements of teamwork – responsibility, accountability, relationship building, and communication. To answer the research questions I outlined at the beginning of this chapter, I examined data within the context of my specific course activities addressing each of these four core elements. For each element, I will describe the relevant pedagogical approaches and then follow with applicable data points. As previously noted, I looked at data from multiple vantage points – course-wide and for two selected teams each semester, and then in further detail for the fully virtual fall 2020 semester.

Team Effectiveness

I studied team effectiveness through the teams’ project performance and the perceptions and experiences of the students. Specifically, I examined what students believed they learned and how they viewed their team experiences. In their team assessments, students rated the overall success of their team collaboration using four weighted options – the team was extremely successful, successful enough to get the job done, not so great or a train wreck. Across the three semesters, the average student ratings indicated that all teams felt they were successful enough to get the job done or better. Students in the fall 2019 face-to-face semester rated their teams as just successful enough to get the job done (an average rating of 7.0), while fall 2020 virtual students’ average rating was higher at 8.1. The spring 2020 split semester students had the highest average rating of 8.6.
In the six teams I chose to study, I examined the relationship between the team’s Project 4 grade and the team members’ ratings of their success as a team. (See Table 3). Across all three semesters, the individuals on the teams that performed better on Project 4 rated their teams’ overall success higher than the teams who earned lower grades. In the fall 2019 face-to-face course, team F2F-A (the more successful face-to-face team) earned 97% on the team portion of Project 4. When rating their success as a team, the average individual rating was 8.2 on a 10-point scale compared to the class average rating of 7.0. Team F2F-B (the less successful face-to-face team) earned 77% on Project 4 and their average success rating was 5.5. The successful team in spring 2020 (Split-A) earned 94% on Project 4. The team members clearly recognized their success as everyone on the team rated their success as a team 10 on the 10-point scale. The less successful team in this semester (Split-B) earned 67% on their final project. The average of the individual ratings of their team’s success was 7.6 compared to the full class average of 8.6. Although in both semesters, the less successful teams acknowledged that their success as a team was lower than the class average, Split-B seemed to have less self-awareness of the relationship between their success as a team and their overall performance on the project.

Table 3: Team Success Ratings

<table>
<thead>
<tr>
<th>Team</th>
<th>F2F-A</th>
<th>F2F-B</th>
<th>Split-A</th>
<th>Split-B</th>
<th>Virtual-A</th>
<th>Virtual-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team grade on Project 4</td>
<td>97%</td>
<td>77%</td>
<td>94%</td>
<td>67%</td>
<td>95%</td>
<td>74%</td>
</tr>
<tr>
<td>Avg. individual ratings of team success (10 pts)</td>
<td>8.2</td>
<td>5.5</td>
<td>10</td>
<td>7.6</td>
<td>7.6</td>
<td>5.5</td>
</tr>
<tr>
<td>Course-wide average of individual ratings of team success (10 pts)</td>
<td>7.0</td>
<td>7.0</td>
<td>8.6</td>
<td>8.6</td>
<td>8.1</td>
<td>8.1</td>
</tr>
</tbody>
</table>
In fall 2020 when the course was completely virtual, the correlation between project performance and a team’s assessment of their own success was slightly different. The more successful team (Virtual-A) earned 95% on Project 4. Their average success rating was 7.6, which was lower than the class average of 8.1. The less successful team (Virtual-B) earned 74% on the final team project and their average rating of their team’s success was 5.5 on the 10-point scale. In this class, the team that performed better on their final project appeared to think that their success as a team was lower than the class average. Although I was not able to ask follow-up questions about students’ ratings, these results suggest that there may not be a direct correlation between a team’s view of their success and their performance. Or perhaps more likely, teams are not fully aware of how to identify the elements of successful teamwork.

In addition to asking students to rate their success as a team, I also asked them to share what they believe contributed to their teams’ success or failure. (See Table 4). Students’ responses reflected the core elements of teamwork including responsibility, accountability, relationship building and communication. Students in the face-to-face course attributed their success or failure to people working hard and doing (or not doing) their assigned tasks. A few students mentioned that their success was due to one or two people on the team stepping up to compensate for others. In the face-to-face course (fall 2019), students also attributed both their successes and failures to communication, although the students did not share specific details. In the split course (spring 2020), students placed a greater emphasis on the distinct contributions of communication to their teams’ success or failure. Students’ comments were more specific and included constant real-time communication, regular video chats, and “being able to get everyone into meetings each week so [they] could work together.” Students in the split course also
mentioned using the project plan to divide work and everyone doing their part as contributing factors. In addition, these students listed practicing patience and being able to give each other feedback as important. In the virtual semester (fall 2020), the majority of students also said that communication contributed to both their success and failure. Students’ responses were even more specific and included descriptions such as active, constant and consistent communication as well as using Slack, which was a required tool in fall 2020. Similar to previous semesters, students in the virtual course also noted that the work of only one or two team members or everyone doing their part influenced whether or not they were successful. In addition, these fall 2020 students included interpersonal factors as well, such as the entire team getting along, helping each other and providing feedback.

Table 4: Contributors to Team Success or Failure

<table>
<thead>
<tr>
<th>Face-to-Face Course</th>
<th>Split Course</th>
<th>Virtual Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>• People working hard</td>
<td>• Constant real-time communication</td>
<td>• Active, constant and consistent communication</td>
</tr>
<tr>
<td>• Doing/not doing assigned tasks</td>
<td>• Regular video chats</td>
<td>• Using Slack</td>
</tr>
<tr>
<td>• One/two people stepping up to compensate for others</td>
<td>• Meeting weekly to work together</td>
<td>• Everyone doing their part</td>
</tr>
<tr>
<td>• Communication</td>
<td>• Using the project plan to divide work</td>
<td>• Work of one or two team members</td>
</tr>
<tr>
<td></td>
<td>• Everyone doing their part</td>
<td>• Entire team getting along</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Helping each other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Providing feedback</td>
</tr>
</tbody>
</table>

The post project team assessments also asked students to share their thoughts about what they learned from the teamwork experience and what they would do differently in future teams. Face-to-face students (fall 2019) focused primarily on project processes and the actions of other
team members. For example, many responses included setting better timelines and due dates, dividing tasks differently, and using class time more effectively. These students also highlighted changes to their team members including removing a particular member, being in a different group and figuring out how to motivate others to do their work. In the split course (spring 2020), students most commonly responded that they would not do anything differently. Additionally, while there were a few process-related items in their answers such as better scheduling and communication, students in the split course were more self-reflective and shared how their personal actions impacted their team. They talked about helping others more, reaching out to struggling team members, voicing opinions and being more assertive. The virtual semester (fall 2020) students included some of the same procedural things as previous semesters and they were even more aware of how their behavior as well as the behavior of their teammates influenced their success as a team. These students wrote about learning to ask others for help, being more patient, being more vocal, considering the tone of their communications, giving people a chance to do their work, being open and honest, being firm and offering teammates feedback.

These results support the idea that the four fundamental elements of teamwork (responsibility, accountability, relationship building and communication) contribute to the success or failure of students’ collaboration activities in the technical communication classroom. As such, it is feasible to use these core elements of teamwork as a foundation for teaching collaboration. This data also reveals the significant influence of interpersonal or relationship-building actions. As I compared the responses from students in the different courses, I found that students who worked on their projects virtually (spring 2020 and fall 2020) were more likely to attribute their team’s success or failure to interpersonal behaviors or activities. Thus,
interpersonal and relationship capabilities are important for students’ collaboration literacy, especially when team members are not physically located together.

**Responsibility**

While students may not view responsibility in classroom team projects in the way they view responsibility in the workplace, we can still use workplace-based concepts aimed at responsibility to teach collaboration.

**Team Creation**

In the workplace, responsibility within a team is typically tied to the skills and capabilities that each individual brings to the team. Unlike the classroom where teachers commonly create teams by randomly assigning people or allowing students to create their own groups, most workplace teams are formed based on a project’s goals. In order to achieve these goals, workplace teams require a variety of skills, so many organizations create teams by intentionally selecting individuals with diverse skill sets. As more organizations commit to diversity, equity and inclusion, they are trying to deliberately build teams that also include diverse viewpoints, diverse backgrounds and new opportunities for all individuals in the organization to learn and grow. In my experience, when people are part of a team where their background, skills and desire for growth are acknowledged, individual feelings of responsibility increase. Therefore, I also chose to be intentional when creating project teams in this course.

I wanted to create teams that recognized and combined diverse skill sets and offered everyone opportunities for growth, so I used a pre-project team creation questionnaire. This
questionnaire asked students to rate their skill levels for project-related activities. For Project 4, students rated their project management, research, persuasive writing, informational writing, editing, design, presentation and team collaboration skills. Their options were “I’m a rock star,” “I’m good, but this is not my strongest skill,” “I can do it, but it’s challenging for me,” or “I need work in this area.” Across all three semesters, 20% or more of students rated themselves as rock stars in at least one area, so as I created the teams I was able to acknowledge the individual strengths that students believed they could bring to the team. Through the students’ responses, I was also able to identify opportunities to support individual growth. For example, less than 15% of students felt they were rock stars when it came to presentation skills. Therefore, I attempted to put students on teams where they had a chance to grow their presentation skills. In an effort to increase students’ feelings of responsibility, I used this self-reported information and tried to create diverse teams with at least one person skilled in each area. In addition to gathering this information to create teams, I also asked students these pre-project questions to get them thinking about their skills and possible contributions before beginning the project. I hoped that by making students aware of the value they could bring to a team that they would feel a greater sense of responsibility to contribute.

Given the relationship between responsibility and collaboration, I also examined how students rated their collaboration skills. Interestingly, team collaboration received the highest percentage of rock star ratings, in some cases almost double the percentage for every other skill. The data suggests that even before engaging in these team projects, students had a higher level of confidence in their collaboration abilities than any other project-related skills. This raises questions about whether students in this course actually thought their collaboration skills were at
rock star levels, or if perhaps, they viewed collaboration capabilities as easier than other types of skills. Furthermore, rock star collaborators increased each semester with 45% of students in the face-to-face class, 56% of students in the split class and 68% of students in the virtual class claiming to be rock stars. Since students’ pre-project confidence in their collaboration skills appears to have increased as the semesters progressed from in-person to virtual, it suggests that the virtual interactions required by the pandemic may have enhanced people’s views of their overall collaboration abilities. As students began their projects, I was interested to see if students’ collaborative work reflected this confidence in their team collaboration skills. Regardless, the data supports an important correlation between distributed locations and collaboration skills.

Role Assignment

Once I created the project teams, I required students to assign specific project roles, responsibilities and tasks to each team member. Students completed this assignment in their first team meeting when they also participated in a brief team-building activity, created a team name and established some guidelines. As they assigned roles in this meeting, students had the opportunity to discuss their diverse strengths. I also wanted to increase students’ sense of responsibility and commitment to their assigned roles, so I asked them to put their plans in writing. Documenting the various role assignments and responsibilities allowed everyone on the team to see the bigger picture bringing together different and distinct contributions to achieve project goals. In addition, I hoped that by putting their plans in writing, everyone on the team would have the same understanding about who was responsible for each item.
To create and document their plans, teams used a project planning template that included a list of roles and explicit task responsibilities based on the requirements of the project assignment. In the workplace, teams typically assign roles and responsibilities based on the skills necessary to complete the work. When possible, workplace teams also try to reasonably distribute the workload and give team members a voice in both their tasks and the time necessary to complete them. When I was leading teams in the workplace, I found that people assumed greater responsibility for their work when they contributed to the planning. Therefore, I chose to use project management approaches that I personally found successful in the workplace to engage students in determining how they were going to collaborate and complete their project as a team. Drawing on my work experience with agile software development methodologies and my professional training as a certified scrum master, I incorporated aspects of Agile project management into the classroom. For example, I taught students how they could use the concept of *story points* to prioritize their work and more evenly distribute the project workload. In agile projects, teams use story points to indicate the amount of work required to complete a task. Story points are relative measurements of the level of effort rather than definitive amounts of time. (Davidson, 2014). In the classroom, I used the concept of story points to let students know comparatively where they should focus their efforts, and to support students in evenly distributing the workload. In the planning template, I provided students with a pre-defined level of effort (on a scale of 1 to 3) for the primary tasks their team needed to complete in the project. In addition to tasks and the associated levels of effort, the students’ planning template also included a list of project milestones and allowed students to determine appropriate task completion dates based on these milestones.
The Agile approach to teamwork also focuses on iteration. Therefore, continually adapting plans is an inherent element of an agile teamwork approach. Since I strongly believe that flexibility and adaptability are important to effective team collaboration, I intentionally emphasized these qualities as I taught students to collaborate during their team projects. Teams created and submitted their initial plans. Throughout the project, I encouraged students to continually review and adapt their plans. In some cases, students had to switch responsibilities, engage additional team members in a particular task, or adjust the priority or order in which they completed certain milestones. Each week, I reminded students that even though their team submitted a plan, the team was empowered to change and resubmit their plan at any point in the project. Through this approach, I hoped that students would recognize that planning is an important part of collaborating on team projects, and more importantly, that in order to collaborate effectively, students must be flexible and get comfortable with continually adjusting and adapting to changes.

Although I used this instructional approach in all three semesters, I implemented it in different ways. Since the course included two team projects (Project 3 and Project 4), students had the opportunity to engage in team collaboration twice, and hopefully draw on what they learned from collaborating on Project 3 as they worked with their teams on Project 4. During both projects in fall 2019, teams met and assigned responsibilities face-to-face, while these activities occurred virtually in spring 2020 and fall 2020. In addition to these different methods of meeting, the way students planned Project 3 each semester was also slightly different. In fall 2019 and spring 2020, I focused my instruction on the mechanics of creating a project plan and students created their own Project 3 plans without a formal template. In fall 2020, I focused on
concepts related to project planning, but I provided students with a planning template for Project 3. These differences in how students created plans and assigned responsibilities in Project 3 then influenced how students approached Project 4.

In the fall 2019 and spring 2020, I gave students a planning template for Project 4 which included the various project tasks with associated level of effort and key project milestones. I also provided verbal guidance about using level of effort to evenly distribute roles and responsibilities. Since I explicitly taught the mechanics of project management during Project 3, I gave students the option to create additional detailed Project 4 tasks and associated completion dates. Given my prior instruction and students’ experiences with Project 3, I also assumed that students could determine task dependencies as they were creating their Project 4 plans. In fall 2020, however, I provided a Project 4 planning template similar to the template I gave students for Project 3. This Project 4 template included even more detail. Responsibilities and tasks were more granular, and the schedule included task dependencies that students could use as they determined target due dates. The Project 4 planning template in fall 2020 also included explicit written instructions about assigning an equal number of effort points to each team member and equally dividing management roles. I found that by providing formal planning templates for both projects in fall 2020 and including additional planning details, I was able to teach students more about responsibility in collaboration without distracting them with administrative work.

**Student Response**

As I examined students’ reflections about the performance of their teams, there seemed to be a positive correlation between the changes I made in how I taught assigning roles and
responsibilities and students’ views about the effectiveness of their team’s collaboration. Students in fall 2019 and spring 2020 noted collaboration issues specifically related to responsibility. Face-to-face students (fall 2019) wished they had assigned more realistic and stricter due dates as well as not given too much or too little responsibility to one person. In the split semester (spring 2020), the same themes emerged. In fall 2020 however, when students discussed responsibility in the context of the effectiveness of their teams’ collaboration, the comments were positive. In many cases, students’ comments focused on advantages of the templated planning. Some students said that having assigned roles enabled them to “divide and conquer” and “knowing everyone’s role made them look forward to working on the project.” Given these responses, incorporating these workplace-based collaboration practices aimed at responsibility seemed to provide a more positive learning experience that emphasized working together as team.

When I examined responses from students in the selected case study teams, the more successful face-to-face team (F2F-A) said that using the planning template contributed to feeling organized, being successful and even reducing their stress. Similarly, the more successful split team (Split-A) felt the planning template enabled them to “know what to do.” The less successful face-to-face team (F2F-B), however, found that discussing and assigning roles and responsibilities based on their diverse strengths did not work. In fact, team members did not proactively choose many of the responsibilities, so one person attempted to delegate them. Unfortunately, since one person assigned specific responsibilities to people who did not ask for them, and thus did not do them, the bulk of the work ultimately fell to only two team members.
During the split semester, students’ comments focused more on their teams’ abilities to adjust their plans. Both spring 2020 case study teams (Split-A and Split-B) recognized a need to iterate and continually modify their plans; although one team was more successful than the other at doing so. Students’ responses reinforced the importance of flexibility and adaptability within teamwork as they discussed obligations unrelated to school. Since this project occurred near the beginning of the COVID-19 pandemic, unexpected and continually changing personal situations of students played a larger role and required more attention.

In fall 2020, the responses from both teams were similar regardless of whether their team was successful or not. Interestingly, both virtual teams (Virtual-A and Virtual-B) explicitly mentioned the planning template’s contribution to their learning experience. One student indicated that the equal distribution of work and everyone knowing what they needed to do resulted in a “safe opportunity to gain experience working collaboratively.” Even the less successful team (Virtual-B) pointed out that using the plan enabled them to take on roles they would not have been comfortable doing in the past. Based on these responses, using workplace-based collaboration practices aimed at responsibility helped students complete this specific class project and provided enhanced learning opportunities. Students’ responses referring to the collaboration experience as safe and comfortable also suggests that these approaches to teaching collaboration can foster a more inclusive classroom environment.

This case study confirms the importance of including responsibility skills when teaching effective teamwork and collaboration. Data from all three semesters support an approach to teaching collaboration that includes intentionally creating teams using individual input on students’ diverse skill sets, backgrounds and growth needs of students, and incorporating
elements of agile and other additional workplace-based project management strategies. These approaches facilitate teamwork through responsibility and emphasize the importance of flexibility and adaptability in collaboration. Moreover, comparing the data across semesters suggests that reducing instructional emphasis on some project processes and simply providing students with tools that already incorporate workplace-based practices can shift learning. In this particular course, students’ responses indicate that the project planning template served a valuable purpose. The data demonstrates that providing more templated information and less project planning instruction enabled students to focus on their collaborative efforts and the project itself. This suggests that deemphasizing project processes in the technical communication classroom may allow students to give more attention to building their collaboration competencies.

Accountability

Accountability is a basic element of team effectiveness theories. After researching hundreds of organizational teams, Katzenbach and Smith (1993) define a team as “a small group of people… with complementary skills committed to a common purpose and set of performance goals [whose] members are committed to working with each other to achieve the team’s purpose and hold each other fully and jointly accountable for the team’s results” (p. 21). Conceptually, common purpose, performance goals and accountability exist in both the workplace and classroom, however, their application can diverge considerably. As a result, accountability may be the most difficult teamwork concept to integrate into the technical communication classroom. Looking at student input, however, I found that accountability has a significant influence on their
teamwork and collaboration. Regardless of their location or final team success, students commonly discuss accountability-related actions such as everyone putting in effort, people doing their parts, and completing work on time as key contributors or obstacles to their success.

When discussing accountability, team effectiveness theories compare individual to mutual accountability and also examine the influence of individual and team commitments (Katzenbach & Smith, 1993; Lencioni, 2002). As I was determining appropriate workplace-based collaboration practices to incorporate into my classroom instruction, I began by identifying some primary differences between the two environments related to accountability. Specifically, I looked at goal creation, individual/group dynamics, and commitment. In the workplace, the organization typically drives project purposes and performance goals. Even when teams define their purpose or set goals, organizational objectives play a part. In many cases financial factors, current employment and/or future career goals influence individuals’ workplace commitments to teams, projects or goals. In the classroom, project purposes and goals are still set at an organization (course) level; however a wider range of factors may influence individual commitments, many with likely less significant consequences. Additionally, in the workplace team performance rewards are usually individual first and team second, while the opposite typically occurs in the classroom. Finally, workplace activities are usually full-time endeavors, while a single class is a small portion of students’ overall obligations. Consequently, time constraints and conflicting responsibilities may have a greater influence on the commitments of students to classwork when compared to commitments in the workplace. These distinctions made selecting and applying workplace-based collaboration practices aimed at accountability more
challenging. As such, I used specific workplace-based collaboration activities sparingly for this element of teamwork.

**Project Purpose and Performance Goals**

The first accountability-related teamwork principles that I used in my approach to teaching collaboration were project purpose and performance goals. Generally, the purpose of projects and performance goals are set in the classroom through assignment requirements and grading. In this technical communication course, students helped define the purpose of their team projects by voting to select the class project topics. Project 4 asked students to propose ideas for projects that help solve an issue or challenge at a real organization/company. In the Project 4 pre-project questionnaire, students ranked their classmates’ proposed topics from favorite to least favorite. Students also indicated three of the topics that interested them, their first topic choice, and any special circumstances that would prevent them from working on a particular topic. I used the questionnaire responses to select the class projects as well as to assign project teams. In all three semesters, I was able to assign every student to one of their top three topic choices. Through this approach, I hoped to unite teams around a common purpose where they were solving a problem for an organization of their choosing. My observations indicated that most students had some level of interest or personal investment in their teams’ project goals. Two student blogs in the split semester (spring 2020) confirmed and explicitly referenced the importance of project purpose and its relationship to their collaborative work. A student from the more successful team (Split-A) wrote:

> Rarely was there a group project that meant more to me than a grade, but the real world projects I’ve worked on mean much more to me…in this class, our professor has allowed
us to come up with our own topics and work with like-minded people, and the project
that we just completed was more successful than previous group projects I’ve been a part of.

Additionally, a student on the less successful team during the same semester (Split-B) indicated
that they usually hate team projects because people do not do their share of the work; however,
“doing the surveys is very helpful because it matches you with people who would suit well with
you [sic].” Thus, finding opportunities for students to define their own project purposes and
goals can contribute positively to teaching collaboration.

**Individual Commitments and Contributions**

The other teamwork-based accountability concepts that I used to teach collaboration were
related to individual commitments and contributions. In addition to using pre-project questions to
assign topics and teams, I also asked students to identify factors which might influence their
commitment to the project or team. I considered these factors when I assigned project teams and
I asked that students discuss them in their first team meetings.

Drawing on Tuckman’s (1965) four-phase model of team development and the
subsequent team effectiveness models that I discussed in Chapter 1, I attempted to facilitate the
teams’ “norming” and “forming” stages through team engagement rules. In fall 2019 and spring
2020, I asked teams to develop some team engagement rules, but I did not explicitly require or
grade this activity. In fall 2020 however, due to the distributed locations of the students, I
required that teams determined and documented team guidelines for meetings, communication
and handling issues. Looking specifically at the two case study teams in the fall 2020 semester
(Virtual-A and Virtual-B), I found that they created similar team guidelines. (See Table 5). Both
teams, regardless of their ultimate project success, documented specific weekly dates, times and methods for meeting. They also created decision-making rules and information sharing procedures for missed meetings. One team decided to handle disagreements by a vote, while the other team delegated final decisions to the project manager and the original topic creator.

Table 5: Team Rules for Case Study Teams

<table>
<thead>
<tr>
<th>Team</th>
<th>Virtual-A</th>
<th>Virtual-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meetings</td>
<td>Meetings will be on Tuesdays at 11 or after class on BB Collab. Minutes will be posted to Slack for anyone who did not attend the meeting.</td>
<td>Fridays after 1:30pm typically work to meet with our team on Collaborate, otherwise we intend to communicate daily through slack. If someone doesn’t show up, we plan to divide the role among the other members. We will also give a reminder or two about the team meeting because notifications don’t always come through.</td>
</tr>
<tr>
<td>Collaboration</td>
<td>Check in on Slack daily. If someone is unresponsive on Slack an email can be sent. We will use Google docs, BB Collab, and Slack during meetings. Documents will be shared via Slack and edited via Google docs.</td>
<td>We plan to actively check Slack for communication as well as send a reminder or two to refer to Slack because some notifications have not gone through right away. We are going to utilize email, Google docs, and texting if needed. For document sharing we plan to use Google docs and forwarding the documents on Slack.</td>
</tr>
<tr>
<td>Work Guidelines</td>
<td>Missed deadlines will be addressed as they come up. Individual responsibility is encouraged. Being clear about who is responsible for each task will hopefully prevent missed deadlines. Poor quality work will be addressed through feedback. Feedback is viewed as a positive and is everyone's responsibility along with the project manager. Disagreements will be addressed with a vote.</td>
<td>We think for missed deadlines that points should be deducted in order to show the seriousness of the point of a deadline. To address poor quality work, we can help or critique nicely in order to make sure the project is where we want it to be. To address disagreements, we can throw all the possible options out there and decide which one will work best for our team. Overall, the decision should be up to the overall project manager as well as the person whose topic was picked.</td>
</tr>
</tbody>
</table>

In their post-project assessments, all fall 2020 teams rated the contribution of their written team rules to their success. Specifically, the post project team assessment asked students
to rate their team rules as critical to their success, referenced occasionally helping their success, referenced occasionally but not impacting success, or written simply because guidelines were required and the team never used them. Course-wide, most students said that their teams referenced their rules occasionally but felt the rules did not impact their team’s success. In the two selected case study teams, the more successful team (Virtual-A) indicated that their team rules were either not referenced, or if they were, the rules did not impact their success. The less successful team (Virtual-B) responded that they occasionally referenced their team rules; however, the majority of the team also felt the rules did not impact their success.

I also incorporated team meetings as a standard aspect of collaboration in all three semesters. Drawing on my experiences with effective collaboration in the workplace, I required teams to meet at least once each week. In these team meetings, students used a formal agenda, designated a facilitator and submitted written meeting notes. In addition, I shared my experiences with agile teamwork methods and taught students the structure and questions of daily stand-up meetings. In the workplace when teams use agile methodologies, a daily 15-minute stand-up meeting occurs and each team member answers three questions. Individuals share what they did yesterday, what they are going to do today, and what, if anything, is blocking their progress. While I did not require students to conduct daily stand-up meetings, I wanted to expose students to an additional way to meet, collaborate and facilitate accountability within their teams. In the face-to-face class I allocated some class time for team meetings. Teams in the split and virtual classes had more responsibility for determining when and how to meet, and of course, all of their meetings occurred via technology.
In this course, I wanted to place greater emphasis on individual commitment when collaborating, and typically grades are the most significant influence on students’ commitments to classroom projects. Therefore, 60% of a student’s project grade was based on the team’s performance, while 40% reflected the person’s individual contribution to the project. I assessed individual contributions based on the student’s performance on their assigned responsibilities and tasks. For example, a team project with an excellent solution assessment and an average recommendation resulted in a higher score for the student responsible for the solution assessment.

**Student Response**

The post-project team assessments included individual team members’ names and asked for detailed evaluations of each person. Students assessed each person’s assigned responsibilities and then rated how well each individual, including themselves, met these responsibilities. Ratings included going above and beyond, meeting commitments and doing a good job, doing the work but only an okay job, or not meeting commitments. (See Table 6).

**Table 6: Individual Contribution Ratings (All)**

<table>
<thead>
<tr>
<th>Term</th>
<th>Team</th>
<th>Did not meet</th>
<th>Did the work but only an okay job</th>
<th>Met commitments and did good job</th>
<th>Awesome – went above and beyond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face to Face Course</td>
<td>All Teams</td>
<td>.5%</td>
<td>13%</td>
<td>45%</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>F2F-A</td>
<td>0</td>
<td>8%</td>
<td>54%</td>
<td>38%</td>
</tr>
<tr>
<td></td>
<td>F2F-B</td>
<td>19%</td>
<td>13%</td>
<td>50%</td>
<td>19%</td>
</tr>
<tr>
<td>Split Course</td>
<td>All Teams</td>
<td>4%</td>
<td>10%</td>
<td>34%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Split-A</td>
<td>0</td>
<td>0</td>
<td>6%</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td>Split-B</td>
<td>4%</td>
<td>24%</td>
<td>48%</td>
<td>24%</td>
</tr>
<tr>
<td>Virtual Course</td>
<td>All Teams</td>
<td>6%</td>
<td>8%</td>
<td>45%</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>Virtual-A</td>
<td>0</td>
<td>21%</td>
<td>46%</td>
<td>33%</td>
</tr>
<tr>
<td></td>
<td>Virtual-B</td>
<td>6%</td>
<td>31%</td>
<td>44%</td>
<td>19%</td>
</tr>
</tbody>
</table>
Course-wide in the face-to-face course (fall 2019), the predominant view was that teammates met commitments and did a good job, while in the split semester (spring 2020), more than 52% of responses indicated that individuals went above and beyond. In the virtual semester (fall 2020), the same percentage of individuals assessed their teams as doing a good job as those who rated their teammates as going above and beyond in meeting their commitments. Everyone on the successful case study teams across all semesters rated their teammates as doing a good or awesome job. In these teams, nobody rated their teammates as not meeting commitments, although 8% in the face-to-face class (F2F-A) and 21% in the virtual class (Virtual-A) said their teammates did the work but only an okay job. In the less successful teams, the prevailing response was that individuals met commitments and did a good job. Unlike their more successful counterparts, however, the less successful teams indicated that 19% of the face-to-face team (F2F-B), 4% of the split team (Split-B), and 6% of the virtual team (Virtual-B) did not meet their commitments. Interestingly, all three of the less successful teams said that approximately 20% of their teammates went above and beyond their commitments.

In the virtual semester (fall 2020), students also rated their teammates’ contributions at a more granular level. Students assessed and rated their own and each team member’s quantity and quality of work, timeliness of work completion, meeting participation and overall contributions to the team. (See Table 7).
Table 7: Individual Contribution Ratings (Fall 2020)

<table>
<thead>
<tr>
<th>More Successful Virtual Team (Virtual-A)</th>
<th>Below Average</th>
<th>Average</th>
<th>Above Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Work</td>
<td>0</td>
<td>58%</td>
<td>42%</td>
</tr>
<tr>
<td>Quantity of Work</td>
<td>8%</td>
<td>60%</td>
<td>32%</td>
</tr>
<tr>
<td>Timeliness of Work Completion</td>
<td>20%</td>
<td>36%</td>
<td>44%</td>
</tr>
<tr>
<td>Leadership</td>
<td>20%</td>
<td>52%</td>
<td>28%</td>
</tr>
<tr>
<td>Communication</td>
<td>8%</td>
<td>56%</td>
<td>36%</td>
</tr>
<tr>
<td>Participation in Meetings</td>
<td>12%</td>
<td>40%</td>
<td>48%</td>
</tr>
<tr>
<td>Overall Contribution to Team</td>
<td>4%</td>
<td>60%</td>
<td>36%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Less Successful Virtual Team (Virtual-B)</th>
<th>Below Average</th>
<th>Average</th>
<th>Above Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of Work</td>
<td>6%</td>
<td>56%</td>
<td>38%</td>
</tr>
<tr>
<td>Quantity of Work</td>
<td>6%</td>
<td>63%</td>
<td>31%</td>
</tr>
<tr>
<td>Timeliness of Work Completion</td>
<td>31%</td>
<td>44%</td>
<td>25%</td>
</tr>
<tr>
<td>Leadership</td>
<td>44%</td>
<td>31%</td>
<td>25%</td>
</tr>
<tr>
<td>Communication</td>
<td>25%</td>
<td>44%</td>
<td>31%</td>
</tr>
<tr>
<td>Participation in Meetings</td>
<td>19%</td>
<td>56%</td>
<td>25%</td>
</tr>
<tr>
<td>Overall Contribution to Team</td>
<td>12%</td>
<td>56%</td>
<td>31%</td>
</tr>
</tbody>
</table>

As I compared responses between the more and less successful virtual teams, I found that both teams rated individual contributions to the team and quantity of work relatively the same. In these two categories, students rated approximately one-third the team members’ quantity of work and overall contributions to the team as above average. In the more successful team (Virtual-A), students rated 42% of their teammates’ work quality as above average compared to 38% in the less successful team (Virtual-B). The largest rating differences between the more and less successful teams were in the categories of timeliness of work completion and meetings. The more successful team (Virtual-A) rated 44% of their teammates above average in timeliness of work completion compared to 25% in the Virtual-B team. There was a similar difference in meeting participation. Virtual-A rated 48% and Virtual-B rated 25% of their team members’ meeting participation as above average.
As I reflected on how I integrated accountability-related strategies into teaching collaboration, I realized that I did not explicitly teach students about accountability. When I analyzed students’ blogs and post-project team assessments, I discovered an opportunity to provide more specific instruction about accountability-related leadership strategies. In team effectiveness theories and my own personal experiences, I have found that teamwork strategies encourage accountability in collaboration by holding others to their commitments, honestly discussing needs and freely providing feedback. Although I did not teach these specific skills, these accountability-related strategies were prominent themes when students shared what they learned and their teamwork take-aways. In all three semesters, students learned that they should be honest and ask for help when they need it. In the split (spring 2020) and virtual (fall 2020) courses, students also discovered that it is “ok to be firm and even a bit pushy about others meeting commitments.” In the more successful virtual team (Virtual-A), one student stressed the benefits of being assertive and holding people accountable in a team. This student said that previously they would just do someone else’s work, but in our class, the student learned how to hold others accountable for their commitments. Many students across all fall 2020 teams also commented about the importance of continual feedback between virtual teammates – both the benefits of providing it and their personal desires for more of it.

My analysis implies that using pre-project questionnaires can positively influence accountability in team projects. By integrating teamwork practices aimed at accountability, I found that I was able to expand collaboration skills of students. For example by giving students a voice in a project’s purpose and their commitment level before forming teams, I was able to increase students’ personal investment and accountability to the team. I also observed that some
accountability practices may not have as much impact on students’ abilities to collaborate. Although I only required formal team rules in one semester, these guidelines did not seem to get much use nor impact project success. According to students, keeping meeting commitments and providing teammates with status updates were more important contributions to effective team collaboration. In addition, accountability issues related to meeting timelines and attending meetings were even more prevalent when teams were distributed and working virtually. This correlation suggests that incorporating additional workplace-based teamwork practices specifically aimed at accountability can strengthen students’ abilities to collaborate. For example, providing more instruction about agile teamwork methodologies can expand students’ collaboration skills and improve students’ experiences with team projects in the classroom. Integrating daily standup meetings into team assignments (even if they do not actually occur daily) can help facilitate and teach students a means to keep others updated on collaborative work. The structured daily standup approach offers a quick way to provide task completion updates and a non-confrontational process to discuss anything that may be getting in the team’s way (Agile Alliance, n.d.). In addition, we can expand our view of relevant collaboration skills to include leadership strategies. When I think about collaboration skills through the lens of teamwork and accountability, I want to teach students about holding others to their commitments, honestly discussing needs and freely providing feedback.

**Relationship Building**

Relationships run through and hold together the other core elements of teamwork. Therefore, I specifically examined how workplace-based collaboration practices focused on
relationship building can influence teaching collaboration in the classroom. Although the classes in this case study occurred in different physical environments, I used the same types of relationship building strategies. In some cases, I simply had to adjust how I integrated these strategies into the course. I wanted to start building relationships immediately, so I began using collaborative activities in the first class meeting.

**Building Relationships through Small Groups**

As I discussed earlier, students participated in small group work throughout the semester. Many times I pre-assigned groups for in-class work or I used creative strategies for putting students in random groups during class. For example, during one class meeting students might get in random groups according to their birth month and in the next class, they would divide into groups based on the last thing they ate. My primary goal when creating small groups, especially during the beginning of the semester was to give students the opportunity to interact as a team member with every classmate at least once. While I was mindful of diversity, I did not create in-class small groups based on gender or ethnic identities. As indicated in a study of work group diversity, the effects of team diversity have many moving parts, outcome variations, and a range of positive and negative impacts (Guver & Motschnig, 2017). Thus, my diversity considerations when I put students in these small groups only focused on getting students working with different individuals. I used this approach when I assigned students to small groups regardless of how the class met. My relationship building strategy was the same whether student participated in class face-to-face or virtually. The only exception was the virtual synchronous meetings in fall 2020 because I experienced breakout group limitations in the virtual learning environment. I was
able to pre-assign students to breakout groups before class and randomly assign students to breakout groups during class. If however, I wanted students to work in their small groups, come together with the full class and then return to their small groups, the learning environment would not automatically put students in the same breakout room again. Therefore, I had to rethink how I implemented this relationship building approach during the virtual synchronous meetings.

Small group work began the first week with a visual storytelling activity. I distributed images and students worked in teams to craft a story based on their image. The teams had 10-minutes to create their stories and they then shared them with the full class. My goal was to introduce students to visual communication concepts as well as collaborative work. The only difference between semesters was that this instructional activity took place in person in fall 2019 and spring 2020, while it occurred virtually in fall 2020. Regardless of their location, many students, across all semesters, referenced this activity in their initial blog posts. Specifically, students said this activity enabled them to meet their classmates in a simple, fun and non-stressful way while they still learned important course concepts. In the virtual course, a few students even wrote that this activity made the course feel more personal. As a result, students felt more engaged and connected with their classmates even though they were not physically located together.

In the face-to-face course and during the time when the split course was still meeting face-to-face, I facilitated collaborative activities with continually changing group members in almost every class meeting. These activities included analyzing visual designs, exploring instructions through a video game, creating user personas, conducting usability testing, discussing ethical scenarios and others. One of the most effective classroom activities for
building relationships focused on peer feedback. In both their teamwork and final course reflection blog posts, students referenced this face-to-face peer feedback lesson most often. For this lesson and its associated activities, I specifically used some of my personal workplace-based collaboration experiences and practices. First, we discussed workplace performance, peer and 360 feedback concepts. Students explored benefits, challenges and opportunities to apply elements of these approaches to classroom feedback. Then students participated in a team building exercise that I had used to enhance feedback skills in my workplace teams. Students engaged in a friendly ball-tossing team competition involving blindfolds and varying levels of performance feedback. I wanted students to experience the effects of different feedback approaches. In addition to exploring peer feedback through a different lens, I chose this lesson to build students’ relationships with each other using kinesthetic team activities. Similar to the team storytelling, students praised this activity as a means for getting to know their classmates and feeling more comfortable with them. In many cases, this activity also resulted in more robust peer feedback on their first projects.

Recognizing the compelling positive influences of this in-class team experience, I attempted to replicate it for the virtual class. I used the same instructional material for the feedback lesson in one of our synchronous meetings and tried a three-round drawing activity using the ball-tossing concepts. Unfortunately, the lesson did not go as I had hoped. The students experienced challenges similar to those experienced in a distributed virtual workplace – technology challenges, an inability to read social cues and distracted participants. As a result, I identified the importance of recognizing these challenges as we create instructional activities aimed at teaching collaboration skills. Understanding and addressing these types of challenges is
even more relevant as we look to enhance our students’ collaboration literacy in remote, distributed and virtual situations.

Building Relationships with the Entire Class

In addition to team building, I consistently incorporated other workplace-based collaboration practices focused on developing relationships in the virtual course (fall 2020). When I led distributed and remote teams in the workplace, I focused on building and maintaining relationships as a means to create cohesive and effective teams. So, I implemented one of my virtual workplace strategies into this technical communication course - every interaction with a group of students, regardless of size, started with an icebreaker question. For example, in the first virtual class meeting, each student shared either a word people use to describe them, the coolest thing their family has ever done together or a show they were currently binge watching. This activity gave every student an opportunity to speak during our first class meeting and students were able to connect on things they had in common. A week later, I began their first virtual small group meetings with every student sharing their favorite thing that happened during the first week of classes. Later in the semester, a full-class synchronous session started with students sharing either their favorite dessert or the weirdest thing they ever ate. These short activities consistently facilitated student interactions virtually in a low-stress way. Virtual students continually wrote about these icebreaker activities in their blogs. Similar to the experiences of my distributed teams in the workplace, students credited this small instructional strategy with big impacts. Students said the icebreaker questions got everyone talking, made students feel like they
wanted to know more about their classmates, connected them to each other, helped them come out of their shells, and enabled them to feel less shy.

**Student Response**

I analyzed data from students' pre-project questionnaires and examined links between relationship building and team effectiveness. In addition to asking students about their commitment levels and project preferences, the pre-project questionnaires also asked students for input on their potential team members. Students had the opportunity to indicate specific individuals they wanted or did not want as teammates. When I examined the data, I found that explicitly named teammate preferences consistently increased from Project 3 to Project 4. As I would expect, students in all semesters referenced their Project 3 experiences in their Project 4 teammate preferences. The difference in percentage of explicitly named teammate preferences between the semesters is noteworthy. Named individuals decreased as the class experience of students moved from in-person to virtual. 61% of face-to-face students (fall 2019) specifically named desired Project 4 teammates, while 56% of split students (spring 2020) and only 49% of virtual students (fall 2020) did so. The difference between semesters is even more profound for undesired teammates. Almost half of the students in the face-to-face course named specific undesired teammates. Explicitly named undesired teammates dropped to less than one-third in the split course and to less than a quarter in the virtual semester. Although further study is needed, students’ responses seem to point to differences in personal interactions, relationships and shared experiences.
Post-project team assessments also asked students to indicate their desire to work with each individual teammate again. I noticed that differences occurred based on team success rather than learning locations/experiences. I found the reasons that students gave for their responses much more interesting than whether or not they would work with particular teammates again. Regardless of whether the team worked face-to-face or virtually, the more successful teams referenced interpersonal qualities such as “easy-going,” “really nice,” “open to ideas,” “caring,” “friendly” and even “a little goofy.” The less successful teams primarily noted getting work done, timeliness and meeting commitments as reasons why they would or would not work with a particular person again. I also found interesting references to leadership. In the more successful teams, students frequently listed leadership abilities as the reason for wanting to work with someone in the future. I confirmed this correlation by looking at the individual leadership ratings from fall 2020 students. In the virtual course, the successful team (Virtual-A) rated only 20% of their team members’ leadership skills as below average, while almost half of the less successful team (Virtual-B) had below average leadership ratings. This data further supports the connection between leadership and collaboration skills.

Overall, the students’ experiences, my observations and the data emphasize that when we teach collaboration, we must focus on relationship and team building from day one rather than waiting until a project has started. This mirrors a common practice in most workplace environments. Furthermore, my research suggests that instructional strategies should incorporate safe and easy ways to foster student connections beyond course topics. Similar to many workplace cultures, I found that fostering and maintaining personal connections, especially with individuals in distributed locations, through continual, fun, non-work-related interactions
positively contributes to teaching teamwork and collaboration in the classroom. The data also supports placing a greater emphasis on leadership skills as part of teaching collaboration. In addition to contributing to students’ collaboration literacy, integrating additional leadership skills into instructional activities can expand the overall capabilities of technical communication students. These leadership skills may provide students with additional opportunities in the workplace and help students build relationships and collaborate more effectively in other contexts.

Communication

Communication is the most referenced, researched and discussed element of teamwork. With the variety of approaches, channels, and strategies, communication typically receives the majority of praise and blame in effective teamwork and collaboration. The technical communication classroom is no different. Every team, regardless of semester, listed communication as a key contributor to its success or failure. Each of the less successful teams listed lack or ineffective communication as an obstacle. Since communication is such a pervasive and influential element of teamwork, Chapter 4 presents a separate case study dedicated to exploring communication and specifically analyzing the workplace-based technology (Slack) that we used for team collaboration in this technical communication course.

Overall, the most significant difference impacting communication in this course was the physical location of students. I used the same communication processes and tools across all three semesters, although the way I used them and their relative importance changed as the course moved from face-to-face to virtual collaboration. Even when the course was fully face-to-face, I
chose to integrate workplace-based communication practices and technology specifically aimed at remote, distributed and virtual collaboration. In this course, I required that teams use the Slack technology platform for any team communication which was not face-to-face.

Slack is technology specifically designed for team communication in the workplace. According to its website, “Slack is a channel-based messaging platform…[where] people can work together more effectively, connect all their software tools and services, and find the information they need to do their best work all within a secure enterprise-grade environment” (Slack Help Center, n.d.-g). Although our university’s learning management system was the primary technology tool for this technical communication course, I found that it did not serve students’ collaboration needs, especially as they worked on team projects outside the physical classroom. Since the course focused on communication in professional contexts, I selected a tool with success in the workplace. I used Slack with my workplace teams and personally found that it was an extremely effective way for the team to communicate and collaborate, especially because we were geographically distributed. In January 2019 (before the COVID-19 pandemic) Slack had over 10 million daily users from over 600,000 organizations (Slack Technologies, Inc., 2019).

In addition to its popularity, I selected Slack because it offered a secured (only accessible to my students), single location for teams to communicate, including uploading and sharing project materials. Slack is a web-based tool offering desktop and phone applications and there was no cost for students to use it. Since every student in the course had a phone and/or access to the internet, using Slack meant that all students had equal access to the same technology. In addition, students no longer had to exchange personal contact information to text or email to
communicate with their team outside of class. Slack also provides a “channel” structure that I discuss in greater detail in Chapter 4. In Slack, I was able to set up channels for each team where students could work together and engage me in real-time or asynchronous team conversations, even outside physical class meetings and office hours. Of course, Slack became invaluable when the spring 2020 face-to-face course meetings unexpectedly moved to virtual delivery.

**Student Response**

When I first started teaching this course, I offered Slack as an optional tool; however beginning in fall 2019, I required that face-to-face students use Slack for Project 4 communications. In all three semesters, students recognized Slack’s value. In a fall 2019 blog post, a face-to-face student wrote:

> I learned how to communicate not only through group collaboration but through social media. So many times, I got experience chatting and doing work through a computer with my classmates. This is exactly like work from home. Not only does this class let you see what it’s like, but it literally makes you do it. I think that is crucial as many companies offer a work from home atmosphere for their employees in contemporary society.

Implementing this workplace-based communication approach taught distributed collaboration skills even in a face-to-face environment, before the COVID-19 pandemic. When the spring 2020 students moved online, students attributed their abilities to still be successful to our distributed collaboration practices. As one student wrote, “this class has also taught me that you can accomplish anything, from anywhere, as long as you have the right technology and use it to its full potential.” Because of Slack’s significant influence in this course, Chapter 4 presents a detailed study of how I selected Slack and the results of using it in this course.
Overall, the data supports the importance of communication skills and communication’s place as a foundation in teaching our students to become literate in collaboration. Students’ blogs and team assessments continually pointed to the correlation between communication and successful collaboration. As I analyzed the obstacles to classroom teamwork and collaboration, I found that the less successful teams cited communication challenges as their most dominant obstacles. On the other hand, the more successful teams said communication helped them overcome their challenges. Although students frequently referenced communication in their blogs and assessments, they typically talked about communication in general terms. When students answered the assessment questions about teamwork advice for their team members, students defaulted to “better communication,” regardless of the team’s success. In responses from the face-to-face (fall 2019) students and the split (spring 2020) students, the few specifics they offered primarily focused on communicating task status and being available to communicate. The responses from the virtual course (fall 2020) were more robust. These students provided additional detail about important communication skills including responsiveness, more frequent and intentional communication, speaking-up, and greater consideration of tone. As I analyzed students’ responses, I recognized that we need to teach these specific skills to develop communication competencies of students and contribute to their collaboration literacy.

I also analyzed the data from my perspective as a former leader of distributed teams and identified another opportunity to use workplace-based collaboration practices in the technical communication classroom. The communication challenges raised by virtual students are similar to the challenges experienced by distributed and remote workplace teams. Therefore, we can ask
students to critically analyze these specific issues and how people are currently solving them in the workplace. With the dramatic increase in the number of technical communication courses occurring online where students are collaborating as remote, distributed and virtual teams, students are already experiencing some of these communication issues. In the workplace when I worked with distributed teams, we addressed these issues by using more intentional and structured communication, focusing on how to effectively listen and assert ideas, experimenting with new ways to use technology to communicate and identifying opportunities to connect with teammates outside of work-related interactions. In the classroom, we can ask students to engage in some of these activities and then critically reflect on these practices and their experiences using them.

Ultimately, my research reinforces commonly held notions that communication is the glue which holds everything together, especially when it comes to collaboration between individuals in distributed locations. While students consistently indicated communication as the most significant contributor or obstacle to success, many seemed unable to identify specific aspects. As a result, we should rethink how we define, discuss and evaluate collaboration skills in our classrooms. I will discuss this idea further in Chapter 3. The experiences of these students also confirm the benefits of using workplace-based technology specifically designed for team communication. As I will discuss in Chapter 4, the data demonstrates positive outcomes from supplementing academic tools with workplace-based technology when teaching collaboration and teamwork skills. Unlike many academic-focused learning management systems, workplace-based team communication technology is specifically designed to encourage and facilitate collaboration. Typically, these tools address the needs of teams in a single organization as well
as teams that bring together disparate contributors who are co-located or distributed. In this course, I found that using these tools to teach collaboration gave students a safe environment to apply teamwork communication skills and experience using technology that they may encounter in professional contexts in the future.

Conclusions and Implications

Using Workplace-based Practices

This case study provides examples of specific workplace-based collaboration practices in a technical communication classroom and the impact on students’ learning and experiences with teamwork and collaboration. While the classroom is not the workplace, I was able to effectively integrate workplace-based practices into my instructional strategies and address learning objectives related to collaboration. My data confirms the value of using workplace-based teamwork concepts for teaching collaboration. I created strategies for teaching collaboration using the four core elements of teamwork (responsibility, accountability, relationship building and communication). The instructional strategies I used in this course illustrate that successful workplace-based collaboration practices can support the teamwork efforts of students and emphasize skills that support their collaboration competencies. For example, blogs and assessment responses support the use of workplace-based project templates to develop responsibility and remove barriers, such as fairness concerns, that can impede students’ collaboration. More importantly, this data suggests that reducing instructional emphasis on project management processes and simply providing students with tools that incorporate workplace-based practices can shift students’ learning to skills that impact their collaboration
competencies. Data from distributed student teams also indicate that some of the challenges students face with virtual collaboration may simply be logistical. We can use additional workplace-based strategies specifically aimed at these logistics and allow our teaching approaches to focus on other areas of collaboration. Holistically, this case study demonstrates that we can look beyond the classroom and integrate workplace-based strategies, practices and technology to enhance our approaches to teaching collaboration to technical communication students.

Students’ blogs and assessment responses also indicate that we need to intentionally integrate more relationship building and team leadership strategies into our instructional practices. Since the data emphasizes the value of interpersonal capabilities, teaching skills and offering opportunities for students to develop their leadership competencies is important. Based on my managerial experiences, especially with early career technical communication professionals, I believe that focusing on leadership skills aimed at motivation, feedback and coaching can offer good starting points. In addition, creating and maintaining relationships throughout a course, or even a program can benefit students’ collaboration literacy. We can use workplace-based teambuilding approaches to further inform instructional strategies and incorporate additional opportunities to foster student relationships and connections in a safe environment. Overall, this study suggests that we should examine how we prioritize people, technology and processes in our instructional approaches. Based on my experiences in the workplace and this study, it seems that people skills and competencies are most important, then technology and then processes, rather than the more traditional placement of process competencies first. The results from my analysis of this course seem to indicate that as classroom
teams collaborate in a more distributed manner, workplace processes enabling them to get their work done fade into the background and technology and personal interactions become more important. This was an important finding as I began developing a framework for teaching collaboration.

**Collaboration Literacy**

One of my goals in this case study was to determine the collaboration skills and competencies that students should learn in the technical communication classroom. Although this study only examined a specific course at three particular snapshots in time, it suggests a foundation for creating a framework for teaching collaboration literacy. This case study supports defining collaboration through the lens of teamwork. It also demonstrates that the four core elements of teamwork (responsibility, accountability, relationship building and communication) can provide a foundation for a teaching framework. In addition, these teamwork concepts, and collaboration practices used in the workplace can contribute to determining appropriate skills and competencies that we can teach technical communication students to help them become literate in collaborating with others. For example, my observations of students support developing leadership competencies when we teach collaboration. These leadership competencies can enhance students’ abilities to demonstrate the accountability, responsibility, communication and relationship building necessary for effective collaboration. In response to the significant changes in education, the workplace and the ways people collaborate due to the COVID-19 pandemic, this case study also indicates that collaboration literacy requires specific skills and competencies focused on remote, distributed and virtual collaboration. For example, we might teach skills for
reading virtual social cues that will contribute to students’ competence in addressing the challenges people face when attempting to collaborate while physically separated. The responses from students who collaborated virtually in this course also suggest teaching skills that will develop students’ competencies in virtual communication, agility, flexibility, adaptability and self-advocacy - all of which will contribute to their collaboration literacy.

**Implications for this Course**

My observations and students’ responses support the continued use of many of the workplace-based teamwork practices that I implemented in this course. The data confirms incorporating these practices into my teaching strategies contributed to successful teamwork in the classroom and students’ learning of both course content and collaboration concepts. This case study also suggests new ideas to explore when I teach this course in the future. Specifically, I want to look for additional workplace-based teamwork practices that I might incorporate into my teaching to address accountability in collaboration. Perhaps, strategies used in workplace performance management can be adapted to teach accountability skills and used to enhance this element of students’ collaboration competencies. The experiences of virtual students who collaborated remotely from distributed locations revealed that I also need to increase my focus on teaching interpersonal skills, relationship building, providing feedback and leading teams when people are physically dispersed. In addition, the increase in distributed collaboration in the workplace has resulted in new ways to communicate and collaborate virtually, so I will continue to look for emerging collaboration practices that I can share with students.
**Future Research**

With the continued emphasis on collaboration over individual work and the rapid expansion of distributed teamwork, the technical communication field has an opportunity to contribute research in the classroom as well as the workplace. While noted but not explored in this particular study, there are likely correlations between team composition, collaborative approaches and success. As the workplace continues to move towards assembling more diverse teams from across organizations and locations, the short-term and rapid project work of the technical communication classroom may offer insights for the future construction of workplace teams. The results from this case study also suggest future research opportunities to examine the correlation between distributed interactions (personal, school and work) forced by COVID-19 and collaboration competencies. For example, will the need for collaboration literacy increase? How will experiences of students during the pandemic contribute to their confidence and abilities related to teamwork and collaboration?

Supporting collaboration literacy goes beyond preparing students for the workplace. Collaboration literacy can enable students to be agents of change. I believe that by bringing appropriate workplace-based practices into the technical communication classroom to teach teamwork and collaboration, we offer students skills and competencies that develop their collaboration literacy which students can incorporate into other contexts and areas of their lives. As such, we should continue studying the idea of explicit collaboration literacy and its relevant skills and competencies.
CHAPTER 3: SHAPING THE COLLABORATION LITERACY OF STUDENTS:
CURRENT TEXTBOOK AND CLASSROOM APPROACHES

Introduction

In the last chapter, I discussed the results of integrating workplace-based collaboration practices based on teamwork into my classroom. In this chapter, I will examine how others are teaching teamwork and collaboration in their classrooms. In order to get a complete picture of contemporary strategies, I combined a survey of technical communication teachers with an analysis of popular technical communication textbooks. First, I surveyed a small group of current technical communication teachers to learn about how they are currently addressing collaboration in their classrooms. Then, because of the significant role textbooks can play in classroom curriculum, I analyzed the content of ten popular technical communication textbooks.

Some scholars have analyzed technical communication textbooks to examine coverage of important topics such as usability, ethics and global work (Chong, 2016; Hartung, 1998; Matsuda & Matsuda, 2011). Others have conducted deeper analyses of how textbooks address specific topics including rhetorical discourse, oral presentation and plagiarism as well as how content meets needs for groups such as engineering students, trans students and workplace professionals (Joswiak & Duncan, 2020; Mosco, 2021; Sanchez, 2019; Wolfe, 2009). Regardless of the topic, researchers have confirmed that studying textbooks is important given their potential influence on classroom practices. As others have noted, “so many of the instructors in the service technical communication courses around the country are English graduate students and adjuncts who do
not have educational or professional backgrounds….Such instructors rely heavily on the textbook, and thus, technical communication textbooks – perhaps more than other textbooks – often drive the curriculum” (Wolfe, 2009, p. 353). In technical communication courses covering broad topics, graduate students who may not necessarily have the professional background in collaboration practices rely on the textbook for relevant information. Adjuncts who may be practitioners with collaboration experience but do not have a pedagogical background turn to textbooks to help them teach it. Read and Michaud (2018) found that “although [teachers] utilize a range of teaching materials in MMPW [multiple major professional writing] classes (i.e., online handbooks, general and business periodicals, scholarly articles, etc.), 92% use a textbook to teach the course” (p. 233). Thus, they believe that “the fact that so many respondents use a textbook suggests that textbooks may exert a powerful influence over the curriculum and pedagogy” (Read & Michaud, 2018, p. 234). Therefore, an important aspect of studying collaboration and teamwork in the classroom is understanding how technical communication textbooks present these topics.

I began with looking at how teachers address collaboration and teamwork in technical communication classrooms and gathered examples of technical communication syllabi and assignments specifically focused on teamwork or collaboration. Through my research, I wanted to learn:

- How do teachers define collaboration?
- How are teachers currently discussing and teaching collaboration and teamwork in the classroom?
• How do teachers integrate collaboration and teamwork into course syllabi, assignments and grading?

Then, I examined how technical communication textbooks address collaboration and teamwork. Specifically, I wanted to know:

• How do these books define, integrate, discuss and teach collaboration and teamwork?
• How might the content in textbooks influence perceptions about collaboration in the technical communication field?

Finally, bringing this information together, I examined how textbook content aligns with teachers’ expectations and approaches for teaching collaboration and teamwork.

Through my research, I found that regardless of whether we are talking about what we should teach, what we are teaching or what our textbooks include, three types of collaboration and teamwork skills emerge – process/task skills, interpersonal skills and personal skills. I define process/task skills as those which bring together a series of steps to achieve a specific end-result. I define interpersonal skills as skills related to interacting with another person and personal skills are those which demonstrate a particular quality, characteristic or mindset of an individual person. As a result of this observation, I used these three categories as a framework for my analysis in hopes of using these same categories to define collaboration skills in a teaching framework. In this chapter, I will demonstrate how teachers and textbooks confirm that collaboration and teamwork are important elements of technical communication; however, they place their focus on processes, tasks and related skills most often. Even when I looked at interpersonal and personal collaboration skills, I found that teachers and textbooks are placing
greater emphasis on processes and procedures related to these skills than on the interpersonal or personal skills themselves.

This emphasis on processes and tasks seems contrary to the types of capabilities that our students and employers consider most valuable. In addition, these priorities seem to reinforce the notion of technical communicators as document creators and doers, instead of leaders in distributed teams. As I discussed in Chapter 1, students, teachers, practitioners, scholars and employers believe that collaboration skills are an essential part of technical communication. Beyond the fundamental tasks necessary to collaborate with other people, employers are starting to look for particular mindsets and personal qualities. For example, in their 2020 survey of how college contributes to workplace success, the Association of American Colleges and Universities (AACU) asked employers about the value of certain mindsets for students after college. Of those surveyed, “at least half of employers think it is very important for college graduates to possess a range of mindsets and aptitudes to be successful” (Finley, 2021, p. 8). These mindsets include capabilities that I have categorized as personal skills such as persistence, resilience, and empathy. As we continue to frame technical communicators as symbolic analysts and demonstrate their contributions beyond supporting roles, we have to push the collaboration skills and experiences of our students beyond processes and tasks.

Methodology

This chapter explores perceptions, materials and classroom activities related to collaboration and teamwork through two distinct research activities:

- An online survey of 28 technical communication teachers
• An analysis of ten popular technical communication textbooks

I believe we can use the results to create a collection of pedagogical practices, identify opportunities to enhance our teaching, stimulate future research opportunities and perhaps, influence views of collaboration and technical communication within and outside the field.

Teacher Survey

The objective of the survey was to gather information about current teaching approaches related to teamwork and collaboration with questions emphasizing classroom activities. I wanted to take a snapshot of teamwork and collaboration activities in some classrooms, curate examples of these activities and look for common themes and approaches. Since I was not trying to generalize across the field, I chose to gather deep information from a small sample of technical communication teachers rather than broad data from a larger group. I developed an online survey asking teachers to define collaboration and share their teaching approaches, technology use and collaboration assignments. Since I distributed the survey in 2020, I also asked teachers to share how, if at all, the COVID-19 pandemic impacted their views and approaches to teaching collaboration. Excluding the general instructor, institution and course information, most questions were short-answer or asked respondents to select all applicable answers from a given list. Through this approach, I was able to gather more in-depth information. The survey included 10 open-ended questions and also asked teachers to share course syllabi and collaboration-related assignment artifacts. These artifacts included assignment prompts, instructions, and other supporting materials.
Survey questions were divided into six sections about collaboration and teaching practices. (See Appendix D for survey questions). First, I asked teachers to define collaboration and to share collaboration skills that they believe are important for today’s technical communication students. Since one of my goals was to look at how we can expand our pedagogical approaches, I also asked participants to share one or two of the biggest challenges they have faced when teaching collaboration. The survey then asked respondents to select one of their technical communication courses aimed at introductory, basic and/or broad technical communication theories, strategies, concepts and practices, and use it to answer the remaining questions. The survey asked questions about how teachers represent collaboration in their course syllabi, assignments and grading. To gather more specific information, the survey also asked teachers to share any collaboration theories, strategies, skills and technologies that they include in their courses. In addition, I requested one successful assignment or activity that these instructors have used for teaching collaboration and details about what made it successful. Finally, since I am particularly interested in how we address distributed teamwork and collaboration, I asked how participants address remote or virtual collaboration, if at all.

For participants, I looked for technical communication educators who have taught at least one technical communication course in the past three years. Since I was hoping to gather in-depth information, the survey was rather detailed, requiring approximately 20-minutes to complete. I did not offer any specific incentive for completing the survey, so participants had to be willing to respond and invest the time necessary to do so. With my focus on recent technical communication teachers, I distributed a call for survey participants to subscribers of electronic mail lists (listservs) aimed at technical communication scholars, practitioners and educators.
These included the ATTW (Association of Teachers of Technical Writing) mailing list server, CPTSC (Council for Programs in Technical and Scientific Communication) listserv, and NextGEN (the international rhetoric and writing graduate student listserv hosted by the University of Texas at Arlington). In addition, as a member of the Society for Technical Communication (STC), I sent distribution requests to the STC Chicago chapter, the STC academic group, and the STC instructional design and learning interest group. I distributed an online survey through Qualtrics in mid-September 2020 and it was open for approximately 30 days.

Twenty-eight teachers responded to the survey. All respondents teach at 4-year universities with the majority at public institutions. Approximately 65% are full-time faculty including full-time lecturers, visiting professors, tenure-track or tenured professors. The others are graduate teaching assistants (instructors of record), part-time or adjunct faculty. Overall, 75% have been teaching technical communication courses somewhere between one and ten years with most of them having taught these courses between three and five years.

As I analyzed survey responses, I looked at the viewpoints and teaching approaches across this group of teachers. I was not interested in any one teacher, so I did not correlate the responses of a particular teacher across all questions in the survey. Rather, I gathered common themes, perspectives and ideas and analyzed the responses of individual teachers within the contexts of these commonalities. In addition to gathering data about how teachers address collaboration and teamwork skills in today’s classrooms, I also used the survey results as context for my analysis of the most popular technical communication textbooks.
Textbook Analysis

To analyze how technical communication textbooks represent collaboration and teamwork, I selected ten of the most popular or frequently used textbooks. In June 2020, I searched for “technical writing” in Amazon’s best sellers. I selected only textbooks from this list and excluded handbooks, style guides, books about general writing, books targeting specific skills such as editing, and books aimed at specific disciplines such as writing in the sciences. Amazon’s list included multiple editions of the same book; however, I only selected a title once and used the most recent edition. In addition to Amazon’s best sellers, I also searched academic publisher websites for currently available technical writing textbooks. Combining this information, I selected and analyzed ten textbooks. (See Table 8).

Table 8: Textbooks

<table>
<thead>
<tr>
<th>Textbook Title</th>
<th>Edition</th>
<th>Authors</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Communication: A Reader-Centered Approach</td>
<td>9th</td>
<td>Anderson. P. V.</td>
<td>2018</td>
</tr>
<tr>
<td>Technical Communication Today</td>
<td>6th</td>
<td>Johnson-Sheehan, R.</td>
<td>2017</td>
</tr>
<tr>
<td>Successful Writing at Work</td>
<td>11th</td>
<td>Kolin, P. C.</td>
<td>2017</td>
</tr>
<tr>
<td>Technical Communication</td>
<td>12th</td>
<td>Markel, M. &amp; Selber, S. A.</td>
<td>2018</td>
</tr>
<tr>
<td>Technical Writing for Success</td>
<td>4th</td>
<td>Smith-Worthington, D. &amp; Jefferson, S.</td>
<td>2018</td>
</tr>
<tr>
<td>The Essentials of Technical Communication</td>
<td>4th</td>
<td>Tebeaux, E. &amp; Dragga, S.</td>
<td>2017</td>
</tr>
</tbody>
</table>

1 Amazon’s best sellers is a list updated hourly of Amazon’s most popular products (top 100) based on sales.
For more consistent comparisons, I selected editions published between 2016 and 2018, which were the most current editions when I began my research. Overall, I wanted to understand how technical communication textbooks address collaboration and teamwork. Within this broad question, I specifically wanted to learn:

- What collaboration and teamwork topics do textbooks cover and how?
- How do textbooks contribute to views about collaboration and teamwork in the practice and teaching of technical communication?
- How does the presentation of teamwork and collaboration in textbooks align with teachers’ expectations and approaches in the classroom?

To answer these questions, I started by gathering and analyzing general information and then focused on more specific data. First, I gathered the brief and detailed tables of contents and indices from each book and looked for references to collaboration, teamwork, teams, groups and groupwork. I collected all chapters or sections within each textbook dedicated to one or more of these keywords. I also noticed that many textbooks discuss teamwork or collaboration in chapter one or their introductory chapter, so I gathered these as well. Finally, since I wanted to see how these textbooks may represent the evolution of collaboration and teamwork within the field, I also gathered the “instructor’s preface” and “what’s new in this edition” information from each book.

Using the various tables of contents, I began my research by examining the structure, contents and overall design of each textbook. This included where collaboration and teamwork topics are placed in the textbook and how they are represented as individual chapters or sections. To learn more about how each textbook discusses teamwork and collaboration, I collected the
learning objectives, section headings and sub-headings from chapters and sections dedicated to these topics. This information also helped me identify key themes and points related to collaboration and teamwork for more detailed analysis. To gain a better understanding about how textbooks are positioning the role of teamwork and collaboration within the overall field of technical communication, I also gathered titles, learning objectives, section headings and sub-headings from the introductory chapters of each book. Finally, I collected the front matter from these books. Since all of the textbooks were subsequent editions, I was able to see how, if at all, the representation of collaboration and teamwork in textbooks may be changing or evolving. For example, I looked at whether and how the edition updates in a book addressed collaboration and teamwork. From this data, I could determine whether textbooks were placing an increased and/or different emphasis on collaboration and teamwork. I was also able to get a better understanding of specific topics or key points that were gaining more importance in these books.

In addition to studying which collaboration and teamwork topics the textbooks address, I conducted a detailed content analysis of the primary chapter or section within each book dedicated to collaboration and/or teamwork to learn how the textbooks cover these topics. As Huckin (2004) defines it within writing research, “content analysis is the identifying, quantifying, and analyzing of specific words, phrases, concepts, or other observable semantic data in a text or body of texts with the aim of uncovering some underlying thematic or rhetorical pattern running through these texts” (p. 14). As I studied how these texts address collaboration and teamwork, I began by looking for words and phrases identified in the teachers’ surveys. These included the most frequently identified terms that came to mind when these teachers thought about collaboration in their technical communication classrooms, words or phrases
teachers used when discussing the collaboration skills they think are important for students, and words or phrases teachers noted as challenges they have faced when teaching collaboration. I compared these words and phrases from the surveys with those appearing in textbooks’ learning objectives, headings and sub-headings. Finally, I analyzed some key words related to two concepts important to my particular research – distributed work and collaboration technology. By combining this information, I created a list of thirty terms (words or short phrases) related to collaboration and teamwork. I placed twenty-five of these terms into the three categories of my proposed collaboration skills framework – process/task skills, interpersonal skills and personal skills. (See Table 9). I grouped the terms “virtual,” “remote” and “distributed” together as related to virtual work and grouped “collaborative writing tools” and “collaborative communication tools” together as related to technology.

Table 9: Categories for Coded Collaboration Skills

<table>
<thead>
<tr>
<th>Process/Task Skills</th>
<th>Interpersonal Skills</th>
<th>Personal Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative writing</td>
<td>Accountability</td>
<td>Adaptability</td>
</tr>
<tr>
<td>Editing or revision</td>
<td>Communication with others</td>
<td>Empathy for others/Feelings</td>
</tr>
<tr>
<td>Goals or purpose</td>
<td>Compromise</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Meetings</td>
<td>Consensus</td>
<td>Respect individual diversity</td>
</tr>
<tr>
<td>Problem-solving or defining</td>
<td>Diverse/differing viewpoints</td>
<td>Trust</td>
</tr>
<tr>
<td>Project management</td>
<td>Feedback/Giving criticism</td>
<td></td>
</tr>
<tr>
<td>Project planning or schedule</td>
<td>Leadership</td>
<td></td>
</tr>
<tr>
<td>Task definition or delegation</td>
<td>Listening</td>
<td></td>
</tr>
<tr>
<td>Time management</td>
<td>Mediation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team conflict</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team manager or leader</td>
<td></td>
</tr>
</tbody>
</table>

Using seven chapters dedicated to collaboration and teamwork and three sections (from textbooks with only a section within a chapter rather than a full chapter dedicated to these
topics),\(^2\) I coded each paragraph and *breakout item* for these terms. I defined breakout items as tables, forms, figures or guideline lists. In order to conduct comparative data analysis, I also counted the total number of paragraphs and breakout items for each chapter or section. I only counted a term once regardless of how many times a particular paragraph or breakout item mentioned the term. When counting paragraphs and terms within them, I counted paragraphs split between two pages only once. I counted bullet points containing multiple sentences as individual paragraphs; however, I counted single-sentence bullet point lists along with the paragraph introducing them as one.

To minimize codes overlapping, in most cases I counted only exact words or phrases. I did not count terms implied by other words. For example, I only coded paragraphs and breakout items for “collaborative writing,” when it explicitly used the term “collaborative writing.” If the text discussing people writing together implied collaborative writing, I did not code it as containing the term “collaborative writing.” On the other hand, I did not automatically code terms without confirming their use in the proper context. For example, if “feedback” was used to describe audio feedback, I did not code the paragraph as containing the term. Coding for “collaborative writing tools” and “collaborative communication tools” was an exception. I coded these two terms when the paragraph or breakout item included specific technology. When the text mentioned Google Docs, Microsoft Word track changes, file sharing or other similar technology, I coded the paragraph or breakout item for “collaborative writing tools.” I coded the paragraph or breakout item for “collaborative communication tools” when the text discussed

\(^2\) For the one textbook which included multiple dedicated sections throughout the book, I used the most predominant one.
video calling, Skype or similar technology. To enhance coding reliability, two independent raters coded one chapter and one section. We compared coding results and calibrated them. We both coded another chapter to confirm our calibration. I then coded the remaining chapters and sections using the calibrated approach.

Once I counted and coded all paragraphs and breakout items in the ten selected chapters/sections, I tabulated and analyzed the data. Since my goal was to identify themes and patterns, my analysis focused on relative use of these terms. I analyzed the use of each term as a percentage of the total paragraphs and breakout items in each book. I also analyzed the relationship of the use of each term in paragraphs compared to breakout items, the relationship of the use of each term in textbooks with collaboration-dedicated chapters compared to those with only dedicated sections, and the relationship of the use of each term to the others. In addition, I further evaluated the data based on the collaboration skill category or term grouping (process/task skills, interpersonal skills, personal skills, virtual work or technology). Finally, I considered the presence or absence of some specific key terms such as “leadership,” “accountability,” “time management” and others.

Taking my research one level deeper, I evaluated how some textbooks specifically discuss key topics related to collaboration and teamwork. I looked at specific presentations of process/task skills, interpersonal skills and personal skills. I also examined the details books include about leadership, feedback and managing conflict. Lastly, I studied some explicit ways these textbooks consider virtual teams and collaboration technology.
Important Collaboration Skills

As I have discussed, collaboration skills are important to employers and college students. In one study of the important skills for success, “83% of employers and 77% of students” rated the ability to work in teams as very important (Hart Research Associates, 2015, p. 8). Therefore, before I began analyzing how current technical communication teachers address collaboration and teamwork in their classrooms, I wanted to confirm that collaboration skills are also important to teachers. In the survey, I asked teachers to rate the importance of collaboration skills for technical communication students on a 5-point scale (1=not important and 5=essential). Everyone rated the importance of collaboration skills as at least a 4 and 78% rated these skills as a 5, indicating that collaboration skills are essential. Therefore, we need a better understanding of what we should be teaching our students about collaboration and teamwork.

Defining Collaboration in Our Classrooms

As I began examining how we teach collaboration, I found it helpful to understand how teachers are defining collaboration and collaboration skills. I asked teachers about the terms that come to mind when they think about collaboration in their technical communication classrooms. In the survey, I provided thirty terms that I have seen or heard referenced when discussing collaboration either in workplace or academic settings. I asked respondents to check all terms that come to mind for them. (See Appendix E for response data). A word cloud demonstrates the relative frequency that teachers selected each term. The larger the word, the more often teachers selected it. (See Figure 1). As we might expect, the terms “team,” “teamwork” and “group” received the most responses. After terms that describe collaboration (teamwork, team and
group), most teachers thought about typical team activities – “problem-solving,” “writing,” “project” and “discussion.” When we think about the most frequent collaborative classroom activities, they are usually writing, projects and discussions. Thus, teachers associating these terms with collaboration in the classroom also makes sense.

![Figure 1: Word Cloud of Collaboration Terms](image)

Interestingly, “problem-solving” was selected as often as “team.” Since the survey did not explicitly define problem-solving, I do not know specifically how teachers thought about problem-solving in relation to teamwork. It seems possible that teachers either viewed problem-solving as part of students’ collaborative activities or problem-solving as something that the teachers need to do when they use collaboration in the classroom.

After words that describe collaboration and typical classroom collaborative activities, the next most frequently selected terms related to interpersonal collaboration skills. These words
included “cooperation,” “conflict” and “accountability.” These most popular interpersonal terms appear to be words that are more often related to challenges with classroom collaboration. Similar to one interpretation of “problem-solving,” these terms can be viewed as actions that collaboration necessitates rather than activities that are part of collaboration. Since "conflict" is one of the interpersonal words most frequently associated with collaboration, it seems more likely that "problem-solving" describes the teachers’ experiences with collaboration in the classroom rather than an activity for students. This suggests that cooperation and accountability may also be challenges associated with collaboration in the classroom. While I was not able to ask follow-up questions, looking at these responses collectively, it seems that teachers may be more focused on how to address challenges with collaboration rather than building other more positive collaboration skills. For example, they may be teaching conflict management instead of relationship building skills.

The words chosen least often were “individual,” “performance” and “results.” Again, we can interpret this association in multiple ways. It might suggest that teachers do not focus on the individual aspects of collaboration. It could also indicate that teachers view collaboration as a distinct and separate concept in the classroom and not necessarily correlated to students’ performance or directly influencing results. Regardless, teachers do not seem to make a direct connection between collaboration and an individual’s role in it or between collaborative work and its end result. Although the responses leave open questions, they also provide some context for how teachers are currently addressing collaboration in classrooms. In addition, they appear to reflect and align with other findings further into my research.
Determining Important Collaboration Skills

After teachers selected the terms that they associate with collaboration in their classrooms, I asked them an open-ended question about specific collaboration skills they view as important for technical communication students. Specifically, the survey asked teachers to share collaboration skills in which they believe students should have proficiency. Their responses offer a good starting point as we begin developing a list of skills and competencies for collaboration literacy. Since teachers provided written answers, their responses varied. Some responses included general topics related to collaboration and teamwork such as project management, writing and communication. In other responses, teachers were more specific, including peer review/revision as an important element of writing and task delegation as part of project management.

The value of collaboration in the workplace and classroom were common themes in teachers' responses. Some people made specific references to the relationship between collaboration skills and the workplace. For example, one person said that they believe and explicitly tell their students that “they need to know how to work with fellow co-workers” and another wrote that “because this field requires working with others across teams, being able to work as a team…is important.” One teacher referenced an increased need to think about virtual and remote collaboration by saying that students need to know how to “[work] on team projects asynchronously given the current state of the workplace.” It seems important that students understand the significance of collaboration and the value of collaboration skills when they enter the workplace. One teacher differentiated between collaboration skills in the workplace and in the classroom. This teacher stated that “in the classroom (not necessarily the workplace),
[students] need to be able to step back especially if they know how to do the task already, so that others contribute…very effective for pedagogy, maybe in some workplaces.” Although not explicitly stated, this comment suggests the importance of specific leadership skills. The teacher also highlights the importance of differentiating workplace and classroom skills. While I agree that there are differences between the workplace and the classroom, I found the distinction in this particular example interesting. I am not sure why this person believes that this type of leadership is primarily or only beneficial in the classroom. I think leadership that incorporates supporting the growth of others is important in both places.

Within the category of important collaboration skills, some teachers incorporated their thoughts about the specific role of technical communicators in the workplace. One teacher referenced the role of students “contributing to a team of writers.” This teacher then listed writing-specific skills such as “explaining the value of information in paragraphs…[paraphrasing] relevant source content accurately…revising writing so it’s free from distracting errors…[and signaling] the use of source material.” Given this list of skills, it appears that this teacher views the collaboration role of technical communicators solely in a writing capacity. In another case, a teacher said that students “need to know how to communicate with bosses and those in authority over them.” This teacher’s response did not reference any other situations such as communication with coworkers or subordinates, perhaps implying that technical communicators can only act in supporting rather than leading roles. Most responses simply referenced skills related to technical communicators as members of a larger team without references to specific roles. Overall, the results support that stressing the value of collaboration skills and acknowledging how collaboration may occur in the workplace, including how it may
differ from collaboration in the classroom are necessary. More importantly, many responses indicate that we need to think about how we, as teachers, view the role of technical communicators and how these views influence the types of collaboration and teamwork skills we teach.

**Process/Task Skills**

I was not surprised that most respondents listed writing-focused processes or tasks as important collaboration skills. Some teachers listed writing as an important collaboration skill, while others mentioned specific writing skills such as editing, peer review, revision, document design, and properly citing sources. In addition to writing tasks, many respondents also listed project management and its related processes/tasks. Specifically, teachers indicated that project management tasks such as planning, setting goals and deadlines, assigning tasks, having meetings and taking notes are important skills for students engaging in collaboration and teamwork activities. As I reflected on my own experiences and anecdotal conversations about teaching technical communication, I recognized that when we talk about addressing collaboration skills in the classroom, many process and task-based skills tend to be the first ones mentioned.

Although less frequently, some teachers also included problem-based skills such as posing, defining and solving problems. Similar to my uncertainty about why the surveyed teachers selected “problem-solving” as a term defining collaboration, I was unclear from teachers’ responses how they are defining these skills. Posing problems, defining them and solving them may be project tasks, may reflect classroom assignment requirements, or perhaps
have some broader meaning. In most cases, however, regardless of their exact definitions, teachers seemed to view problem-based activities as explicit tasks or elements within a project process. Interestingly, more than one teacher included the importance of time management skills. Of all the process/task-related skills noted, I do not think that we teach time management skills very often. Perhaps, we do not think about time management as a collaborative activity and therefore do not think of it as part of collaboration. Given their importance, we may want to include time management skills as we teach collaboration in the classroom. More broadly, we should give greater thought to those individual skills which may not be inherently collaborative but will enable student to collaborate more effectively.

**Interpersonal Skills**

Many teachers listed collaboration skills related to interacting with others. Teachers described most interpersonal skills in broad terms such as “communication with others,” “interpersonal communication” and “sound communication practices.” There were also general references to accountability and holding others accountable, although nothing more specific. A few teachers also noted listening skills and listening, but, again, without further definition. Although the survey did not explicitly ask for definitions, these responses still raise the importance of clearly defining broad collaboration-related terms. For example, what do we consider “sound communication practices?” We need to be sure that we have or create more granular definitions for collaboration-related terms or we will find developing pedagogical practices more challenging.
One interpersonal collaboration skill that appeared throughout responses was the ability to encourage and support differing or diverse viewpoints. There are many benefits to teaching students skills related to different viewpoints. Teaching students these types of skills can lead to greater diversity and inclusion regardless of the context - in the classroom, in the workplace and other places. Fostering diverse viewpoints is also a primary benefit of effective collaboration. Therefore, it seems natural that as we teach students how to collaborate that we also teach them skills related to considering differing viewpoints. While some teachers simply listed conflict resolution, others provided more specific skills aimed at creating, encouraging, respecting and supporting diverse ideas. One teacher said that students need to learn how to “comfortably exchange ideas.” Another said that students should be proficient in having “productive conversations.” Similar to “sound communication,” if we are going to teach these concepts, we need to define “comfortable” and “productive” in these contexts. As I examined teachers’ responses discussing conflict, I also noticed that some teachers used the words “compromise” and “mediation” rather than "conflict management" or "resolution." One teacher wrote, “students need to be able to mediate between two opposing sides to find collaboration, either as a person on one of the two sides or as a person on neither side.” Capturing these various terms, I wondered about benefits we might find if we think about and teach collaboration skills aimed at conflict from the more positive perspective of compromise and mediation.

In the same way teachers used multiple terms reflecting conflict-related skills, teachers also described other important skills with varying terms. For example, some teachers included “peer review” as a collaborative writing task while other teachers, although fewer, indicated skills related to “feedback.” At first, I thought that perhaps teachers were using these terms
interchangeably. I noticed, however, that one teacher who included giving feedback also included peer review separately. In addition, multiple teachers referenced peer review in the context of written work revisions. This information combined with my personal workplace and classroom experiences seem to indicate that we should consider peer review and feedback as different and distinct collaboration skills. From this perspective, I believe that peer review is more frequently aligned with process/task skills, while feedback is typically considered an interpersonal skill.

Many teachers’ responses also included “team management” and “leadership.” Much like “peer review” and “feedback,” these terms are not necessarily interchangeable. Both team managers and leaders can guide a team toward an outcome, oversee the activities of others, and use communication and listening skills. I have found, however, that the way team managers and leaders approach these activities may be significantly different. From my perspective, team managers guide others using their position or title, while leaders guide through influence. Team managers primarily focus on tasks and thinking about completion. Leaders typically focus more on people and consider growth. In many cases, team managers may be looking short-term and at the task-at-hand, while leaders more often look at the big picture and long-term. Expounding on these distinctions, while team management and leadership are both interpersonal skills and share commonalities, not all team managers demonstrate leadership nor do all leaders act as team managers. The responses from some teachers reflected these contrasts even when they did not reference the different terms. For example, some teachers explicitly wrote “leadership,” while others implied leadership by including terms such as “motivation.” One teacher listed “followership” within the context of leadership while another mentioned the “ability to know
when to guide [and] when to step back.” These responses seem to indicate that we may want to expand our views about leadership skills. We can teach leadership skills in the context of “officially” leading or managing a team as well as other situations where students can demonstrate leadership as a team member. Finally, one teacher included “quiet leadership” as an important collaboration skill. Badaracco (2002), a Harvard business ethics professor proposed the idea of quiet leadership. According to him:

The vast majority of difficult, important human problems – both inside and outside organizations – are not solved by a swift, decisive stroke from someone at the top. What usually matters are careful, thoughtful, small, practical efforts by people far from the limelight. In short, quiet leadership is what moves and changes the world. (p. 9)

Quiet leadership emphasizes a view of leadership that focuses on the ability of everyone to act as a leader and influence change. As we think about teaching leadership skills to our technical communication students, we need to consider the definition of leadership and non-traditional leadership techniques.

**Personal Skills**

The third type of collaboration skills in my framework are those that I consider personal skills. In their responses, teachers included terms such as “flexibility,” “adaptability” and “empathy.” Realistically, we might call these traits rather than skills since they are individual characteristics and mindsets. Personally, I think we can teach people how to employ them so I also consider them skills. Regardless of how we classify them, technical communication teachers believe these concepts are important when teaching collaboration. One teacher who included empathy in their important collaboration skills described it as teaching students to be “attuned to cultural rhetorics, diversity, and other anti-discrimination discourses.” In addition to empathy,
teachers discussed flexibility and adaptability. Some teachers said that we need to teach students to be flexible in their team roles and another specifically said that students need the “ability to flexibly adapt to changing group dynamics/scenarios.” Thus, skills related to flexibility can be applied throughout collaborative experiences. Adaptability is also broadly appropriate and beneficial. For example, students can apply adaptability within the context of team diversity. One teacher said that students need to be proficient in “working with people from other disciplinary backgrounds [and] adapting to others’ writing, organizing and presentation styles.” As we think about increasing efforts to recognize and improve diversity, equity and inclusion, these personal skills are essential in the classroom, workplace and other contexts. Students need to know how to apply empathy, adaptability and flexibility in their own actions and their interactions with others.

Since empathy, adaptability and flexibility are personal characteristics typically demonstrated through other actions and subjectively evaluated, they may be more difficult to teach and measure. For example, teaching flexibility or adaptability may require creating a situation, unexpectedly changing it, and then figuring out how to assess students’ reaction to the change. In other words, we must find ways to teach beyond static procedures and problem-solving for a given situation. We need to create opportunities to teach and assess students’ reactions to changing situations and their abilities to demonstrate nimbleness. As such, we may have to be more intentional, and perhaps creative, in weaving concepts related to personal collaboration skills into our teaching strategies than when we teach objective collaboration processes and tasks.
Challenges Teaching Collaboration

In addition to asking teachers what collaboration skills they believe are important for students, the survey also asked teachers about the biggest challenges they have faced when teaching collaboration. I believe that looking at the current challenges offers additional strategies for teaching future courses. Most of the challenges identified focus on the relationship between students’ prior classroom collaboration experiences, a resistance to group work, and how students engage in collaboration as a result. Another commonly mentioned challenge was students’ lack of participation, including students who were unable (or unwilling) to make time to meet. Even beyond this survey, these are the most frequent challenges that come up in conversations about collaboration. As we look at teaching collaboration, we should consider how we address students’ previous experiences with collaborative activities. We can explicitly ask students to discuss their previous experiences with collaboration and the skills that can make their collaborative work more effective. In addition, we can structure collaboration activities and assignments to remove students’ participation barriers and set their teams up for success.

Many teachers also wrote about challenges with managing group dynamics. They described specific issues related to conflict. Their responses did not necessarily focus on the challenges of students. Rather, teachers discussed their own challenges such as “not effectively anticipating conflicts.” Teachers also shared thoughts about challenges with creating and facilitating teachable moments like “putting different personalities together and trying to get them to compromise” and “finding a way to empower and encourage students to handle group dynamic issues on their own.” These responses support including team dysfunction in our collaboration pedagogy and teaching students how to work through it.
Since this survey was distributed during the COVID-19 pandemic when many students were required to take their technical communication courses virtually, some teachers also mentioned challenges specifically related to teaching collaboration online. One teacher wrote:

Running collaborative groups online has been the single hardest thing I’ve had to do while teaching…it has all the usual issues of students waiting until the last minute to tell me there are issues with their group, but on a whole-class scale instead of a handful of individuals.

It seems that many challenges which sometimes occur with collaboration in face-to-face classes were exacerbated when courses were online. Students experienced more challenges in getting together for meetings and with using and accessing technology. Thus, an increased focus on virtual collaboration and collaboration technology also needs to be part of our learning objectives and teaching approaches.

Teaching Collaboration

Similar to my approach of examining the general importance of collaboration before analyzing specific skills, I wanted to get a sense of how teachers felt about teaching collaboration before studying the details about how they address it in their classrooms. The survey asked teachers about their comfort level with teaching collaboration on a scale of 1 to 5 (1= not comfortable at all and 5=extremely comfortable). Everyone indicated some level of comfort. Approximately one-third of these teachers said they were extremely comfortable teaching collaboration and collaboration skills. Therefore, it does not appear that teachers’ comfort level with teaching collaboration significantly impacted their teaching approaches.

The survey asked teachers to select one of their technical communication courses aimed at introductory, basic and/or broad technical communication concepts to answer questions about
current teaching approaches. The majority of teachers who responded to this survey (75%) have taught their selected courses more than one term and over 40% have taught the course five terms or more. Thus, many approaches have been refined by teaching them for multiple semesters. These courses reflect online, hybrid (a combination of online and face-to-face instruction) and face-to-face delivery as well as unplanned or unique modalities required by COVID-19. (See Table 10).

Table 10: Teaching Modalities

<table>
<thead>
<tr>
<th>Modality</th>
<th>Responses</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face-to-face</td>
<td>18</td>
<td>75%</td>
</tr>
<tr>
<td>Online (institution-required due to COVID-19)</td>
<td>12</td>
<td>50%</td>
</tr>
<tr>
<td>Online</td>
<td>11</td>
<td>46%</td>
</tr>
<tr>
<td>Face-to-face switched mid-term to online due to COVID-19</td>
<td>5</td>
<td>21%</td>
</tr>
<tr>
<td>Hybrid (a combination of online and face-to-face instruction)</td>
<td>4</td>
<td>17%</td>
</tr>
<tr>
<td>Hybrid or flex (institution-required due to COVID-19)</td>
<td>3</td>
<td>15%</td>
</tr>
</tbody>
</table>

Before gathering specific assignment details, I wanted to understand teachers’ general approach to collaboration in their courses. When I asked about their overall approach to teaching collaboration and collaboration skills, all of the teachers said that they intentionally include collaboration in some way. Eighty-three percent indicated that they have explicit instructions and assignments aimed specifically at collaboration and collaboration skills. The others said that collaboration is an underlying skill throughout their instruction and assignments, but they do not give it special attention. The question, therefore, is not whether collaboration is part of these technical communication courses, but rather what approaches are teachers using.
Collaboration in Course Design and Syllabi

I began by asking teachers about the percentages of learning objectives, course instruction, overall grades and assignments focused on collaboration. Almost half of these teachers said that 50% or more of their assignments focus on collaboration and collaboration skills. One teacher indicated that all (100%) of their assignments include collaboration. Approximately 20% of the teachers said that they included collaboration and collaboration skills in more than half of their learning objectives, course instruction and overall course grades. In order to gather more information, I asked teachers whether and how they addressed collaboration and collaboration skills in their course syllabi. The question offered six options and I asked teachers to select all options that apply. (See Table 1). Everyone indicated that their course syllabus addressed collaboration in some way. Although approximately 20% of these teachers said that they do not explicitly mention collaboration in their syllabi, they indicated that collaboration and/or collaboration skills are still referenced or implied. Of the teachers who said that their course syllabi specifically addressed collaboration, it appeared that most explicitly refer to collaboration in students’ overall course grades, specifically address collaboration in learning objectives and deliberately include collaboration in their course descriptions.
Table 11: Collaboration and Collaboration Skills in Course Syllabi

<table>
<thead>
<tr>
<th>In Syllabus</th>
<th>Responses</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration is explicitly called out as a portion of students’ overall course grade</td>
<td>18</td>
<td>78%</td>
</tr>
<tr>
<td>Collaboration is specifically addressed in course learning objectives</td>
<td>17</td>
<td>74%</td>
</tr>
<tr>
<td>Collaboration and/or collaboration skills are explicitly stated in my course description</td>
<td>16</td>
<td>70%</td>
</tr>
<tr>
<td>Collaboration policies are included in my syllabus</td>
<td>9</td>
<td>39%</td>
</tr>
<tr>
<td>Collaboration and/or collaboration skills are referenced or implied within specific areas of my syllabus, but not explicitly called out</td>
<td>5</td>
<td>22%</td>
</tr>
<tr>
<td>I do not address collaboration in my course syllabus</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

In addition to asking whether collaboration was specifically part of their syllabi, I wanted to see how teachers referenced it. The survey asked those who were willing to do so to share a copy of their technical communication course syllabus. I received fifteen course syllabi. These examples included traditional face-to-face and online courses as well as courses reflecting the unique circumstances due to COVID-19. As I reviewed these syllabi for collaboration references, modality did not seem to impact the ways that teachers addressed collaboration.

Course Descriptions and Objectives

Less than half of the syllabus samples reference collaboration in their course descriptions. While some syllabi do not explicitly use the word “collaboration,” they imply collaboration by including project management, leadership skills, or referencing group work in their course descriptions. In general, throughout the syllabi, the term “group work” seems to be used interchangeably with collaboration and collaborative work. However in a few cases, syllabi differentiated group work during class time from group projects. The course descriptions that specifically mention collaboration put it in the context of workplace writing. For example, one
course description states that “because writing in the workplace often entails collaboration, students in this course will be encouraged to expand their view of writing to include the interactions through which they accomplish writing tasks with other people.” From these samples, it does not appear that course descriptions consistently represent collaboration as a primary aspect of technical communication.

Similar to course descriptions, less than half of the learning outcomes or objectives in these samples include collaboration. Interestingly, syllabi with collaboration in their learning objectives are not always the same ones that include it in their course descriptions. Most collaboration-related learning outcomes are broad statements such as “collaborate effectively on project teams” or “practice working in a team setting.” Some syllabi are more specific about how students will demonstrate collaboration in the course. One syllabus has a course goal to “give and receive feedback among work groups,” while another specifically equates a collaboration learning objective to peer review activities. In addition to learning outcomes, one syllabus includes a section about how the course can contribute to students’ resumes and/or CVs. This section in the syllabus highlights three main points – writing, project management and interpersonal/social skills. In the interpersonal/social skills description the syllabus states, “you will be working in a group for at least one, if not two, of our class projects. Work like this demonstrates you have experience working on larger scale projects with others of different skill sets and backgrounds.” Similar to course descriptions, technical communication learning outcomes do not consistently include collaboration and many times collaboration skills seem to be equated with workplace-based activities.
Course Policies and Grading

Specific references to collaboration in course grading are relatively limited. Most syllabus samples include grading sections with points or percentages for major course projects and, in many cases, class participation. A few syllabi label course projects as collaborative or group assignments with no other specific references to collaboration. Collaboration appears more frequently in class participation grade descriptions or participation expectations. Some course syllabi also reference the participatory nature of the course and/or collaborative writing more generally. For example, one syllabus states that “many assignments will include a collaborative component.” Another syllabus explains that participation is expected because “as [students] will hopefully discover, writing is an inherently collaborative and process-oriented endeavor.” While these examples make vague or general references to the relationship between collaboration and participation, one syllabus makes required participation in collaboration more explicit by stating, “group work is a basic non-negotiable requirement of this course.” Even so, students are not given much information about what collaboration entails.

A few syllabus examples offer students more details and contain separate sections specifically about group work. These sections describe the importance of collaboration and working with others in technical communication and set expectations about how group work will occur. One syllabus tells students that in group work, they will need to meet with their groups outside of class. One fully virtual course syllabus tells students that when working within a group, students must “check [their] email regularly, maintain open communication and ask questions when necessary.” Another syllabus discusses plagiarism in the context of collaborative work by setting the expectation that “taking credit for others’ work is not tolerated in the
business world and it will not be tolerated [in this course].” One syllabus also acknowledges the challenges that can come from working as a group and suggests that keeping others informed of issues can help mitigate some of these challenges. Although there were only a few, these syllabi provide good examples of how we might include collaboration as a standard part of our technical communication courses and set expectations upfront to address the known challenges discussed earlier.

Course Structure and Assignments

In course structure and assignment sections, many syllabi reference collaboration through small group work, discussion participation and peer review. Some syllabi present courses as communities and encourage collaboration through “active participation within a community of writers.” One syllabus compares the classroom to a “virtual office” where students will need to “find effective ways to collaborate and give each other feedback,” while another syllabus presents the entire course as a multi-player game, thereby requiring continual cooperation and collaboration. These examples show that the inclusion of collaboration may be more common in syllabi even if course descriptions, learning objectives or grading do not reference it.

As previously noted, many syllabi classify assignments as either individual or group/collaborative. One syllabus offers students the opportunity to decide for each project whether they want to complete it individually or as part of a group. Students who want to work with a group can indicate their choice of groupmates. In addition, students also have the option

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3 This section only includes collaboration-related assignment information in syllabi. A broader discussion of collaboration assignments from the survey is presented later in this chapter.
of working on one project individually and another as part of a group. In other words, it seems that students are given the chance to try group work and see how it goes for them. Although it is unlikely that students will have an option about whether a project is completed individually or by a team in the workplace, this approach allows students to explore the relationship between their personal work style and collaboration while they are still in the classroom.

As I reviewed group or collaborative assignments in syllabi, most seem to be projects with multiple parts or multiple phases. Some syllabi indicate which parts of the project are collaborative while other syllabi simply note whether the overall project includes group work. Proposals, instructions, reports and oral presentations seem to be most common types of group or collaborative projects. Interestingly, a couple of syllabi also include specific collaboration technology recommendations. These suggestions appear as part of assignment descriptions or in the course schedule/calendar. One syllabus recommends, but does not require, that students use Google Drive for collaborative work. Another syllabus suggests using Discord. In a syllabus with a detailed course schedule, the schedule indicates that students will be setting up a project management space during one particular class meeting and suggests that students do so using slack.com or Monday.com. The survey included an entire section of questions about collaboration technology which I will discuss in more detail later in this chapter. While overall everyone indicated that they address collaboration in their syllabus in some way, there are a wide variety of approaches. These syllabi indicate that teachers need to be explicit about the role of collaboration in technical communication by including collaboration and/or teamwork in course descriptions and/or learning objectives, providing more information defining and setting
expectations for collaboration in the class, and incorporating general collaboration/teamwork strategies and technology as standard aspects of the course.

**Collaboration Instruction**

In order to understand collaboration-specific instruction, I asked survey participants to share specific collaboration theories, strategies or skills that they include in their technical communication courses. Many teachers said that they do not teach specific collaboration theories, however, education, writing studies and rhetorical theories informed their teaching. A few teachers indicated that they teach Tuckman’s model of team development and Joanna Wolfe’s team writing model, however, they qualified these theories “as presented in the [course] textbook.” A few teachers also said that they teach students Lencioni’s model of trust. While the survey responses did not expand on specific aspects of the trust model taught, Lencioni (2002) says that:

> In the context of building a team, trust is the confidence among team members that their peers’ intentions are good, and that there is no reason to be protective or careful around the group. In essence, teammates must get comfortable with being vulnerable with one another. (p. 195)

It appears that there is not much discussion of collaboration theories in the syllabi I reviewed. Rather, teachers use collaboration-related theories primarily to inform teaching strategies and assignment creation.

Almost every teacher indicated that they teach some type of collaboration strategy or skill in their course. Most of these skills and strategies seem to be process or task-based skills. Project management, collaborative writing and peer review were mentioned most often. Some teachers
said they teach specific project management skills such as creating Gantt charts and designating project roles. One teacher shared details of their approach:

Students create a collaboration plan that includes the roles they’ll each take in the project, a justification for that role, their communication plan and ranked preferred methods of communication, their conflict resolution agreement strategy, a description of what they define as conflict and their decision-making strategy.

The students review their plan with the teacher, revise as appropriate and then agree to follow the plan. A few teachers also said they talk about conflict resolution. One teacher said they deliver short lectures on collaboration-related topics including “intolerable situations [which are] situations where a person should seek outside help rather than trying to solve a problem alone.” Another teacher said they conduct role playing of bad teamwork. Other than these few examples however, none of the other teachers mentioned interpersonal strategies or skills related to collaboration.

**Collaboration Assignments**

As noted earlier, many teachers indicate in their assignment descriptions whether the assignment is individual or collaborative. Almost half of the teachers who responded to this survey said that assignments requiring collaboration or collaboration skills make up more than 50% of their course. Drawing on my own experiences and the types of collaboration-related assignments that typically appear in technical communication syllabi and textbooks, I included a list of collaboration assignments and a separate list of collaborative work products in the survey and asked teachers to indicate which ones they use in their courses. I also asked teachers to share any other types of collaboration-related assignments they may use. All of the teachers indicated that they used three or more collaboration assignment types from the provided list. (See Table
120

12). As I expected, all of the teachers surveyed have used collaborative writing. In addition, almost all of them also said that they have used peer review and response. When it came to putting students in groups, most teachers used in-class paired or group work. For group projects, everyone used graded small group projects (3 to 5 students working together) while they rarely used paired and larger group projects. None of these teachers shared additional types of collaboration assignments beyond the provided list.

Table 12: Types of Collaboration Assignments

<table>
<thead>
<tr>
<th>Type of Collaboration Assignment</th>
<th>Responses</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaborative writing</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>Graded small group projects (3 to 5 students working together)</td>
<td>22</td>
<td>100%</td>
</tr>
<tr>
<td>Peer review and response</td>
<td>19</td>
<td>86%</td>
</tr>
<tr>
<td>In-class paired or small group work</td>
<td>19</td>
<td>86%</td>
</tr>
<tr>
<td>Discussion forums</td>
<td>14</td>
<td>64%</td>
</tr>
<tr>
<td>Social media interactions</td>
<td>2</td>
<td>9%</td>
</tr>
<tr>
<td>Graded pair projects (2 students working together)</td>
<td>2</td>
<td>9%</td>
</tr>
<tr>
<td>Graded large group projects (6 or more students working together)</td>
<td>1</td>
<td>5%</td>
</tr>
</tbody>
</table>

The results were slightly different when I asked teachers about collaborative work products. (See Table 13). Approximately one-third of the teachers incorporated one or two collaborative work products into their courses, while the remainder used three or more. Reports and oral presentations were the most frequently used assignments, while teachers used infographic, instruction and website collaborative assignments equally. Some additional types of collaborative work included proposals, posters, and white papers. One teacher indicated that they let students participate in a collaborative project where the students can choose their resulting work product. These survey results confirm that most teachers include some type of collaborative
writing and small graded group project assignments in their courses. In addition, collaboration-based assignments typically result in written reports and/or oral presentations. It seems that there are opportunities to extend collaboration into other work that we find in many technical communication courses such as websites, infographics, proposals and white papers.

Table 13: Types of Collaborative Work Products

<table>
<thead>
<tr>
<th>Type of Collaboration Work Products</th>
<th>Responses</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reports</td>
<td>18</td>
<td>82%</td>
</tr>
<tr>
<td>Oral presentations</td>
<td>17</td>
<td>77%</td>
</tr>
<tr>
<td>Instructions</td>
<td>9</td>
<td>41%</td>
</tr>
<tr>
<td>Websites</td>
<td>8</td>
<td>36%</td>
</tr>
<tr>
<td>Infographics</td>
<td>7</td>
<td>32%</td>
</tr>
</tbody>
</table>

Beyond this broad view of collaboration assignments, I also asked teachers to share successful assignments. The assignments fell into a few general categories. First, there were self-reflective assignments. One activity asks students to complete a collaboration self-assessment. Using an assessment created by the Academy for Co-Teaching and Collaboration (2012), students rate themselves across eleven collaboration-related categories including contribution, motivation/participation, role flexibility, problem solving and others. Students’ ratings equate to numeric scores, enabling students to determine whether their collaboration skills are emerging, developing or established. In addition, the scoring is separated into interpersonal and intrapersonal skills so students can see where their proficiencies fall. Other self-reflective assignments ask students to reflect on their team’s collaboration efforts and their own contributions. Teachers felt these types of activities were successful because they enabled students to learn more about themselves.
Next were activities focused on collaboration tools or processes. Some teachers shared peer review activities and collaborative discussions. Others discussed class activities focused on project management. These included creating team charters, drafting problem statements and using sticky notes to create Gantt charts. Teachers believed these activities were successful because they “get students thinking about their responsibilities” and they strengthened accountability. Other teachers shared team building activities such as asking students to build a tower using office supplies and using Legos to create instructions for building something. These team-building activities allowed students to connect with their teams in a playful way. One teacher shared an assignment where they asked students to “familiarize [themselves] with a project management software or app and analyze its potential as a collaborative tool.” Students then use this information to create a handout and brief oral presentation for the class. Through this assignment, students learn about choosing appropriate content, using good design and creating a coherent presentation. In addition, the final products are also resources for other students in the course.

Finally, there were assignments that addressed “real” situations and audiences. These assignments used mock real-world scenarios, real clients, or an audience of their classmates. In some cases, students created proposals for mock scenarios. One teacher asked students to create proposals for campus improvements, while another teacher created a mock situation where students compete for a “grant funding prize.” In another course, a teacher crossed fiction with reality by asking students to follow the social media presence of an actor, film, or director at the Sundance Film Festival. Students “analyzed the data and prepared a draft of an email, a press release and a formal letter of presentation to a fictional manager who’s solicited their services in
order to edit the client’s social media presence for optimal success.” This assignment resulted in one group’s information appearing in the press notes of an actual film. A different teacher used an assignment where the teacher asked students to work with the university’s office of international student affairs to redesign a document for an international audience. This assignment resulted in the office using the students’ work.

In some “real” assignments, teachers included other students as the clients. One teacher has technical communication students create materials for students in a different class. In this assignment, students work together to create a “WordPress Start-up Guide.” Once these guides are completed, they are given to students in a different writing course. Some other teachers shared assignments that use classroom peers as the audience. One teacher asks students to create their own board games and write instructions for them. Other students in the class conduct usability testing by playing the games. Another teacher has students use poorly written instructions for a virtual reality game and asks students to rewrite the instructions as a team. Teachers felt that these projects were successful because they engaged students, fostered their creativity, and enabled students to create work that was used by and useful to others. These samples provide ideas for many specific assignments. Beyond these particular assignments, when we think about teaching collaboration, we should consider self-reflective work, activities specifically focused on collaboration tools and processes, and assignments that address real-world situations or audiences. As these teachers observed, using these types of assignments can enable students to learn more about their own collaboration approaches, participate in effective collaborative activities, and allow them to use collaboration to create valuable work that others can use.
Although most assignment examples included grading information for the overall project, none of them included explicit information about how collaboration activities factored into students’ grades. Even those with detailed rubrics did not include collaboration-related grading criteria. In the survey, I asked teachers to indicate how they factor collaboration into grades for assignments requiring collaboration. Ten percent said that they do not consider collaboration in the assignment grade and another 10% said they consider collaboration, but it is not an explicit part of the assignment grade. Half of the teachers said that they include and explicitly indicate collaboration in the overall assignment grade. Unfortunately, I did not receive any examples that illustrate how this was implemented. It seems we have an opportunity to more clearly define how collaboration can impact performance and results by more explicitly defining its influence on specific assignment assessment and grades.

**Collaboration Technology**

Since collaboration technology can play a prominent role in technical communication work, I asked teachers to share how they use specific collaboration technology in their classrooms. The survey included a list of common collaboration technology platforms and asked teachers to indicate which ones they use in their technical communication courses. If they use a particular technology, I also asked whether the technology is required, suggested or just used by students without any prompting. (See Table 14).
Collaborative writing technologies (Google Docs and Microsoft Word) are required, suggested or used by students most often. More than half of the teachers said that they also required or suggested Zoom; however, they responded to the survey during COVID-19 restrictions, which likely influenced these responses. A few teachers said they require students to use some type of file-sharing and document-commenting technology, but they do not dictate specific software. Beyond collaborative writing tools and Zoom, teachers do not seem to require other common technology but approximately one-third of teachers suggest that students use Google Docs, Microsoft Word track changes, Google Hangouts and Slack even when they are not required. Of these common technology platforms, students used Google Hangouts more often without prompting than any of the others, although it is not clear whether this use may also be related to the pandemic.

I also asked teachers to share other collaboration technologies they use in their technical communication courses beyond the list provided. Some other collaboration technology platforms that teachers require are WordPress, YouTube and Blogger. Over the years, I have found students use technology beyond those I discuss in class. A few teachers said that their students

<table>
<thead>
<tr>
<th>Technology</th>
<th>Required</th>
<th>Suggested</th>
<th>Used</th>
<th>Not Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Docs</td>
<td>45%</td>
<td>27%</td>
<td>23%</td>
<td>5%</td>
</tr>
<tr>
<td>MS Word track changes</td>
<td>23%</td>
<td>36%</td>
<td>18%</td>
<td>23%</td>
</tr>
<tr>
<td>Microsoft Teams</td>
<td>15%</td>
<td>15%</td>
<td>10%</td>
<td>60%</td>
</tr>
<tr>
<td>Zoom</td>
<td>38%</td>
<td>19%</td>
<td>14%</td>
<td>29%</td>
</tr>
<tr>
<td>FaceTime</td>
<td>0</td>
<td>16%</td>
<td>16%</td>
<td>68%</td>
</tr>
<tr>
<td>Google Hangouts</td>
<td>0</td>
<td>27%</td>
<td>32%</td>
<td>41%</td>
</tr>
<tr>
<td>Skype</td>
<td>0</td>
<td>14%</td>
<td>18%</td>
<td>68%</td>
</tr>
<tr>
<td>Slack</td>
<td>0</td>
<td>27%</td>
<td>14%</td>
<td>59%</td>
</tr>
<tr>
<td>Discord</td>
<td>0</td>
<td>14%</td>
<td>10%</td>
<td>76%</td>
</tr>
</tbody>
</table>
used chat tools like GroupMe or text message groups. One teacher said that they “discovered that many students were creating self-generated chat groups (via Snapchat, Instagram and other apps) to help one another tend to due dates, aspects of a project, missed information and more.”

Another teacher said that some of her students also used social media for collaboration. The teacher encouraged this because they believe that students “are often very good at using these services and are more likely to check them frequently.” Beyond collaborative writing and communication technologies, a few teachers also mentioned students using project management tools such as Basecamp, Asana, Trello and Kanbanchi.

In addition to understanding what collaboration technologies teachers use, I also wanted to learn more about technology they are explicitly teaching in their classes. Based on their responses about required technology, I did not find it surprising that many teach their students how to use Google Docs, Microsoft Word and Zoom. The teachers who used project management technology such as Basecamp and Asana also said they give explicit instruction on these tools. There was a direct correlation between teaching certain project processes and how to use the relevant technology platforms. For example, the teacher who uses Kanbanchi in the classroom also teaches their students Agile project management approaches. Some teachers said that rather than teaching a particular collaboration technology, they let the students pick the technology they are most comfortable using. The teacher then helps students work with the technology platforms the students selected. One teacher said they give technology tutorials and, in some cases, ask students to teach their classmates. Looking at these responses, it appears that collaboration technology requirements and instruction are driven primarily by their relevance to the coursework. There were some examples of teachers using unique technology like Kanbanchi
to teach new collaboration approaches such as Agile project management. Regardless, these results confirm the importance of making technology choices that support our learning objectives. We can choose to teach collaboration technologies, use technology to facilitate teaching collaboration skills, or a combination of both.

**Virtual Collaboration**

Given the increasing distributed and virtual nature of technical communication work, the survey specifically asked teachers how they address collaboration work and skills used in virtual environments or by remote/teleworkers. Some teachers said they do not address virtual collaboration and a few attributed this to a lack of good materials to do so. Many responses to this question seemed to focus on the impact of the pandemic. One teacher said they did not address virtual collaboration until COVID-19 made it a necessity and others equated teaching virtual collaboration with teaching asynchronously online during the pandemic. Outside the context of COVID-19, one teacher mentioned using Twitter to communicate across virtual environments and another said they explain the differences between synchronous and asynchronous communication. Only one teacher wrote about specific instruction focused on virtual collaboration. This teacher said:

I discuss collaboration in the global, dispersed workplace and brainstorm strategies together…of ways to address challenges that telework can pose. I also describe the experiences that my father, a retired senior engineer for an automotive company, had while on the job working with teams of engineers from Korea, Germany, Brazil, Thailand and more.

Overall, teachers’ responses seem to indicate that the pandemic raised awareness of virtual collaboration’s importance; however, there is a great deal of opportunity to explicitly integrate it
into our technical communication pedagogy. In the next chapter, I will present a case study that illustrates how I integrated the Slack technology platform and virtual collaboration skills into a technical communication course.

**Impacts of COVID-19**

I distributed this survey in September 2020 at a time when most college courses were taught either partially or fully online. Of the teachers who responded to the survey, at least 65% taught technical communication during 2020 and at least half of them were going to be teaching it in 2021. As a result, I wanted to know how COVID-19 may have impacted either their views or their approaches to teaching collaboration. Understandably some of them were unsure since they were completing this survey near the beginning of the fall 2020 semester. As noted earlier, those who taught technical communication during the pandemic felt that COVID-19 gave them an opportunity to teach virtual collaboration skills. Most teachers who discussed the impacts said that they had to rethink some assignments they would typically use. In addition, they had to consider how students were going to interact and collaborate virtually. Many teachers said they narrowed the scope of assignments requiring collaboration or removed them completely. This seemed to be a result of broader pandemic impacts rather than simply the effects of working virtually. As one teacher said:

> It has made me want to focus more heavily on accessibility and digital collaboration skills, but I’m also not eager to tackle that during this actual pandemic. The difficulty in teaching this right now is not moving online. It’s the outside stressors that are making our students (and us) less effective versions of ourselves while we deal with all of this. These are incredibly valuable skills, but group work is an intricate skill at the best of times. I’ve really struggled getting it to work well in the middle of all this.
These sentiments were common in many responses. Teachers stressed the pandemic’s impacts on all aspects of students’ lives. They also noted that collaboration is definitely harder when people are distributed and trying to work through technology. Many also said, however, that the pandemic made them realize the importance of being more explicit about remote work and virtual collaboration. Some teachers who scaled back their collaborative work during COVID-19 specifically said that they “narrowed the scope a bit in favor of a more solid mastery of certain knowledge, skills and proficiencies” and they were doing “more small-scale teamwork activities.” Unfortunately, I do not have any details about these approaches. I am also interested to know which, if any, of the changes made due to the pandemic will remain as we move forward and these classes return to face-to-face delivery. Regardless, workplace changes and classroom experiences during COVID-19 have highlighted the importance of virtual collaboration competency and a need to incorporate collaboration skills used by distributed and remote teams into our teaching approaches.

**Collaboration and Teamwork in Technical Communication Textbooks**

As discussed in the chapter introduction, textbook content can have a significant impact on what instructors teach in the classroom as “textbook contents form technical communication pedagogy, offering instructors choices of what to teach and how to teach it” (Matveeva, 2007, p. 151). Thus, I analyzed ten popular technical communication textbooks, examining how they address collaboration and teamwork. I wanted to get a better understanding about what collaboration and teamwork topics commonly-used textbooks cover and how these topics are being discussed. Beyond the content of the textbooks themselves, I was also hoping to learn
more about how textbooks might contribute to views about collaboration and teamwork within the field of technical communication. I connected the survey data from teachers with my textbook analysis to get a better sense about how the presentation of teamwork and collaboration in textbooks aligns with teachers’ expectations and approaches in the classroom. Although not a significant part of my research efforts, I also wanted to see if there was any correlation between the title of the textbook containing the words “technical communication,” “writing” or “workplace-related” and how the book addressed collaboration and teamwork. Of the ten textbooks, six include “technical communication” in their titles, three include “writing” and two specifically reference “business” or “work.” As I conducted my analysis, I noted any differences between books with technical communication, writing or workplace-focused titles.

I began my textbook analysis by searching tables of contents and indices. Of the ten textbooks I reviewed, seven include specific chapters dedicated to collaboration and teamwork. There did not seem to be any correlation between a textbook’s title and whether it includes a dedicated collaboration or teamwork chapter. Three chapter titles reference collaborative writing and the other four include working in teams or teamwork. The title of one of the chapters puts teamwork in the context of global considerations and another as part of work professionalism. The two textbooks that reference the workplace or business in their book titles also reference the workplace in their collaboration chapter titles; although this is not surprising.

The textbooks place chapters dedicated to collaboration and teamwork in various locations. Some appear as earlier chapters in the book, while others are placed near the end of it. A few books include their collaboration chapters in an introductory or technical communication basics unit, while other textbooks put their collaboration chapters in application or
implementation units. For example, *Technical Communication: A Reader-Centered Approach* includes a chapter titled “Creating Communications with a Team” in a unit called “Applications of the Reader-centered Approach” (Anderson, 2018). *Writing that Works* includes a full chapter, “Collaborating on a Document” in their unit on “Methods and Design” (Oliu et al., 2016). While three books did not have full chapters about collaboration, they did include collaboration sections in chapters covering other topics. Two books each include a single section titled “writing collaboratively” and place them in chapters titled “Writing Process” and “Technical Reports” (Smith-Worthington & Jefferson, 2018; Tebeaux & Dragga, 2017). The other textbook includes collaboration-related sections throughout, with the majority of them in the book’s introductory chapter. Again, there did not appear to be any correlation between the title of a textbook and where the collaboration/teamwork-related chapters or sections are located in the book.

More than half of the textbooks highlight the value of collaboration and some also provide the counter perspective of its disadvantages or challenges. There is little difference between textbooks. Collaboration benefits include wider and more diverse skills, knowledge and opinions as well as enhanced productivity and decision making. Many also discuss individual benefits such as improved communication with coworkers and job satisfaction. Consistently, the disadvantages discussed indicate that collaboration can take more time, may result in uneven work distribution and can cause interpersonal conflict. It appears that most textbooks present collaboration’s advantages and disadvantages as an overview or context setting for their more detailed discussions of specific topics.
Key Themes about Collaboration and Teamwork

After getting a broad structural overview of how textbooks present collaboration and teamwork, I began gathering some predominant themes. Since six textbooks include learning objectives in their collaboration or teamwork-specific chapters, I used these learning objectives for insights about collaboration skills deemed important. Almost all of these textbooks want students to learn how to address conflict in some way. This includes learning how to identify conflict and how to manage it. The next most prevalent learning objectives center on collaboration’s benefits, team meetings, and team planning or procedures. At least half of these textbooks teach students about one of these concepts, if not all three. According to the learning objectives, students will learn how to engage in productive and efficient meetings and practical ways to implement team goal setting and planning. Although less frequent, a few books include learning collaboration technology, working with virtual teams, or team management as important learning goals. Finally, one textbook includes learning objectives aimed at working in a global team and how to behave ethically as a team member. Process/task skills seem to dominate collaboration and teamwork learning objectives, while addressing conflict appears as the most important interpersonal learning goal.

As I reviewed chapters’ section headings and sub-headings, I was not surprised to find topics aligned with the learning objectives noted above. Even books without chapters or learning objectives specifically dedicated to collaboration or teamwork seem to address many of the same topics, including team functions, meetings, and addressing conflict. Bringing chapter and section headings together with the results of the teacher survey, I was able to create a list of key collaboration and teamwork topics. As noted earlier, these topics align with my framework of
process/task, interpersonal and personal skills as well as virtual collaboration, and collaboration technology. I used these five categories to conduct more detailed content analysis. Before digging deeper into the content, however, I completed my broader analysis by examining introductory chapters and edition updates in each textbook.

**Role of Collaboration and Teamwork**

As I reviewed tables of contents in these textbooks, I noticed a common theme in their “Chapter 1” titles. All seem to focus on introducing, defining or situating technical communication. In four textbooks, the first chapter titles are “Introduction to Technical Communication,” “What is Technical Communication” or something similar. The first chapter in two other books discuss writing or communication and “your career.” In the remaining four books, the first chapter focuses on the workplace with titles such as “Characteristics of Workplace Writing,” “Communicating in the Digital-Age Workplace” and “Technical Communication in the Entrepreneurial Workplace.” Similar to collaboration-specific chapter and section titles, there does not appear to be any correlation between introductory chapter titles and whether the textbook title focuses on technical communication, writing or the workplace.

The first chapter in many textbooks focuses on teaching students about technical communication’s characteristics and comparing it to other types of writing. Most also include qualities and approaches for creating successful technical communications. A few books use the first chapter to introduce their book’s specific approach to learning. Regardless of specific details, every first chapter appears to discuss the field of technical communication and the various elements it includes. Based on this information, it seemed more than reasonable to use
first chapter content as an opportunity to examine how some of the most popular textbooks position collaboration and teamwork within the context of technical communication.

As I reviewed the various learning objectives, headings and content in the first chapters, only one textbook includes collaboration or teamwork-related learning objectives. This book, however, does not have a separate chapter dedicated to teamwork or collaboration. The first chapter learning objectives in most of the textbooks include technical communication strategies or characteristics, so I hoped the headings and subheadings within these chapters might provide some additional information about how collaboration and teamwork fit into the field. Other than the book using the first chapter as its primary collaboration chapter, only two textbooks include collaboration or teamwork in their introductory chapters’ headings. *Technical Communication: A Reader-Centered Approach* includes “created collaboratively” as a sub-heading under the heading of “characteristics of workplace writing” (Anderson, 2018, p. 3). *Technical Communication* lists “often produced by teams” as a sub-heading below the “main features of technical communication” heading (Lannon & Gurak, 2019, sec. 1.2). Thus, it appeared that any teamwork or collaboration discussion would occur within the body text of the introductory chapter. If we assume that learning objectives and headings highlight the most important concepts and information in a chapter then these learning objectives and headings seem to imply that collaboration and teamwork are not necessarily viewed as major elements of technical communication.

Reading the first chapters, I was not surprised to find that the two textbooks without dedicated collaboration chapters also did not include details about collaboration or teamwork in their technical communication overview chapters. Of the other eight textbooks (including the one
using the introductory chapter as its dedicated collaboration chapter), four textbooks present collaboration and teamwork as essential skills sought by employers. For example, Essentials of Business Communications states:

In a Fortune poll, 1,000 executives cited writing, critical-thinking and problem-solving skills along with self-motivation and team skills as their top choices in new hires…among the top choices in two other surveys were teamwork, critical-thinking, analytical reasoning, and oral and written communication skills. (Guffey and Lowey, 2016, p.3)

These textbooks and a few others also discuss the collaborative nature of the workplace. For example, one textbook states that “teamwork has become a reality in business” and another says that “workplaces are highly collaborative” (Guffey & Lowey, 2016, p. 7; Johnson-Sheehan, 2017, section 1.4). Thus, the body text of introductory chapters position collaboration and teamwork as complementing written communication skills, possibly with the same level of importance. In addition, the text presents collaboration and teamwork as critical skills which can be transferred to the workplace. Unfortunately, students only get these messages by reading all of the body text details. Students who read the learning objectives, headings and sub-heading and skim the text are likely to miss this information.

Students who fully read their textbook’s introductory chapter will find details about the importance of collaboration and teamwork in technical communication and how these skills have broad applicability. Many textbooks that discuss the features of technical communication include a point that technical communication is often created in collaboration or by teams. In addition, Successful Writing at Work also highlights the importance of being a good team player, even
positioning it as one of your ethical responsibilities. In the “Ethics on the Job” section, Kolin (2017) states:

Your employer has every right to expect you to be a team player striving for the good of the company; its products, service and image; your department and your coworkers. Cooperate fully, fairly and on a timely basis with your collaborative team. (sec. 1-5b)

In addition to stressing the value of collaboration and teamwork in both the workplace and within technical communication, *Technical Communication Today* highlights valuable skills technical communication professionals can provide. In this textbook’s introductory chapter, the author compares the characteristics of technical communication to traits of successful entrepreneurs, specifically noting that “successful entrepreneurs are innovators, leaders, listeners, network-savvy collaborators, self-reliant individuals, ethical persons, resilient workers, and effective communicators” (Johnson-Sheehan, 2017, section 1.5b). As I studied these chapters, I found that most textbooks position collaboration and teamwork as important in technical communication and at least one textbook includes collaboration in a list of technical communicators’ traits that extend far beyond collaborative writing. The placement of this information, however, requires that students thoroughly read introductory chapters in textbooks and/or that teachers emphasize this information.

**Evolution of Collaboration and Teamwork**

As others have done, I studied updates across textbook editions for insights into how concepts and views are evolving (Matveeva, 2007). In the ten textbooks I studied, changes to collaboration and teamwork topics from prior editions were relatively limited. A few books include new, enhanced or updated advice and information in either their collaboration chapters or
as general threads running through the book. Most often, any collaboration or teamwork-related content added to these textbooks between editions consisted of updates about technology. Those that reference specific technology include collaborative writing tools such as Google Docs, content sharing spaces such as SharePoint, as well as wikis and podcasts. While these editions date back to 2016 and textbook production times can be lengthy, there did not appear to be any references to emerging collaboration technology such as team collaboration platforms like Slack or visual project and team management platforms such as Trello.

A few textbooks explicitly added or updated information about virtual collaboration covering virtual meetings and technology used by dispersed teams. Only *Technical Communication Today* contained edition updates that reframe collaboration and teamwork within the field. It is noteworthy that this textbook has a unique focus looking at technical communication from an entrepreneurial perspective. In its edition updates, the sixth edition “reframes teaming in terms associated with entrepreneurial start-ups and projects, helping students understand the fluid and evolving nature of today’s technical workplace” (Johnson-Sheehan, 2017, What’s New in the Sixth Edition). In addition, the preface of this textbook reinforces the relationship between technical communication, entrepreneurship and teamwork:

> Entrepreneurship is a mindset that blends together creativity, leadership, self-reliance, resilience, and persuasive communication…In the workplace, you will be assigned to specialized teams that are designed to take on specific projects. Then, when those projects are finished, you will be put on other teams that are meeting other objectives. The teams you are working on will often include people from around the world, who are being brought in because they have specialized skills and knowledge. Like an entrepreneur, you will need to know how to work independently and in teams, adapting quickly to new people, new tasks, and new workplace environments. (Johnson-Sheehan, 2017, Preface)
This new edition emphasizes collaboration and teamwork as a natural part of technical communication. It also reinforces the proliferation of dispersed and ad hoc teams that students will experience in the workplace. Perhaps most notably, it highlights key personal skills deemed important for successful collaboration and teamwork – flexibility, adaptability, resilience, and leadership.

**Teamwork and Collaboration Content Analysis**

Beyond studying what collaboration and teamwork topics textbooks address, I wanted a better understanding about how textbooks cover these topics. Using the 30 collaboration-related terms discussed earlier, I coded the chapter or section within each book dedicated to teamwork and collaboration. (See Appendix F for textbook coding by terms). One goal in this analysis was to look at how textbooks represent specific terms and phases in relationship to other textbook content as well as to each other. Overall, the coded skills that appear across all textbooks with the greatest frequency are “meeting activities,” “team conflict” and “project planning/schedule.” “Meeting activities” and “project planning/schedule” appear at least once in all ten textbooks and “team conflict” appears in all textbooks except for one. The skills that appear with the least frequency include “trust,” “empathy,” “flexibility,” “mediation,” “compromise,” “leadership,” “problem solving” and “communication with others.” “Leadership” and “compromise” appear at least once in half of the textbooks and “mediation” only appears in one book. The three terms that either did not appear or appear only once or twice across all textbooks are “adaptability,” which appears in one textbook, “accountability,” which appears once in two different textbooks, and “time management,” which does not appear anywhere.
Collaboration Skills

I examined the collaboration-dedicated textbook content covering process/task skills, interpersonal skills and personal skills\(^4\). As I anticipated based on the teachers’ survey responses, the textbooks discuss process/task skills most frequently, followed by interpersonal skills and then personal skills. (See Table 15).

Table 15: Skill Categories in Paragraphs and Breakout Items\(^5\)

<table>
<thead>
<tr>
<th>Element</th>
<th>Total</th>
<th>Process Skills % of Total</th>
<th>Interpersonal Skills % of Total</th>
<th>Personal Skills % of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Books with chapters dedicated to collaboration or teamwork:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paragraphs</td>
<td>477</td>
<td>32%</td>
<td>24%</td>
<td>5%</td>
</tr>
<tr>
<td>Breakouts</td>
<td>81</td>
<td>73%</td>
<td>37%</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>558</td>
<td>38%</td>
<td>26%</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Books with sections dedicated to collaboration or teamwork:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paragraphs</td>
<td>104</td>
<td>30%</td>
<td>29%</td>
<td>4%</td>
</tr>
<tr>
<td>Breakouts</td>
<td>8</td>
<td>25%</td>
<td>0%</td>
<td>25%</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td>29%</td>
<td>27%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>All Books:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paragraphs</td>
<td>581</td>
<td>32%</td>
<td>25%</td>
<td>5%</td>
</tr>
<tr>
<td>Breakouts</td>
<td>89</td>
<td>69%</td>
<td>34%</td>
<td>13%</td>
</tr>
<tr>
<td>Total</td>
<td>670</td>
<td>37%</td>
<td>26%</td>
<td>6%</td>
</tr>
</tbody>
</table>

Looking at the paragraphs and breakout items combined across all ten textbooks, process/task skills appear in 37%, interpersonal skills appear in 26%, and personal skills only appear in 6% of them. In all books, these skills are distributed similarly across the paragraphs and breakout items. Since chapters dedicated to collaboration were a more significant portion of

\(^4\) See Methodology section for terms and category associations.

\(^5\) Seven textbooks have chapters dedicated to collaboration and teamwork and three have sections.
the dataset, the distribution of skills in textbooks with dedicated chapters mirrored the skills distribution across all books. Interestingly, in the textbooks with only sections dedicated to collaboration and teamwork, process/task skills and interpersonal skills appear with almost the same frequency. In these textbooks, there is also an even distribution of process/task skills and personal skills in the breakout items with interpersonal skills not included in breakout items at all. The small number of breakout items may account for this result; however, the distribution is still an indication of which skills are highlighted when there is less coverage of collaboration and teamwork in a textbook. Within each category, I was also curious to know which skills appear most often.

**Process/Task Skills**

Within the category of process/task skills, textbooks cover “meeting activities” most frequently followed by “project planning/schedule.” The difference between the presence of these two skills is significant. “Meeting activities” make up almost 35% of process/task skills appearing in textbooks, while “project planning/schedule” is only 18%. Outside of “project planning/schedule” and “meetings,” it appeared that textbooks mention other project management related skills least often. Overall, the term “project management” only appears in 1% of paragraphs and breakout items in collaboration-dedicated content across all textbooks. In addition, the project management related skills that appear least often are those typically considered less administrative such as problem, objective and task definitions. Based on this analysis, it seems that technical communication textbooks are not only emphasizing process/task collaboration skills, but they also focus on project administration activities rather than the higher-
level roles technical communicators can play in team projects. For example, the textbooks are not necessarily teaching students how to identify when a team needs to get together or how to facilitate productive team discussions, which are typically leadership roles in teams and organizations. Instead, the textbooks are more focused on teaching students how to set-up meeting calendar invitations and how to take notes – typically responsibilities associated with lower-level jobs and supporting roles in an organization.

Examining process/task related content further, I found that most textbooks provide some information about collaboration models or team structures and the processes or tasks associated with each. Structures fell into three categories, which include collaboration models (cooperative, sequential, functional and integrated), Tuckman’s four stages of teaming (forming, storming, norming and performing), or writing processes. Some textbooks focus on collaboration processes or tasks explicitly within the context of collaborative writing or creating a written document. For example, when *Technical Communication* provides the guidelines for collaborative projects, the authors explicitly encourage students to “identify the type of document required [and]…decide on the most suitable digital writing apps” (Lannon & Gurak, 2019, sec. 5.1.1). While the list of guidelines also includes other more general project management activities, the items are still primarily process-focused collaboration skills. Even collaboration skills which may be more interpersonal are presented as a process or task such as “establish a procedure for responding to the work of other members…[and] establish procedures for dealing with interpersonal problems” (Lannon & Gurak, 2019, sec. 51.1). As a result, students may be learning how to complete a process or procedure related to collaboration skills, but they may not receive enough information about the skill itself. In other words, students learn that they should include a procedure for
responding to the work of others as a step within a document-creation process, but they are not learning how to effectively respond to others’ work.

All textbooks discuss the correlation between collaboration and meetings. Many focus on making meetings efficient, productive or successful and offer guidelines to do so. These include preparatory tasks as well as activities during the meeting itself. Almost every textbook discusses creating the agenda and other meeting administration tasks. As Successful Writing at Work states, “to succeed in the workplace, you need to know how to plan a meeting, create an agenda, and write minutes for your group” (Kolin, 2017, sec. 3.1). This seems to reinforce the idea that the role of a technical communicator, even in meetings, is documentation. Furthermore, by placing this level of focus on meetings, textbooks may be inadvertently encouraging students to view meeting activities as synonymous with collaboration. As a result, students may see meeting skills as the only necessary collaboration skills. Essential of Business Communication positions meetings in a different way by presenting meetings as “career critical” and suggests that students “see meetings as golden opportunities to demonstrate [their] leadership, communication and problem-solving skills” (Guffey & Loewy, 2016, pp. 368-369). This textbook presents a more comprehensive view of collaboration, indicates that meetings are only a small part of collaborative activities and illustrates how the role of technical communicators can extend beyond administrative tasks. Thus, students can see collaboration as more than meetings and view meetings as a means to develop their collaboration skills beyond document creation.
Interpersonal Skills

I coded the textbooks for eleven interpersonal skills, however, some terms are closely interrelated, so I analyzed the results from a few different perspectives. Looking at the terms separately, “conflict management/resolution” was the most frequent interpersonal skill in textbooks. Nine of the ten textbooks discuss conflict and it appears in 7% of collaboration-specific content across these books. In most cases, conflict is presented as a necessary and even beneficial aspect of collaboration which likely accounts for its ranking as the most predominant interpersonal skill. Many times, a textbook discusses conflict in the context of meetings either as occurring in a meeting, something that can be resolved in a meeting or both. While most textbooks provide some type of step-by-step way to manage conflict, Technical Communication references management and business ethics experts outside technical communication to address personal differences and animosity (Lannon & Gurak, 2019, sec. 5.3.4). This textbook examines conflict from a fully interpersonal perspective and suggests that we should increase our efforts to incorporate business and workplace-based collaboration strategies in the technical communication classroom.

Since teachers included specific conflict-related skills as important collaboration skills, I also coded “consensus,” “compromise” and “mediation” as separate terms. Although textbooks may include these terms in the same paragraphs or breakout items as conflict management/resolution or each other, when I added the four terms together, conflict-related skills appear in 12% of collaboration content and make-up 44% of interpersonal skills discussed across textbooks. When discussing conflict, consensus makes up 33% of the discussion and compromise 20%. Most textbooks that discuss conflict resolution or conflict management talk
about consensus and half of them discuss compromise. Generally, it seems that most textbooks use these terms interchangeably. It is unclear from the teacher survey responses whether they viewed “consensus” and “compromise” as distinct terms. Only one textbook discusses “mediation” and this textbook includes the most content about conflict management/resolution. Technical Communication Today tells students to use mediation when their team is unable to move forward and other types of conflict resolution approaches have not worked. (Johnson-Sheehan, 2017, sec. 3.3.2). This discussion of mediation is not much different than other types of conflict management/resolution and although mediation is an interpersonal skill, the textbook presents it as procedural steps. It seems that textbooks view mediation as a minor skill within collaboration.

“Leadership” and “team management” account for approximately 20% of the collaboration-related interpersonal skills in these textbooks. I coded them separately since, as I discussed earlier, I believe that they are different skills. Recall the teacher who discussed quiet leadership in the survey. Team management can include leadership, but leadership does not require team management. When I examined the distribution of “team management” compared to “leadership,” textbooks discuss “team management” three times more often than “leadership” and half of the textbooks do not include the term “leadership” at all. Textbook content about team management skills seems to vary. For example, Essentials of Business Communication says, “effective teams often have no formal leader,” while The Essentials of Technical Communication states, “collaborative projects must have a team leader” (Guffey & Loewy, 2016, p. 368; Tebeaux & Dragga, 2017, p. 206). In addition, the portrayal of team leaders’ responsibilities in some textbooks support my assertion that team management is not necessarily
the same as demonstrating leadership skills. For example, in *Writing That Works*, the team leader:

Shares decision-making authority with the others while assuming the responsibility for coordinating the team’s activities, organizing the project, and producing the final product…on a practical level, the team leader’s responsibilities include scheduling and leading meetings, writing and distributing minutes of meetings, selecting the tools the team will use and maintaining the master copy of the document during all stages of its development. (Oliu et. al., 2016, p. 139)

In this example, technical communication leaders are described as individuals who are responsible for tasks related to directing the work of others – scheduling meetings, distributing notes, selecting tools and maintaining the master document. Other textbooks describe the role of team leaders similarly. Even the few textbooks that mention leadership skills contain minimal information about how to be a leader beyond completing team management tasks. It seems that current textbooks do not distinguish leading a team from demonstrating leadership. Given the distinction and important difference between these two activities, textbooks have an opportunity to provide more information about leadership and teach students about the collaboration skills demonstrated by effective leaders. For example, textbooks could present the differences between guiding a team through position and guiding a team using influence. They could look at leadership through the lens of task completion compared to people growth. As noted in the teacher survey responses, textbooks could include information about different methods of leadership, such as quiet leadership. From a skills perspective, textbooks could also place more emphasis on the interpersonal skills related to leading teams such as motivating and influencing others, and less emphasis on leaders’ tasks like meeting minute distribution. Although it may be more challenging to discuss skills that are not easily described or quantifiable, the value of these skills in effective collaboration suggests that textbook authors rise to the challenge.
Within interpersonal skills, textbooks discuss feedback and listening with nearly the same frequency as team management. Given the distinction between “feedback” and “peer review” discussed earlier, I explicitly coded for the word “feedback.” Based on my personal experiences that demonstrate people often align feedback with criticism, I also coded references to giving or receiving criticism as “feedback.” While “feedback” represents nearly 15% of the discussion of interpersonal skills, it is only about 4% of all collaboration-related content. Most of the feedback-related content actually focuses on giving and receiving criticism. This includes guidelines for making criticism constructive and receiving criticism gracefully through strategies such as discussing behavior rather than the person, being specific, considering the intent, and listening actively (Guffey & Loewy, 2016; Markel & Selber, 2018). Since these criticism strategies are the same skills necessary for feedback proficiency, perhaps we should consider reframing giving and receiving criticism as giving and receiving feedback. This might alleviate some of the negative connotations that can be associated with providing feedback.

Similar to feedback, “listening” is a fair portion of the content reflecting interpersonal skills, appearing in 3% of textbooks’ collaboration discussions. Beyond connecting listening with criticism, listening primarily appears in the context of meetings. Textbook content describes listening as “[requiring] active involvement instead of merely passive reception” and “unlike hearing which involves receiving and processing sound waves, listening involves what the speaker is saying and interpreting the information” (Lannon & Gurak, 2019, sec. 5.3.5; Markel & Selber, 2018, p. 65). Textbooks present listening as an action, and thus a collaboration skill which can be learned and mastered. Although, as I have suggested with other interpersonal skills,
textbooks can discuss listening at a deeper level and offer additional strategies to help students master more effective listening skills.

Of the coded interpersonal skills, textbooks discuss “communicating with others,” “working with diverse viewpoints” and “accountability” least often. While at least half of the textbooks include “diverse viewpoints” and “communicating with others,” “accountability” only appears in two. In addition, each of these two textbooks only use the word “accountability” once. It is worth noting that some textbooks discuss doing your work; however, these textbooks do not describe this activity as “accountability.” Unfortunately, this omission means that none of the textbooks talk about accountability beyond just doing your work and they do not present “accountability” as a collaboration skill. From my perspective, accountability is more than just doing your work. Accountability includes an understanding and commitment to a team’s purpose and to the team as a whole. Commitment goes beyond completing your work and encompasses actively participating in team activities and putting forth your best personal work. In addition, accountability involves holding others to their commitments, honestly discussing needs and freely providing feedback. Personally, when I think about critical interpersonal skills required for successful teamwork and collaboration, leadership, feedback and accountability are at the top of my list, and the survey responses of teachers reinforce this.

**Personal Skills**

As noted earlier, personal skills appear in only 6% of the collaboration and teamwork content in these textbooks. I used the responses about important collaboration skills from the teacher survey and coded for “flexibility,” “adaptability,” “empathy for others’ feelings,”
“respect of individual diversity” and “trust.” Of these personal skills, “respect of individual diversity” and “trust” appear in textbooks most often. Looking across all collaboration-related material, however, “respect of individual diversity” is only discussed in approximately 3% of content and other personal skills terms are each used in 1% or less. While each textbook includes at least one of these personal collaboration skills, none of the books include them all.

“Flexibility” and “empathy” are each mentioned in four textbooks, although not necessarily in the same book, and most books only use the term once. When a textbook discusses “flexibility,” it is usually only in the context of plans. In one textbook, flexibility is only tied to a written outline stating, “collaboration requires flexibility. The team should not insist that individual members rigidly follow an agreed-on outline if it proves to be inadequate or faulty in one or more areas” (Oliu et. al., 2016, p. 133). Unfortunately, this passage seems to imply that flexibility as a collaboration skill is only necessary when plans are insufficient or poorly done.

“Adaptability” is only used one time in one textbook. Based on the limited references to personal collaboration skills and these five skills in particular, there is a significant opportunity to increase our focus in this area.

Technology

Technology comprises a little over ten percent of the collaboration content in these textbooks. I coded technology aimed at “collaborative writing” and technology aimed at “collaborative communication” separately. Of the collaboration-focused technology content, textbooks place a greater emphasis on writing technology. Sixty percent of the technology content consists of general or specific references to document or file-sharing technology such as
Google Docs and Microsoft Word. The other 40% discusses collaborative communication technology including video and occasionally instant messaging. Interestingly, technology content appears much more often in breakout items than in paragraph content, and in many cases includes illustrations and/or instructions for a particular technology.

The textbooks categorize and discuss technology in various ways, using labels such as groupware, internet resources, cloud technology, collaboration tools and collaborative writing software systems. While the categories and terminology differed, the same technology is discussed across textbooks and includes Google Docs, email, blogs, wikis, conference calls, video conferencing, Google Hangouts, Skype and WebEx. Given publishing lead times, I expected some dated technology, however, only a few textbooks discuss other types or emerging technology explicitly within their collaboration-focused content. For example, *Technical Communication Today* includes “project management software packages like Microsoft Project, Clarizen, Teamwork Projects and Zoho Projects help teams lay out calendars for completing projects” (Johnson-Sheehan, 2017, sec. 3.2.4). Although this book extends its collaboration technology purview, it only presents this software as a means for creating schedules. Project management technology can be used to support other collaboration skills, so making this connection in textbooks could help expand the role of technical communicators in collaboration. Many books encourage students to select the best technology to support objectives, but few offer help doing so. *Technical Communication: Process and Product* provides a breakout chart which includes different technology types, indicating whether the technology provides “synchronous or asynchronous” communication, whether it is “written, verbal or nonverbal” and how interactions within the technology occur (Gerson & Gerson, 2017, p.12). Since teachers support students
making technology choices, textbooks could offer more support about how students and teachers can or should choose appropriate technologies. With rapidly changing technology far outpacing textbook editions, specific technology references are probably best left for supplemental materials.

**Virtual Teams**

Virtual, remote or distributed work references appear in approximately 7% of textbook content dedicated to collaboration. Only one textbook did not address it at all. Since all of the textbooks I sampled were published prior to 2020, I assume this coverage will increase dramatically in future editions. When coding these terms, I coded each one separately to get a sense of how textbooks reference this type of work and its relationship to collaboration. All textbooks that discuss the topic use the term “virtual.” Only three books use the term “remote” and only one references “distributed” work or teams. This inconsistent use of terms implies that we need to expand the use of these other terms in the classroom, especially since they do not appear very often in textbooks. By using terms like “remote” and “distributed,” we can begin to recognize that the collaboration skills needed when conducting distributed work go beyond just using virtual technology.

The textbook content typically presents virtual collaboration as either a work necessity or technical affordance. For example, *The Essentials of Technical Communication* indicates that “team members often cannot collaborate in real time due to other work responsibilities” and *Technical Communication: Process and Product* states that “when employees are disbursed geographically, getting all team members together would be costly in terms of time or money.”
Companies solve this problem by forming virtual, remote digital teams that collaborate using electronic communication tools” (Gerson & Gerson, 2017, p. 25; Tebeaux & Dragga, 2017, p. 206). A few textbooks discuss virtual work in the context of meetings or using specific technology tools. Generally, virtual work is not significantly distinguished nor uniquely positioned within collaboration or teamwork. As Johnson-Sheehan (2017) notes, “virtual teaming does not change traditional teaming strategies – it just makes them more necessary” (section 3.4.3). Only one textbook appears to emphasize the difference and importance of virtual teams.

*Essentials of Business Communication* explicitly defines distributed team structures and highlights the unique skills required when collaborating virtually:

> Virtual teams have greater autonomy and require members who are more self-reliant than co-located workers are…in the digital age, you are increasingly viewed as what you are rather than the place you go. In some organizations, remote coworkers may be permanent employees from the same office or may be specialists called together for temporary projects. Regardless of the assignment, virtual teams can benefit from shared views, skills and diversity. (Guffey & Loewy, 2016, pp. 365-366)

Examining these textbooks, I found that distributed teams and virtual collaboration are not consistently represented as a significant aspect of technical communication. Thus, textbooks do not present students with unique considerations and skills related to this type of teamwork. Since these textbooks were created before COVID-19, it will be interesting to observe any changes resulting from the pandemic’s impact on the ways we work with others in both the classroom and the workplace. And more importantly, whether and how newer editions of textbooks take collaboration more seriously.
Conclusions and Implications

By bringing together the responses of teachers in the survey with the findings I gathered from analyzing popular technical communication textbooks, I was able to study how teamwork and collaboration are currently represented and taught to our students. Through this research, I have drawn some conclusions about how the presentation of teamwork and collaboration in textbooks align with the approaches of teachers in the classroom and where we may want to enhance our teaching focus and research efforts in the future.

Alignment between Teachers and Textbooks

There are relationships encompassed in the perceptions about technical communication, what we teach in our classrooms, the content included in textbooks and the role of technical communicators in the workplace. Thus, each one influences the others. As expected, there is a correlation between how collaboration and teamwork are covered in textbooks and what is being taught in classrooms. The ten most popular textbooks all include collaboration and teamwork skills in some manner, although some more than others. This approach is mirrored in the classroom. In both places, collaboration skills typically align with the process/task, interpersonal and personal skills framework. The relative attention to each skill type is similar in textbooks and the classroom and it is clear from teachers’ comments that the ideas that textbooks focus on are underscored in the classroom. In addition, specific concepts and skills receiving the most attention in textbooks are also those highlighted in classroom instruction and activities.

Collaboration and teamwork textbook content and classroom instruction emphasize process/task skills over interpersonal and personal skills. In many cases, textbooks focus on the
role of technical communicators as document creators engaging in collaboration by completing tasks in meetings and project administrative processes. This includes activities such as meeting scheduling, note-taking and managing document versioning. In some cases, classroom collaboration activities may highlight these same skills. Technical communication teachers, however, tend to view other skills, specifically interpersonal and personal collaboration skills, as equally, if not more, important.

Conflict management/resolution is one of the primary interpersonal collaboration skills emphasized and addressed similarly in both textbooks and classrooms. A significant divergence appears, however, between textbooks and classroom instruction for other interpersonal skills such as leadership, feedback, and accountability. At first glance, it may seem like a difference in terminology such as “leadership” compared to “team management” as discussed earlier. Upon closer analysis, however, textbooks are currently placing greater emphasis on the tasks associated with these collaboration skills. For example, as noted earlier, many textbooks present team leadership as leaders’ tasks rather than leadership skills. Many teachers, however, view leadership as an important collaboration and teamwork skill for technical communication students and their related classroom activities seem to outpace textbooks with these concepts. For instance, teachers talked about delegation skills (even if teachers did not explicitly name them as such) in the context of encouraging others’ growth rather than simply completing tasks yourself. Many also referenced the difference between acting as a team leader in an official capacity (with the title of team leader) compared to performing as a team leader through influence. Some teachers even referenced or named specific leadership strategies such as quiet leadership and servant leadership. As a result, I think that the kind of classroom approaches to interpersonal
collaboration skills that the surveyed teachers reported should have a greater influence on textbook content.

The workplace values collaboration and teamwork and we see this echoed in technical communication classrooms and textbooks. Both teachers and textbook authors have the opportunity to influence perceptions about the role of technical communicators in these areas. By shifting the approaches to collaboration in textbooks, authors can influence what textbooks bring to the classroom. In many cases textbooks teach students how to complete processes related to collaboration skills, but they are not focusing on the skills themselves. As noted earlier, this might include presenting a feedback process without discussing how to provide effective feedback within that process. If textbooks transition attention from processes to the skills necessary to execute these processes, it will be easier to make this transition in the classroom as well. As a result, we can expand the contributions of technical communicators to team projects. By placing greater emphasis in the classroom on the interpersonal and personal skills that teachers believe are most important, such as communication, leadership, feedback, empathy and adaptability, we can shape the collaboration abilities that students bring to the workplace and ultimately how others perceive technical communication.

**Future Focus on Teamwork and Collaboration**

Survey responses from teachers and textbook content also provide some ideas for additional classroom focus and academic study. Similar to textbooks, teachers highlight the value of collaboration and teamwork in the workplace and recognize differences between the classroom and professional situations. We need to consider how we are positioning the relevance
of collaboration and teamwork as well as how we are presenting the role of technical
communicators in the classroom. A good starting point may be examining our own viewpoints as
these perceptions directly influence our teaching. It appears that some teachers, perhaps
unknowingly, may think about collaboration as a set of challenges more frequently than a set of
opportunities. In addition to influencing how students perceive collaboration and teamwork, this
viewpoint may drive the skills we choose to teach. Looking at the survey results, I found that
many teachers focused on conflict management and meeting processes and, as a result, students
are spending most of their time learning how to address the symptoms of ineffective
collaboration and teamwork. If we can redirect our focus to collaboration skills such as
leadership and accountability, we have an opportunity to minimize poor collaboration
experiences and reduce the need to focus on conflict management. Instead, we will have more
time to build students’ interpersonal and personal collaboration skills setting students up for
future success in these areas. Beyond our own viewpoints, we should also consider students’
existing perceptions and collaboration or teamwork experiences. Anecdotally, we know that
many students have had negative experiences and may look at collaboration and teamwork as a
challenge. At a minimum, acknowledging these views can help guide classroom discussions and
lead us to remove barriers to successful collaboration.

We should also enhance our definitions of teamwork and collaboration skills. When we
look at the responses of teachers about important collaboration skills, we see that teachers often
expressed these skills as general concepts or vague actions. While this may be a result of the
survey questions not requiring that teachers provide specific definitions, I did not find much
explicit or detailed information in the textbooks either. Perhaps, this lack of detail is caused by a
need to broadly cover a wide range of topics or because we have not recognized that this lack of
detail may influence what we teach. Regardless, by creating more detailed descriptions of
collaboration and teamwork competencies, we will be better equipped to teach the appropriate
skills. More precise definitions of skills can also enhance our focus on interpersonal and personal
skills rather than process/task skills. For example, emphasizing leadership abilities can offer
students additional ways to consider their roles in collaboration and teamwork as well as give
them additional skills.

We also need to place greater emphasis and focus on personal skills. Looking at this
textbook corpus, we see that only one book points out the increasing importance of these skills.
This book emphasizes that flexibility, adaptability, resilience and leadership are important skills
for successful collaboration and teamwork; however, other textbooks do not assert a similar
significance of these concepts. As a result, teachers need to teach these concepts to students
rather than relying on textbooks to do it. While flexibility, reliability and empathy may be
considered personal traits, it makes sense to cover them in the classroom as there are still aspects
of these traits that students can learn. Although incorporating these skills into our teaching
approaches will likely require more creativity and time, we can and should incorporate these
skills into classroom activities and assignments. For example, we might consider how to insert
elements requiring flexibility into assignments addressing real world scenarios or incorporate
opportunities to demonstrate empathy into self-reflective activities.

Finally, looking specifically at collaboration and teamwork skills necessitated by
distributed teams, the COVID-19 pandemic certainly highlighted their importance. While
teachers said they are more aware of virtual collaboration skills, the pandemic introduced many
of its own challenges and led teachers to be more reactive than proactive when teaching virtual, remote, or distributed collaboration. There are, therefore, significant opportunities to explicitly integrate this type of collaboration and teamwork into our teaching practices. Although textbooks may emphasize virtual collaboration more than teachers in the classroom, the terminology they use may not give students the full picture. Textbooks focus on virtual communication rather than the broad range of collaboration skills required by remote work, teleworking and distributed work. By expanding our textbook and classroom nomenclature and our teaching strategies, we can better represent and address distributed technical communication work.
CHAPTER 4: TEAMWORK EMERGING FROM EMERGING TECHNOLOGY: USING SLACK TO TEACH COLLABORATION IN THE TECHNICAL COMMUNICATION CLASSROOM

As I have discussed throughout this dissertation, technology plays a pivotal role in teaching collaboration. In Chapter 2, I presented a case study that examines the results of integrating workplace-based collaboration practices into an undergraduate technical writing course. I proposed four core elements of teamwork as the foundation for teaching collaboration and used these four elements as a guide for my instructional strategies. In this chapter, I examine the role that technology can play in supporting these foundational elements and developing the skills and competencies necessary for collaboration literacy. Specifically, I analyze the results of using a workplace-based technology platform in this same course.

Scholarly discussions are decades beyond debates about whether technology has a place in the technical communication classroom. As Selber (1994/2004) suggested in the early 1990s, we use technology in the classroom “to increase students’ marketability in business and industry, build skills important to technical communication activities, improve the quality of students’ writing, promote collaboration, and provide faculty with an opportunity to research issues related to computers and technology” (p. 458). Thus, technology has become an expected part of our pedagogy. More recent conversations focus on the types of technologies we use in the classroom and how we use them. Even when we narrow our view to collaboration-related technology, there are countless case studies examining productivity tools (such as PowerPoint and Google Docs),
wikis and blogging tools, and a wide variety of social media (Barton & Heiman, 2012; Chong, 2017; Ferro & Zachry, 2014; Thielsch & Perabo, 2012). Currently, technical communication scholars are taking an increased interest in emerging technologies such as team communication platforms (TCP) in organizations and in the classroom (Anders, 2016; Hill Duin et al., 2021). Slack is one of these platforms.

According to its website, “Slack is a channel-based messaging platform. With Slack, people can work together more effectively, connect all their software tools and services, and find the information they need to do their best work” (Slack Help Center, n.d.-g). In other words, Slack is technology specifically designed to facilitate collaborative work and communication. Slack’s usage statistics are impressive; Slack claimed more than 10 million users even before the COVID-19 pandemic (Slack, 2019) and Slack is becoming part of academic conversations about teaching technical and professional communication. In fact, Hill Duin et al. (2021) include Slack in their discussion about the future of collaboration and suggest the possibility of using Slack in the technical communication classroom. When incorporating collaboration platforms such as Slack into our pedagogy, they suggest that “we should focus on the communicative affordances of the collaborative software platform along with how each platform supports community and team development” (Hill Duin et al., 2021, p. 181). In essence, my work attempts to answer their call.

In this chapter, I examine how incorporating a team communication platform into an undergraduate technical communication course can contribute to students’ collaboration literacy. I chose technology specifically designed for the collaboration competencies I was trying to develop. Slack was created to facilitate workplace teamwork and collaboration. Thus, I studied
how students used Slack as they collaborated on team projects and their interactions within the Slack environment. My goal was to answer these research questions:

- How do students engage in collaboration when a team communication platform, like Slack that is designed for the workplace, is used in the classroom?
- How can workplace-based technology created specifically for teamwork and collaboration contribute to developing technical communication students’ collaboration literacy?

While some might argue that existing classroom technologies can serve the same purposes as Slack, I do not believe that the students I studied would have interacted in the same manner if we had only used existing or traditional classroom technologies. Although I did not study students in this course attempting to collaborate on team projects using only our learning management system (LMS), my past teaching experience has shown that the tools available for collaboration in an LMS have not fostered proactive discussion, idea sharing or feedback unless I prompted students, or it was part of an assignment. By integrating a technology platform that is specifically designed for team collaboration, I hoped that students would be more apt to view collaboration as a natural and ongoing part of the course (and technical communication) rather than simply as a requirement for a particular assignment.

In this chapter, I begin by looking briefly at some types of technology and the ways we incorporate them into the technical communication classroom. Then, I share my approach to using Slack in a technical communication course. My primary focus, however, is analyzing how students in this course used Slack in their team projects and how their interactions and behaviors reflected teamwork and collaboration. With my interest in collaboration in distributed work, I
chose to study students using Slack for team projects when the students were physically distributed and working together virtually.

The results of this case study indicate that in this particular course using workplace-based technology specifically designed to foster team collaboration and communication can positively contribute to the teamwork and collaboration competencies of students. Rather than teaching students about team collaboration technology or how to use it, I chose to incorporate Slack as a means to facilitate collaborative projects. Using a team communication platform (TCP) like Slack offered additional opportunities for students to interact and fostered collaboration that likely would not have occurred if students had only used more traditional types of collaboration technology like collaborative communication tools, publicly available online services (PAOS), and online collaborative writing tools (OCWT)\(^1\). In this course, I observed teamwork and collaboration skills emerge organically as students used the Slack technology. Through their collaboration in Slack, students engaged in the four core elements of teamwork – responsibility, accountability, relationship building, and communication. As I examined the behaviors of students within Slack, I was able to identify important collaboration and teamwork skills, and specific aspects of the Slack environment that influenced how the students interacted. As a result of this study, I will continue to use team communication technology, such as Slack, when I teach this course in the future. In addition, I believe this study suggests that incorporating workplace-based technology aimed at facilitating the types of skills we are looking to teach can offer valuable learning opportunities and warrants further research.

\(^1\) These collaboration technologies are further defined and discussed in the next section.
Types of Collaboration Technologies

There is a wide variety of collaboration technologies that generally fall into a few categories. Within technical communication scholarship, these categories include collaborative communication tools, publicly available online services (PAOS), online collaborative writing tools (OCWT), and team communication platforms (TCP) (Anders, 2016; Behles, 2013; Ferro & Zachry, 2014). As I considered the role of collaboration technology in my technical communication course, I wanted to better understand the technologies within these categories as well as how students and technical communication professionals might typically use them.

Behles (2013) defined online collaborative writing tools (OCWT) as “tools that allow users to work collaboratively on writing projects through digital media” (p. 30). When she surveyed practitioner and student use of these tools, she explicitly described them as “[ranging] from real-time collaboration tools to tools that include communication or scheduling functionality…[but] excluded tools used solely for communication (such as email, instant messaging, or voice over Internet protocol programs)” (p. 30). As a result, I defined collaborative communication tools as email, text messaging, and instant messaging. Using Behles research, I included Microsoft Office 365 (including online versions of Word, PowerPoint, and Excel), Google Docs, Microsoft SharePoint, and wikis in OCWT. Unlike Behles, however, I classified the learning management system (Blackboard2 in this course) as academic technology. For this

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2 This includes Blackboard Collaborate.
course, I included VoiceThread\(^3\) in this same category. When Behles asked students how they used OCWT, the three most common uses were for collaborative writing, document management, and asynchronous work on a collaborative project. Behles also noted that “the tools were used for real-time collaboration roughly half as often as asynchronous work” (p. 38). Thus, OCWT appear to be used most often for collaborative document creation and projects where work may be completed independently and then consolidated.

In an annual study of the technology use of knowledge workers, Ferro and Zachry (2014) used a relatively broad definition of PAOS as applications outside “enterprise-sponsored, proprietary systems” (p. 6). Their survey asked respondents to identify PAOS, so the list of technologies in this category is long. Twitter, LinkedIn, Facebook and Google Docs were at the top of the list. To clearly delineate categories, I equated PAOS primarily with social media technologies including the top technologies from Ferro and Zachry’s survey and others such as Snapchat and TikTok. When knowledge workers were given a list of tasks, “the task-activity types that most participants reported doing with PAOS were developing associations (62% of participants listed a site) and learning about a topic (60% participants listed a site)” (Ferro & Zachry, 2014, p. 16). Working with others was one of the least frequent uses and the technologies primarily listed for these tasks were Google Calendar and Google Docs. Since I classified Google Calendar and Google Docs as OCWT, it appears that PAOS may be the least used category when it comes to collaboration in professional contexts. The only exception is publicly available online video conferencing services such as Zoom, GoToMeeting, join.me and

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\(^3\) VoiceThread is a platform which enables users to upload documents and presentations, and provide audio comments. Students in this course used VoiceThread to create and comment on individual Project 4 proposals. In the spring 2020 course, some teams also used VoiceThread to create their final team presentations.
Google Hangouts. Due to the COVID-19 pandemic, video conferencing use has increased significantly. For example, Zoom’s daily meeting participants grew from 10 million at the end of 2019 to 300 million in April 2020. (Zaveri & Gould, 2020).

Finally, there are team communication platforms (TCP) which include technology platforms such as Slack. Anders (2016) defined TCP as:

Messaging services the support collaborative discussions organized into groups or topics. Yet these platforms integrate features of multiple media: the accessibility and immediacy of IM [instant messaging]; the flexibility of group conversations organized into dedicated channels or rooms as Internet chat relay; and, the social connectivity and media sharing capabilities of SNPs [social networking platforms]. Most significantly, TCPs support integrations for a growing collection of third-party technologies including diverse types of specialized ICTs [information and communication technologies]. (p. 226)

At a high-level, TCP combine different types of collaboration technology into a single platform. As a result, TCP can facilitate the collaborative communication, collaborative writing, and the social networking that are included in collaboration. Since there is extremely limited research about TCP in technical communication, an early adopter study indicated that one of the most prevalent reasons for using a TCP was “to better support virtual collaboration…In general, the communication visibility enabled by TCP was argued to bridge gaps between virtual teams and create a stronger sense of social engagement” (Anders, 2016, p. 240). In this technical communication course, I was focused on teaching skills that went beyond collaborative writing and gathering information. I took a broader perspective on collaboration, which included the four core elements of teamwork (responsibility, accountability, relationship building and communication). I wanted to expand students’ exposure to what it means to collaborate and how technology can facilitate effectively working with other people. As a result, I chose to use a TCP, specifically Slack, in this course.
When we think about incorporating technology into the technical communication classroom, we typically do so from two perspectives – technology as content and technology to facilitate content. Since the early days of technology in the classroom, technical communication teachers have been encouraged to ask students to critically engage with technology so that students can understand the impacts of using technology and implications of their actions within a technology environment (Selfe & Selfe, 1996). More recently, there are studies integrating social media into pedagogy aimed at getting students to critically engage with the technology or to encourage students’ use in the same manner as professional contexts (Verzosa Hurley & Kimme Hea, 2014; West, 2017). Social media technology has also been used in the classroom as a means to critically examine the relationship between social media and rhetorical practices. In one study, students examined tweets to study how people establish ethos in Twitter (Bowden, 2014). In these cases, the instruction focused on teaching social media use. On the other hand, social media technology has also been used to facilitate other goals. In one study, Twitter was used to foster a sense of belonging in the classroom. While this study was aimed at increasing students’ persistence and retention, it also demonstrated incorporating technology into the classroom to achieve objectives beyond teaching students how to use the technology (Friess & Lam, 2018).

In this course, I integrated technology in both ways. Students learned about specific technologies and they engaged with other technologies to facilitate their learning. For example, students critically assessed the affordances and challenges of different social media technology during an instructional unit on digital writing. In the course’s visual design unit, students learned
how to use online design technology. On the other hand, students used blogging technology to facilitate their learning about how to participate in interactive published communication and used video conferencing technology to participate in synchronous virtual discussions. Regardless of whether I was explicitly teaching a technology or using technology to teach, pedagogy drove my technology decisions rather than the other way around.

As I thought about the role of technology in teaching collaboration literacy, I considered both perspectives; however, my integration of Slack in this particular course was primarily aimed at facilitating collaboration rather than teaching students how to use Slack. I did not want to teach students how to use specific collaboration technologies nor explicitly conduct a critical assessment of collaboration technology or its use within the context of technical communication. Therefore, the research that I conducted for this study does not critically assess the social values inscribed in Slack nor does it explicitly examine the inclusivity that Slack affords or subverts in the classroom. I always try to consider how my pedagogical decisions may affect diversity, equity and inclusion in the classroom, however, these considerations were not a primary focus of this research. As I will discuss, I considered how using Slack could support more inclusive collaboration in the classroom. When I decided to incorporate Slack into this course, I drew on social constructionist and situated learning theories and chose to use collaboration technology to facilitate students’ learning. My goal was to teach students collaboration skills; however, I wanted students to learn these skills by their participation in the collaboration process and incorporating collaboration technology into the classroom offered a means to do this (Lave &

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4 Blogs were hidden from search engines, so they were published only within the context of the classroom community.
Wenger, 1991). As noted in various situated learning frameworks, “useable knowledge is best gained in learning environments that...provide authentic contexts that reflect the way the knowledge will be used in real life” (Herrington & Oliver, 2000). Thus, I drew on my personal experiences and looked at technologies typically used within professional workplace contexts.

**Using Slack in the Classroom**

The idea to use Slack in the classroom came from my own workplace experiences. During my twenty-plus years’ corporate career, I held leadership roles in marketing, product management, product development and academic technology, where I was managing multiple teams and the majority of my time was spent working collaboratively with others. The technologies used at the various organizations where I worked offered a wide range of affordances as well as challenges. These technologies solved communication problems while at the same time caused others. For example, instant messaging technology facilitated real-time connection and collaboration, but the barrage of instant messages throughout the day was also a distraction as I tried to participate in collaborative meetings. In the mid 2010s, organizations were starting to use new technologies to address some of these needs and challenges. Changes to the way organizations were collaborating, particularly distributed and virtual collaboration, was giving rise to team communication platforms (Anders, 2016). Personally, I found that these types of technologies contributed to my productivity, effectiveness and ability to communicate as a collaborative and engaged team leader. So, when I began teaching technical communication, it seemed a natural fit to introduce this type of technology to my students.
When I decided to use Slack as part of my technical communication course, I considered it one among many technologies that students would use to engage in collaboration. Students were already using collaborative communication tools like email and OCWT like Google Docs and Microsoft Word. Students were participating in this course virtually so academic technologies like Blackboard and VoiceThread, and PAOS such as Zoom were a standard part of the course. The primary difference between Slack and these other collaboration technologies was that Slack could enable additional elements of collaboration beyond collaborative writing and information exchange. Furthermore, as Kastman Breuch (2002) suggested, when choosing technology for the technical communication classroom I considered that, “we want students to be capable users of technology who understand broader implications and the potential influence of technology on linguistic activities” (p. 280). As such, a TCP, like Slack, offered an opportunity for students to use technology while participating in the context of its use and experience the “linguistic activities” associated with communicating through it.

**Slack’s Affordances and Challenges**

The home page of Slack’s website highlights four key benefits including its channel design, file sharing, video and voice calling, and integrated applications. The Slack environment is a workspace which others are invited to join either via email or through an invitation link. (See Figure 2). I have a workspace dedicated to my technical communication course and each semester I invite students to join it. Students create individual Slack accounts to access the workspace.
Figure 2: Slack Workspace

The Slack workspace is organized by channels which offer dedicated spaces for individuals to communicate about particular topics. My course workspace has channels for different class sections, project teams, and even some specific course activities. Channels provide a single location for all channel members to communicate, share information and engage in threaded conversations (Slack Help Center, n.d.-f). In addition to channels, Slack also enables anyone in the workspace to communicate privately through direct messages. (See Figure 3). By using Slack and providing students with a single location to communicate about project work, I was able to help minimize confusion and contact challenges which can typically occur in classroom team projects.
Figure 3: Slack Channels and Direct Messages

Within channels, users can post messages, attach files, and participate in audio and video calls. When others have posted a message, a user can reply by posting another message or initiating a threaded conversation. In addition, users can respond to messages using emojis and emoticons, which I will discuss in more detail later in this chapter. Users can also pin important messages which highlights the message in the conversation and allows users to quickly access pinned messages in the channel. (See Figure 4). Slack offers multiple ways to share files and information. Files can be shared directly in Slack or through Dropbox, Google Drive and OneDrive. When a user includes a file, a preview of the file appears directly in the Slack conversation (Slack Help Center, n.d.-a). Users can even make video and audio calls to anyone in the workspace directly within Slack. In addition, users can search in a Slack channel for previous messages or files. Through these Slack features, students can easily respond to messages as well as find and access relevant project information.
Slack also simplifies connecting with teammates. Slack is available directly within a browser or users can choose to download a desktop or mobile app. Many students find it convenient to interact with their teams and have project information available directly from an app on their phones. There are also built-in notification features including desktop, mobile and email notifications. When someone is using the Slack desktop app, messages pop-up when activity occurs in one of their Slack channels. Mobile notifications display if someone is not active in their Slack desktop app and email notifications are sent when an individual is completely inactive in Slack (Slack Help Center, n.d.-d). With access via their browser, computer and phone, Slack gives students the flexibility to participate in team activities in whatever way makes the most sense for their personal, school, work and home schedules and obligations. In addition, notifications provide an automatic means to get in touch with teammates and make it easier for students to keep current with their team project activities.

In his review of TCP, Anders (2016) indicated that a TCP like Slack can address some of the limitations of social networking and instant messaging platforms. He believed that by combining social networking and messaging with additional features, technology like Slack “has
the potential to amplify the benefits of communication visibility for the essential functions of effective social collaboration: knowledge sharing, social engagement, collaboration and team communication, and attention allocation” (p. 234). As a result of his research, Anders also identified some of the challenges associated with TCP. He noted challenges which can occur when the TCP is not adopted by an entire organization and its potential for information overload. In the context of the technical communication classroom, these challenges are less significant given the limited scope of projects and assignment requirements. Given that I was using Slack as a means to facilitate collaboration in a controlled classroom environment, the benefits outweighed the potential challenges.

**Methodology**

To examine the role workplace-based technology created specifically for team communication can play in teaching teamwork and collaboration skills, I analyzed how undergraduate technical writing students used Slack when completing team projects. Since I wanted to study collaboration for distributed and remote teams, I chose to examine two semesters when students were physically distributed (spring 2020 and fall 2020) and studied approximately 50 students each semester. Specifically, I analyzed how students used Slack and the details of their interactions within the Slack environment.

Students were required to create individual Slack accounts and use Slack as part of their team project assignments. As I discussed in Chapter 2, there were two team projects in this course. In Project 3, teams created a digital communication plan, a small product launch website for an imagined product and a short project rationale paper. For Project 4, teams developed a
formal recommendation report, a project rationale and an oral presentation based on their report.\footnote{Team oral presentations were removed from this assignment in the fall 2020 semester due to time constraints.} I created separate Slack channels for each project team and added students to the appropriate channels. Other than creating their Slack accounts, students did not have to do anything to join their team Slack channels. Students had the ability to work in their team channels as well as in general class channels. Within Slack, students could also communicate with anyone in the class, including me, via direct message. To respect students’ privacy, I only studied interactions in the “public” team channels. I did not access or study any direct messaging either between students or with me.

As part of my analysis, I used three Slack-related questions from fall 2020 Project 3 and Project 4 team assessments. (See Appendix C for questions). These questions were not included in the spring 2020 team assessments; however, the responses to these questions were only a small part of my study. I used the data that I collected from the team assessments as context for studying the actual interactions of students within the Slack environment. The majority of my research examined the activities and text conversations in 63 Slack channels over the two semesters. In order to maintain the privacy of students, I have replaced all student names with pseudonyms throughout my results.

**Slack in the Classroom**

The first semester I taught this course, fall 2018, I introduced Slack to students as a tool to help with their collaboration. I asked students to create a Slack account, but I did not require
that they use it for the course. In my course Slack workspace, I created section and project team channels. During class, I showed students a brief Slack introductory video and demonstrated the basics. I also showed students how to create their accounts, manage notifications and download the Slack apps. I reminded students a few times during their projects about the benefits of Slack, but did not push anyone to use it. During this semester, two teams fully embraced using Slack for their projects. Upon later reflection, I noticed that these teams did exceptionally well on their projects and exceeded the performance of other teams.

The next semester, I introduced Slack in the same manner. Again, I made using Slack optional for the first team project; however, I shared the possible correlation between teams who had used Slack the previous semester and the quality of their final work. I also required that students use Slack for their second team project (Project 4) that semester. I found that the projects went more smoothly when students used Slack (they had far fewer challenges getting in touch with each other) and again, teams who fully embraced using Slack performed better on their final projects. As a result, I began requiring Slack use for all team projects in future semesters. In fall 2020 when the COVID-19 pandemic resulted in a 100% virtual course, I incorporated Slack as a required technology for the entire course alongside our learning management system.

Slack in the Classroom – Spring 2020

In spring 2020, I introduced Slack to students as I assigned their Project 3 teams during our last class meeting before spring break. Although we did not know it at the time, due to the pandemic, this was also our last face-to-face class. During class, I discussed Slack along with
some OCWT and PAOS including Microsoft One Drive and Google Hangouts to consider for their team project work. I also had students create their Slack accounts during class and suggested (but did not require) that they download the Slack desktop and phone apps. I did not assign any specific project work or Slack use over spring break.

When our class was moved online, I hoped Slack would help with team communications, so I created video instructions and posted announcements about how to download and use Slack notifications, tagging/mentions, desktop and phone apps. As students worked on Project 3, I encouraged them to communicate with their team through Slack and when we began Project 4, I gave students a “Project 4 Team Introduction” assignment using Slack. To complete this assignment, students went to their new project team’s Slack channel and introduced themselves, shared one positive thing they experienced or noticed during our stay-at-home period, skills they could/wanted to contribute to the project and their availability. Every student posted their introduction. As soon as the course moved online, I also encouraged students to contact me via Slack by tagging me (@mbockeastley) with any course questions or concerns. Although it is not a requirement for using Slack, I made a personal choice to be more frequently and readily available to my students. With Slack notifications on my laptop and phone, I was able to respond to students more quickly than via email. While outside the scope of this study, I think it is worth mentioning that many students used Slack to direct message me throughout the semester to ask questions, get clarifications and just check-in. I do not believe they would have done this with the same frequency if we had only been using collaborative communication technologies such as email or academic technologies such as our learning management system (LMS).
During the fall 2020 semester, I introduced Slack in our first synchronous class meeting and posted a video lecture about getting started with Slack. The first week I also gave students a Slack assignment. I asked students to create a Slack account and post a “show and tell” introduction. To support our first unit on visual communication, students introduced themselves and posted a picture that told a story about them. In order to make students more comfortable, I placed students in Slack channels with only five randomly selected classmates for their introductions. I also asked students to review the course syllabus and a graphic course overview from our first meeting, and post two questions and one thing they found interesting and/or exciting into a #questioncafe Slack channel. In addition, I created another Slack channel (#whenimnotstudying) with an optional assignment to share things that students like to do when they were not in class or studying. I suggested that students post thoughts and/or pictures about their free time activities. While users can control when and how they receive notifications, I chose to watch my Slack notifications and personally responded to all students’ posts as quickly as possible. I had multiple objectives with this first Slack assignment. I wanted to give students an opportunity to get comfortable with the Slack technology before the team projects and I also hoped it would offer students a means to connect with their classmates since they would not meet each other face-to-face. In addition, I wanted students to know that Slack was a fast and efficient way to contact me outside of class meetings, office hours and my university email.

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6 All Slack channel names are automatically created as #channelname.
Throughout the semester, I also used optional Slack channels for class activities such as #usabilitytestingparticipants and #creatingpersonas, but because I made working with others optional for these activities, only a few students chose to connect with their classmates through these channels. Similar to the prior semester, I also encouraged students to use direct messages and “mentions”\(^7\) to contact me with questions or concerns throughout the semester. While I received a few emails, the majority of my communication with students was via Slack. Like the previous semester, I believe that students reached out to me more frequently and asked for help on smaller things using Slack than they may have done if we were only using email or our LMS for communication. Once students started their team projects, we used Slack in the same manner as prior semesters. I created Slack channels for every team, added their respective team members and required students to use Slack as part of their team project assignments.

**Slack and Other Technology Use**

While Slack was mandatory for both team projects, I did not provide requirements for how students used it. Students were also free to use other technologies for their project work in addition to Slack. Based on prior semester observations, I had some idea about how students were using Slack as well as what other technologies they were using, but I wanted to hear directly from students. In fall 2020, I asked specific questions about Slack and other technology use in both post-project team assessments (Project 3 and Project 4). First, students were asked to indicate how their team used Slack for that particular project. Options included to direct message

\(^7\) More information about using Slack mentions appears later in this chapter.
each other, to collaborate on times to meet, to collaborate on their work, as a means to get status updates, to share work and documents, to hold meetings, and to ask me questions about the project. Students were asked to check all uses that applied to their team. (See Table 16).

Reviewing the responses from students, I noticed inconsistency within teams. On some teams, members answered differently. The differences may be a result of students only checking those things they personally did in Slack or something else. For purposes of this study, I was primarily interested in general trends, so I noted this point for possible future analysis.

Table 16: Team Use of Slack for Projects

<table>
<thead>
<tr>
<th>Slack Use</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Across Both Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>To direct message each other</td>
<td>74%</td>
<td>84%</td>
<td>79%</td>
</tr>
<tr>
<td>To collaborate on times to meet</td>
<td>58%</td>
<td>84%</td>
<td>71%</td>
</tr>
<tr>
<td>To collaborate on our work</td>
<td>56%</td>
<td>80%</td>
<td>68%</td>
</tr>
<tr>
<td>As a means to get status updates</td>
<td>74%</td>
<td>82%</td>
<td>78%</td>
</tr>
<tr>
<td>Shared work and documents</td>
<td>63%</td>
<td>82%</td>
<td>72%</td>
</tr>
<tr>
<td>Held some of our meetings</td>
<td>19%</td>
<td>25%</td>
<td>22%</td>
</tr>
<tr>
<td>To ask instructor questions about the project</td>
<td>44%</td>
<td>66%</td>
<td>55%</td>
</tr>
</tbody>
</table>

Since Slack was required, I was not surprised that students used Slack in a variety of ways. For Project 3, the majority of students used Slack to direct message each other and to get status updates. The next most common use was sharing work and documents. During Project 4, students used Slack most often to direct message each other and to collaborate on times to meet. These reasons were closely followed by students using Slack to get status updates and share work and documents. Overall, students increased their use of Slack for all of these purposes between Project 3 and 4. Interestingly, just over 50% of students indicated that they used Slack
to collaborate on their work for Project 3, while 80% used it for work collaboration on Project 4. Since I did not have follow-up data, I could only guess about reasons for this result. One possibility is that students discovered benefits from using Slack in their first team project and applied them to the second project. Another possibility is that students identified activities differently in the second project, meaning that they considered more of their interactions as collaboration than in the previous project. Getting a better understanding about how students define collaboration may be a future research opportunity.

The post-project team assessments also asked students to indicate whether they used other technology besides Slack, and if so, which ones. While the question did not explicitly ask about collaboration technologies, the responses (both provided in the survey and written in by students) implied collaboration technologies. Approximately 85% of students said they used other technologies in addition to Slack for their team projects. If students responded that they used other technologies, they were presented with a list of possible technologies and the opportunity to enter “other.” I provided a list of technologies based on what students had used in past semesters and respondents were asked to check all that applied. (See Table 1). These options included Blackboard Collaborate, Zoom, Google Hangouts, Microsoft Word, Microsoft One Drive, Google Docs, SnapChat, and Discord.
Of the students who reported using other technologies in addition to Slack, they used Blackboard Collaborate and Microsoft Word most often. I expected this since these technologies are used for different collaboration purposes than Slack. I was surprised that the percentages were not higher. Since students were required to submit a collaborative written document, I also expected that Microsoft Word, Google Docs or some other type of word processing technology would have been used by everyone. Given that these students were working virtually and had never met each other face-to-face, I was pleased to discover the high percentage of students who chose to use video technology for their team projects. Combining Blackboard Collaborate, Zoom, Google Hangouts and Microsoft Teams (written in as “other”), approximately 70% of students used video to collaborate with their teams. Blackboard Collaborate was used for class meetings which likely accounts for students using it more than other similar technologies. One interesting note is that even the small percentage of students who chose to use technologies such as Discord and SnapChat (which provide some of the same capabilities as Slack) during Project 3 did not use them during the next team project. This seems to imply that once students used

<table>
<thead>
<tr>
<th>Technology</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Across Both Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blackboard Collaborate</td>
<td>49%</td>
<td>34%</td>
<td>41%</td>
</tr>
<tr>
<td>Zoom</td>
<td>14%</td>
<td>11%</td>
<td>13%</td>
</tr>
<tr>
<td>Google Hangouts</td>
<td>2%</td>
<td>20%</td>
<td>11%</td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>37%</td>
<td>55%</td>
<td>46%</td>
</tr>
<tr>
<td>Microsoft One Drive</td>
<td>28%</td>
<td>41%</td>
<td>34%</td>
</tr>
<tr>
<td>Google Docs</td>
<td>30%</td>
<td>32%</td>
<td>31%</td>
</tr>
<tr>
<td>SnapChat</td>
<td>9%</td>
<td>0</td>
<td>5%</td>
</tr>
<tr>
<td>Discord</td>
<td>12%</td>
<td>0</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>30%</td>
<td>14%</td>
<td>22%</td>
</tr>
</tbody>
</table>
Slack, they realized that it eliminated the need to also use these other similar technologies. Since they were required to use Slack, I could not say that students found Slack a better technology but rather that they may have recognized and eliminated redundant technology use. While the data from these survey questions did not provide many insights by itself, it provided helpful context as I analyzed the use and interactions of students within the Slack environment.

**Teamwork Emerged from Slack Interactions**

I was interested in more than what students said they did in Slack, so I analyzed what they actually did in Slack and, more importantly, how they went about doing it. Since students were working virtually, technology was the only way they were able to communicate. Furthermore, given the pandemic, there were not any options for them to meet face-to-face. I found that every team demonstrated some element of teamwork in their Slack interactions. As I examined students’ Slack channel conversations, I identified six specific competencies related to collaboration that emerged organically as students worked together and used the Slack platform features. As a reminder, I am defining competencies as a combination of skills (or abilities), knowledge and behaviors. The competencies I found are:

- Managing project logistics
- Encouraging participation and giving everyone a voice
- Sharing information and collaborating on ideas
- Providing feedback and positive reinforcement
- Creating common connections
- Resolving conflict
In addition, I observed that it was possible for students to use Slack to coordinate team activities without actually engaging in collaboration. Each of the competencies that I discovered reflects at least one or more of the four core elements of teamwork (responsibility, accountability, relationship building and communication). I also recognized that there are specific affordances of the Slack environment that seemed to facilitate the skills and behaviors inherent to these competencies.

In the remainder of this chapter, I will present detailed examples of how the six competencies emerged, then discuss how these examples reflect the foundational elements of teamwork, and finally I will point out the specific aspects of the Slack environment that I believe support and helped develop these competencies. Through Slack, students engaged in collaboration and had the opportunity to practice and refine their skills while at the same time observing and learning from others. Although students may have used additional technologies, I believe their channel interactions demonstrated that Slack facilitated these behaviors, which may not have occurred otherwise. Thus, TCP like Slack can positively contribute to students’ teamwork and collaboration skills, especially when they are not physically located in the same place.

**Managing Project Logistics**

Generally speaking, all teams used Slack to manage project logistics. Teams coordinated meeting times, posted links to shared documents, and confirmed assignment submissions. My

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8 In this context, I am defining logistics as administrative activities associated with project work and other mechanics of getting collaborative work completed.
only instruction to students regarding Slack was that they were required to use it. I told students that Slack offered the abilities to instant message/chat, attach documents and use external applications like Google Hangouts, but I did not direct them on specific uses. Without explicit instruction, students consistently used Slack for one of its primary purposes – as a single designated means to communicate with their team members.

For some teams, communication equated to coordinating the mechanics of getting their collective work done. Students shared schedules and engaged in brief conversations to set meeting times. Although some teams just discussed meeting dates and times, it was not unusual for students to share what they were doing or why they were not able to meet at a certain time, even when the reason was more personal. For example, as her team was trying to figure out when to meet, Kayla responded in Slack, “hey guys, so I actually have to drive to Elgin for a rehome of my parent’s cat. Could we do later that day?” In another example, a student even shared, “be right in, just running to pee quick.” Similarly, students also used Slack to keep teammates updated if they were running late for a meeting, having computer issues or were unable to attend. As his team’s meeting was starting, August appeared in their Slack channel writing, “aye, ima be home literally in 3 mins, my bad, I had work guys.”

Using Slack offered students a clearly defined way to contact their teammates and an easy means to do so. With the option of Slack apps on their phones and computers, students were able to communicate at times that may not have been possible otherwise. If they missed team meetings, students also used Slack to get information they missed and to step-up and meet team needs even when they had

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*Quotes from student’s Slack conversations appear as they were written. In situations where students entered multiple consecutive messages, the posts have been combined and separated by periods which may not have been present in the original post.*
scheduling conflicts. Without any prompting from his teammates, Samuel posted in his team’s Slack channel:

Yeah I just got off work 😊 so I just need an update on the Initiation Activity sheet\textsuperscript{10} posted in here, looks like the questions are answered so is there anything I can do? I want to contribute as much as I can since I’m going to get 4 teeth removed tomorrow and I’m going to be out for the day.

In this example, the student was able to communicate with his team (likely via his phone) as he finished work, look at their collaborative work, offer his help and let his team know that he was going to be unavailable the next day - all at the same time and in one place. In my experiences with student teams in similar situations, students who did not have Slack-like technology available were less likely to communicate with their teams and there was a greater occurrence of students disappearing and dropping their team obligations.

Beyond team meetings, students used Slack to give and receive status updates on their work. While Slack provides the ability for students to easily integrate calendar applications such as Google Calendar and Microsoft Outlook, and project management tools such as Trello into their team channels, students did not choose to do so. Instead, students shared the project planning document from class and provided updates in their Slack team channels. (See Figure 5).

Again, in other classroom situations without this type of technology available, students may have been less likely to proactively provide status updates, especially if they were falling behind.

\textsuperscript{10} The Initiation Activity was an assignment within Project 4. Teams were asked to create and document team guidelines, determine a one-sentence problem statement for their project, identify at least 3 possible solutions, identify at least 3 criteria for measuring/evaluating solutions and develop a high-level research plan.
Besides the ease of communication, Slack’s ability to facilitate interactive and rapid response about assigned project tasks allowed teammates to offer support and respond positively, thereby potentially encouraging this behavior to continue. In one example, Kayla was behind on something she was supposed to complete, so she posted this message in her team’s Slack channel:

KAYLA: I am working on the decision criteria. I should have it completed tonight so that we can write all of our solutions. I have three other final papers I am working on too so please bear with me and my late nights. Lol. They are all three due tomorrow night too.

DREW: Take your time, no worries at all. Health and sleep is the most important.

Drew’s response likely contributed to his relationship with Kayla and may have set a team culture of honest updates and positive response. Teams also used Slack to confirm when something was due and who was submitting it. Many teams posted in Slack prior to submitting a
team assignment to confirm that team members did not have additional feedback or modifications before submission. One team took this approach one step further as they coordinated their final material reviews (including drafts) to ensure everyone had a chance to review work and agree to the submission. This team came together in Slack to collaborate on their final submission.

AIDEN: @Hannah I will turn in the final report, that way you are not waiting on me. @channel Can everyone have their edits done by this afternoon? I want to have the final format done by 6 and then you guys can look at it and give me feedback. I would like to turn in the report by 8 tonight. Thanks everyone.

JONATHAN: 👍

KASEY: 👍

SAWYER: I am done with edits.

AIDEN: 👍

KASEY: I just looked over the report one last time and made a few edits. @Aiden I will make sure to check Slack around 6 to provide one last round of feedback before we turn it in.

AIDEN: 👍

Later that day, Aiden mentioned the channel (@channel) to let his team know he finished his edits and stated, “any feedback would be appreciated.” Kasey came back to Slack as she promised earlier and conducted a final review. Aiden turned in the final report and the team immediately responded with thumbs-up emojis and Sawyer’s additional message, “Awesome. Thanks Aiden and good job everyone, enjoy your break!!” Through Slack, this team was able to effectively collaborate on their final submission. They used the Slack “mentions” feature to keep

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11 Using @person’s name sends notification of a message to that individual and highlights it in the Slack conversation.

12 Using @channel sends notification of a message to every individual in the channel.
the entire team involved in their final review and used Slack’s reaction emojis to support their collaborative work. While it may have been possible to use collaborative communication tools such as email or OCWT such as a shared Google Doc to accomplish the same thing, Slack appeared to afford all team members an opportunity to contribute final edits through streamlined and interactive communication.

In addition to managing project logistics for meetings, status updates and assignment submissions, almost every team used Slack to share project documents. Their approaches to document sharing varied, but it seemed that teams used Slack as the central point for communicating about their work product documents. Some teams chose to use Slack’s integrated Google Doc and Microsoft features. In these cases, students posted the shared documents directly in their teams’ Slack channels. Team members were able to click on these shared documents and access them from within Slack. In other cases, students shared links to collaborative documents including Google Doc, Microsoft OneDrive and SharePoint links. (See Figure 6). In addition, during Project 3, teams shared links to their websites as they were creating them, so their teammates could view and provide input to work in progress.

Figure 6: Document Sharing in Slack
Encouraging Participation and Giving Everyone a Voice

Many students used Slack to interact with their teams in ways that extended beyond project logistics. Some of these interactions encouraged participation from everyone on the team and supported giving every student a voice. As I have already mentioned, all students were required to create a Slack account, therefore everyone had access to a single environment and the same communication methods. As long as a student had access to the Internet, they had the ability to communicate via Slack. Every student has the same system permissions to add applications, share documents and participate in conversations in Slack. In addition, because Slack conversations persist in channels, students with intermittent Internet connectivity were able to read and engage in team conversations, even if they were unable to do so in real time.

Team SpeakUp was a five-person team working together on a recommendation report for a local VFW (Veterans of Foreign Wars) organization. Similar to other teams, Team SpeakUp used Slack to manage their project logistics including meeting times, document sharing and status updates. They also used Slack to continually check-in with each other and make sure that decisions and final work completion did not occur without giving everyone on the team an opportunity to participate. Although this approach could have potentially impeded decision making or individual accountability, it seemed to have the opposite effect. As I analyzed their Slack conversations, every team member seemed engaged in making decisions about their joint work.

Team SpeakUp used Slack’s features to encourage participation from each team member. As soon as the students posted their required introductions, Claire responded by posting,
Nice to meet everyone! @Tina I’m so jealous. By the time I’ve been done with work I haven’t even had the brain power to write for Nano. @Carter It seems we live in the same area. @Samuel That is so cool. What kind of press is it? Do you draw the designs yourself? @Brooke I am also excited for the holiday seasons! Is there a particular favorite tradition you have?

Claire addressed a specific point from each person’s introduction and also started the team’s use of Slack’s mentions. According to Slack’s website, mentions (or @personsname) notifies a person that they should check Slack. Using @channel will notify everyone who is part of the channel (Slack Help Center, n.d.-e). Regardless of whether a student accessed Slack through a browser, desktop or mobile app, by default they received automatic notification whenever they were mentioned. If someone was not online or used only Slack’s browser version, they received an email for each mention (Slack Help Center, n.d.-b). In addition, all mentions are highlighted in blue within Slack conversations and mentions with a person’s name are highlighted in yellow. This means that even if students did not see an external notification, they could immediately see and engage in any conversation where they were mentioned as soon as they were in Slack. Team SpeakUp continuously used mentions to contact each other and get input from every individual.

In addition to using mentions, this team’s conversations demonstrated their dedication to giving everyone a voice. Early in their work, Claire states, “I personally feel we should wait until we have some responses from the rest of the group.” A few weeks later, in a conversation with Brooke, Tina writes, “it’s not due until Sunday so we can wait a few days to see what everyone thinks before we submit.” As a result, the rest of the team responded in Slack to give their input, even if it was as simple as “sounds good.” When Team SpeakUp was collaboratively writing a document, they also used Slack to offer additional collaboration opportunities. For example, Tina says, “I can also just drop the document questions here and everyone can respond when they
have time.” Setting this team norm, students appeared to become comfortable giving their input and contributing to team decisions through Slack posts. In another conversation, Tina provided a link to a Google Doc and stated, “if you want to see my input if y’all meet today without me that way you guys are free to make any decisions because you’ll already have my thoughts.” As a result, Tina had a voice in the collaboration and simultaneously empowered her team to make decisions without her attendance. These examples indicated that Slack or other TCP technology can facilitate students’ learning and team-based collaboration skills such as speaking up with ideas, encouraging input, considering others’ views and active decision-making.

**Sharing Information and Collaborating on Ideas**

As noted earlier, many teams used Slack to share information. In addition to posting documents or links to documents, students also posted research sources, project technology support and ideas to address assignment requirements. In Team ShareIt, Kendall used Slack to share helpful ideas that went beyond assignment requirements:

Hey guys, so I wanted to make this fun, so I created some icons for our app. There are 4 choices to choose from, this is nothing serious, I just thought this will help us get a visual of what our app could look like and help us write about it better with some visual representation.

![Icons](image)

Like many teams, Team ShareIt created their shared written work in Microsoft Word and posted the document to SharePoint. Instead of collaborating in the OCWT, however, Team ShareIt collaborated directly in Slack.
DRAKE: {link to SharePoint document} I made 3 [paragraphs], but I will cut it down to one. Just wanted groups opinion on which is the strongest.

CLAIRE: So I personally feel A. Though minus the last line. We should come up with a legit catch phrase/slogan and put that there. We’ve got “better grades just a scan away.” “you’re just a scan away from meeting your deadlines”. Let them rip. Lol.

Later in the project, the team engaged in the same behavior. They shared a Microsoft Word document and immediately followed it with this conversation:

CLAIRE: How many pain point quotes do we want here? 3? 5? I feel like more than 5 is too many but I have 3 now and it just doesn’t quite feel like enough? Whenever someone looks at it, let me know if I should add two more or more than two more.

KENDALL: I think to do four. They can be short and easy to describe or you can do two but have really specific detail in them but I feel like 3 would be good to have.

CLAIRE: Sounds good. I shall add another. I made them quotes that specifically reference student’s pain points.

Although I was unable to confirm with the team, it appeared that they found Slack a better means to collaborate than simply working in a shared document. Through Slack, Team ShareIt engaged in real-time idea sharing with immediate feedback. They collaborated through a conversation rather than a document.

Team ShareIt also chose to use the Slack’s calling feature. With Slack calls, students can start calls in a Slack direct message or channel. Clicking a “start call” icon starts the call and Slack posts a message to the channel letting everyone know a call has started. Others join the call by choosing “join” directly in Slack. Slack calls have audio, video and screen sharing. In addition, students can invite someone else to a call they have already started (Slack Help Center, n.d.-c). This means teams could use Slack to invite me to video meetings in progress to help them, as a team, at the moment they needed it. Team ShareIt initiated Slack calls each time they met. On the rare occasions when one team member did not join the call, Team ShareIt used Slack
to mention the person and find out if they were going to join the meeting. This team also
followed up each call by posting meeting notes in Slack. This allowed them to have a shared
written record of meeting discussions, decisions and actions, and catch up those not in
attendance. In addition, the team could use Slack’s search capabilities to search and reference
their meeting notes throughout the project.

Some teams used Slack for even deeper levels of collaboration. In a rather detailed
correspondence, Team IdeaShare worked through an idea for their Project 3 imaginary product.
Sydney started some work during spring break and posted a SharePoint link with the Slack
message, “Hey guys, I’ve been brainstorming product ideas here. Feel free to add to the list and
comment here in a messaging thread to discuss what a good product would be.” As a result of
this post, Team IdeaShare began using Slack to share collaborative work and more importantly
engage in actual collaboration. When students returned from the pandemic-extended spring
break, Team IdeaShare immediately used Slack to collaborate and form a clear product idea
together. Sydney began by sharing her approach to creating the brainstorming document:

When brainstorming, I used the list that [the instructor] gave us…about what students
care about. My logic for whatever product we come up with is that it should be an app.
It's something every student can have access to and it will be easier to let our
imaginations run wild when "designing" it. If you need help narrowing what product we
might come up with, try thinking about things you think are important to a college
student. That's where my ideas stem from…If we went with my third option it would be
easy to add features onto it if we needed more “bulk” to our product, but it is also a
simple idea – would that be an issue in trying to “advertise”? Any thoughts? Any other
product ideas?

In this post, she prompted the team to focus on their goal, suggested an evaluation approach and
asked for her teammates’ input and ideas. Using Slack, Sydney modeled collaborative decision-
making skills and initiated team collaboration. As a result, Team IdeaShare worked together clarifying ideas and collectively arriving at a better solution:

ADAM: I guess we could also discuss how to customize everything for the third option.

SYDNEY: Like the features it would have? I can write something on that if you give me a few minutes

Sydney resumed their Slack conversation by posting some additional details. Adam responded and they engaged in a collaborative conversation continuing to share and refine ideas together.

ADAM: Is there a way to distinguish it from say just turning on airplane mode? I would also add a record of when you use the lock feature, like when you use it and how often you use it.

SYDNEY: I see your point. I guess with airplane mode you can turn it on and off whenever you want - maybe with this app there is no emergency disable feature? Maybe everything has a timer on it that doesn't let you change the setting till its done. And I like that idea of the activity log - it's a good way to keep track of your habits.

ADAM: Yeah we wanna make it more rewarding and useful. The apps would lock at certain times every day.

SYDNEY: Yes and they would give you a notification when everything was about to lock up so you are not confused by the sudden inability to use your apps. The times could always be changed and adjusted too, but not during the lock down. It's kind of like if google calendar and airplane mode had a baby.

ADAM: I think you can choose certain apps for this right?

SYDNEY: What do you mean by that? I'm not sure I understand what you're saying.

ADAM: Choose certain apps to lock.

SYDNEY: Yes you would be able to choose which apps to lock. You can choose all, some, or none. Like if I needed to keep the phone app (for phone calls) in case of an emergency, I could keep that unlocked, but I know for sure I won't need social media so I would just lock those.

ADAM: Ok got it.

They engaged constructively by asking clarifying questions and offering additional ideas. They came up with ideas together and collaborated to make their overall concept clear. Even in their Slack language, they demonstrated active listening through phrases like “I see your point.” They
asked good questions and clarified the questions if they did not understand. They were not
defensive in their responses. As a result, they practiced collaboration skills through a meaningful,
direct and open conversation. The next day Taylor joined the conversation and contributed
additional ideas:

    TAYLOR: I agree with what Adam said about it needing to be rewarding. I’m thinking
we could do like a point system. Maybe you could compare your time to your friends,
too? Kind of like how people compete with how many steps they put in each day.

    SYDNEY: 👍
    ADAM: We could do a share feature when it comes to accomplishments.
    SYDNEY: 👍

Team IdeaShare continued working together through Slack and even referred back to previous
conversations to further develop their ideas. As Sydney was working on the project, she posted,
“I’m starting to detail two additional features of the app – the activity log and the leaderboard.
The activity log 13is what Adam explained above a while ago, about tracking to see your habits.”
Taylor responds that it “sounds awesome.” After submitting their project draft, Team IdeaShare
used Slack to recognize that they came together and created a solid idea.

    Team IdeaShare also used Slack to collaborate in real-time as they designed their project
website. Adam started a Slack conversation with a work-in-progress link asking his teammates
for feedback. Looking at the work, they had a brief, yet productive conversation with specific
feedback and clarifying questions resulting in an action plan.

    TAYLOR: I like it. The green and pink color scheme works good and the font is clean. I
would say we could come up with a logo to replace the padlock, something that's more
relevant. I could try to make something.

13 The activity log referenced here is an element of the imaginary product that the students created and not a Slack feature or something that I provided students as part of this assignment.
ADAM: What are you thinking of?
TAYLOR: I was thinking something simple. Maybe two blocks, maybe with an S in one box and a B in the other.
ADAM: I’d be fine with that. Has to be something eye catching.

Thirty minutes later, they resumed their conversation and Taylor shared two logo design options. They chatted for a few moments and picked the one they liked best. In this example, they used Slack to have an efficient and meaningful conversation to move their work forward. If they were only using collaborative communication tools like email, this conversation likely would have taken much longer. In addition, their discussion may have been less interactive, if it occurred at all. Thus, Slack provided an opportunity to practice skills which may not have been used in other types of collaboration technology. Team IdeaShare continued to use Slack to share work-in-progress, provide constructive feedback, and work together on the project. As they submitted their final work, they congratulated themselves for their efforts:

    TAYLOR: Great job everyone!
    SYDNEY: Yeah good job all! I’m happy with how everything turned out!
    TAYLOR: Me too.
    ADAM: Good job y’all.
    TAYLOR: I would definitely download this app.
    ADAM: Yeah for sure.

Team IdeaShare also expressed pride in their work and potential value beyond this assignment. This conversation demonstrated that they were engaged and invested in their work as a team. Slack likely contributed by providing opportunities for Team IdeaShare to collaborate (work together) rather than to simply create collaborative work (work independently and then consolidate it together).
Providing Feedback and Positive Reinforcement

Slack also offered a means for teams to provide each other with feedback and positive reinforcement. In some cases, it seemed like more positive feedback than students would typically provide in other situations or through other types of technology. Team GoodJob offered each other continual positive reinforcement on their work and used language that connected them as a team. For example, when Leo shared his work on the first draft of his team’s recommendation report, his teammates responded positively:

   KELLY: I just read it and it sounds amazing so far. Keep up the great work!!!!!!
   LEO: Thank you!!! 😊 too bad there’s still so much to write up lol.
   KELLY: At least you have a really awesome start!!

This conversation modeled positive feedback skills and set a tone for the team’s collaboration. As a result, this positive approach continued with other team members. When Adrian posted work in Slack, Leo provided positive reinforcement in the same manner he had received it a few days earlier.

   LEO: Wow thank you!!!
   ADRIAN: NP
   LEO: Thank you for your service. Lol. You’re the real MVP lol.
   ADRIAN: Thank you lol.

As Team GoodJob worked together, they provided status updates and shared information. They also continued to provide encouragement and positive reinforcement by using Slack’s thumbs-up emoji 👍 to acknowledge posts and expressing gratitude through posting “thank you.” As they neared the end, Team GoodJob used their positive collaboration approach to push each other
through the project. Kelly posted her final edits and her team used positive language and Slack’s emoji reactions to support her work.

    LEO: Ok the cover is art. Wow I love it. Looks great. 🌟
    KELLY: ❤️
    ADAM: Looks pretty good. Did a fantastic job on it.
    KELLY: Thank you!!!!!!
    ADRIAN: It looks great @Kelly 👍
    KELLY: ❤️

When Adrian posted a link and asked for input to their final PowerPoint presentation, the team responded using the same approach:

    KELLY: It looks really great!!!
    ADRIAN: Thank you Kelly.
    LEO: It looks awesome! @Adrian. Same with your script @Kelly! You guys did a great job.
    ADRIAN: 😊
    KELLY: ❤️

In addition to their supportive words, Team GoodJob used Slack’s emojis and emoticons to offer encouragement.

    Similarly, Team MyReaction provided ongoing feedback using Slack’s reactions and emojis. In some cases, Team MyReaction collaborated like other teams where they shared ideas and posted further ideas and suggestions. But often they skipped written feedback and used Slack’s reaction emojis instead. Throughout their Slack conversations, many posts received thumbs-up or smiley face emojis to acknowledge them. This simple method allowed teammates
to support each other as they collaborated without having to create detailed responses. In one example, they used Slack to acknowledge their good work as a team:

LAUREN: Good meeting today 👍

ABIGAIL: 👍

MELISSA: 👍

KIMBERLY: I agree!

ABIGAIL: 👍

MELISSA: 👍

MELISSA: I agree; I think we’ve got a really good agenda going. 😊

Team MyReaction used the smiley-face emoji 😊 frequently although there was no set pattern to its use. In most cases, they appeared to use the smiley-face as a positive reaction. There were very few, if any, conversations where the smiley-face emoji was used to soften or influence how their posts may have been interpreted. Overall, Team MyReaction consistently communicated positivity. Many times, they used positive language to encourage discussion, recognize contributions to the team effort and celebrate their collaborative work. Throughout their conversations, they posted messages such as, “I think it personally looks awesome,” “you’re awesome,” “I look forward to what you find,” and “we appreciate all the work you are doing.” In both these teams, as well as others, Slack’s emojis and reaction capabilities facilitated quick responses and provided additional humanization to conversations and collaboration. Although students were interacting through technology, these features added a personal touch to their text.
Creating Common Connections

Perhaps most importantly for this course, students used Slack to connect over things they had in common. Team InCommon was a three-student team in spring 2020. Their Slack channel was created during the last face-to-face class meeting prior to spring break and they immediately used it to post a SharePoint link to a brainstorming document they created during class. They also immediately used it to connect.

KELLY: This is the link to our brainstorming document.

MELISSA: And here is a cute dog gif to keep us all motivated through the rest of the day.

KELLY: Thank you its appreciated.

Spring break was unexpectedly extended due to COVID-19 and although no work was required Team InCommon still connected via Slack. During the extended break, a meeting time question became a conversation about a common interest completely unrelated to the project.

LEO: Did you guys want to work on our plan tomorrow? If not, I’m free Friday and Saturday morning.

MELISSA: Tomorrow works for me! It’ll be a good distraction from my tireless waiting for Animal Crossing New Horizons. Lol. (It comes out late Thurs night for me and feels like an eternity until then.)

LEO: One of my friends got it early some how! I’m kinda jealous about the design because it makes my switch look bland.

While they figured out when to meet, they also talked about gaming, course work, and initial impacts of the COVID-19 pandemic:

MELISSA: Ahh okay; I ordered the digital copy just because I was like “I need something to keep my sanity during the chaos. It’s going to be my “reward” for when I
get stuff done I think but that first weekend I’m going to be engulfed in the game since we technically don’t really have much schoolwise to do until Tues.

KELLY: I am pretty much free all the time since I’m suck in my house. lol.

MELISSA: sameeee 😅

During the uncertainty at the beginning of the pandemic, Slack gave these students an opportunity and easy way to reach out to others experiencing the same things.

Team InCommon got together in Slack a few days later (still during the extended break) to work on initial project ideas. In this conversation, opening a shared OneDrive document and communicating via Slack, they discussed, made decisions, completed their required planning document and even shared research. When they finished, they felt good.

MELISSA: I feel like we’re probably ahead of everyone else since I doubt very few groups have started working before break, so it’ll be a nice feeling to not have to stress as much about this when we’re all scrambling to figure out online classes next week.

KELLY: 100% agree.

LEO: True we got a lot done!

KELLY: I feel really good about the work we’ve got done.

MELISSA: Me too! And I really love our product. I think it’s helpful and creative.

As they were coping with the emotional impacts of the pandemic, they used Slack to engage in a structured activity. Through Slack, they were able to have real-time conversations and connect over a shared goal. Their Slack collaboration provided successful results and, perhaps more importantly, emotional support. Before this particular conversation ended, they shared their uncertainties about how the pandemic might impact the remainder of their school year.

LEO: I’m curious to see how these next 8 weeks are gonna go.

MELISSA: Same. It’s going to be so weird.
KELLY: I’m honestly worried.

MELISSA: Especially for Kelly & me in our writing fiction class. I think that class is gonna be rough.

KELLY: Not this class specifically but other classes.

LEO: Same, I’m getting ptsd from last spring with the winter vortex.

They continued to chat about courses, technology concerns, and specific professors, as well as their general discomfort with not knowing how classes were going to proceed online. In their Slack conversation Team InCommon appeared to take some comfort from each other simply by recognizing that they were all experiencing the same worries.

Team InCommon started a new Slack conversation on the first day of the resumed semester. They discussed Animal Crossing (an online game) and specifically asked, “how is everyone doing on their first day back?” They talked about their class experiences and offered each other advice. There was absolutely no mention of the project, so it appeared that they used Slack simply to offer support and just be there for each other. They talked in Slack the next day and again, they did not talk about the project. One student initiated the conversation to share her experiences in a virtual course meeting and offer her teammates suggestions for using Blackboard Collaborate in their classes.

They also used Slack to complete their project work. It appeared that they supported each other in their project collaboration in the same way they offered support for things outside the course. When their project draft was due, Team InCommon met in Slack. They connected in Slack about technology questions and logistics, and used Slack to design and make edits together. Leo made website edits as the team discussed their ideas, likes and dislikes. Using Slack, Team InCommon was able to look at their collaborative work and offer constructive
feedback. For example, Melissa says, “I feel like a combo of the first one and the fourth one would be cool (not sure how that’d work); but I like elements of the first one.” Her teammates responded positively, and Leo made the changes. Slack allowed Team InCommon to connect personally as well as to create and collaborate on their team project in real time. Since they had to unexpectedly work together virtually, Team InCommon had to rely on technology. Using a TCP like Slack supported immediate touchpoints and real-time, live interactions with other people.

Slack also offered me the opportunity to engage with this team and provide real-time encouragement even though we were located in different places. With the Slack desktop, I saw students’ Slack messages as they occurred. (See Figure 7). While I did not typically read all conversations, Team InCommon’s conversation caught my eye and offered an opportunity to connect with these students.

**ME:** You are making me super excited to see your final work…

**MELISSA:** Hi Professor! 😊. I’m really excited to see how this turns out once we get it all together; especially with Kelly’s gorgeous logo.

**LEO:** 👍

**KELLY:** ❤️

**KELLY:** This is actually a lot fun haha.

**LEO:** 👍

**ME.** By the way, I wasn’t really stalking your conversation – the Slack notifications pop up on my screen for all of the groups and I saw the excited comments from your team in particular. You have been working so hard on this and I love that you are enjoying it. I’m sure it will be amazing…I can’t wait!

**MELISSA:** ❤️
KELLY: ❤️

LEO: ❤️

Team InCommon’s Slack conversations continued like this for the entire project. They talked about video games, online classes and life during the pandemic. They also shared ideas, discussed options and made decisions. Team InCommon gathered in Slack the night the final project was due. They made sure everything was finished and again stayed in their Slack conversation until their work was submitted. Their last Slack message was “I really hope we can work together again!!!”

Figure 7: Desktop Notification in Slack

**Resolving Conflict**

Slack facilitated many positive interactions, but some teams still experienced conflict. Team TenseTalk used Slack to share documents and engage in some collaborative conversations. Specifically, they used Slack to share potential ideas for solving the problem their recommendation report addressed. As they shared ideas, they asked clarifying questions and built on each other’s suggestions, which are all good collaboration skills. Their team conflict occurred
in Slack for many of the same reasons it typically occurs in other contexts. The communication and conversations within the team were a bit sporadic and extended over multiple days rather than occurring in real time. There were also quite a few apologies from some team members for missing a message or a meeting. The day before the final project date due, Slack conversations became tense:

JULIA: Aside from the research, what else do you need to create the report?
DAWSON: There’s information on blackboard and a video that goes over it. I’m going to be attending an online class soon. So I can’t share atm.
JULIA: I meant, since you are in charge of that part, is there any other work you want to delegate for us to provide?
DAWSON: Since I’m not doing research at all, I’m relying on you three to provide ample and detailed information about the research process, findings and data...so, we’ll have to come to an agreement on that once we are at that point. Other than that I’m doing other stuff like the introduction, executive summary, and a few other sections. I hope that is clear. If not then you can ask more questions.

Some tension may have resulted simply from communicating via technology and how written conversation is interpreted. In this example, rather than clarifying Julia’s question, Dawson interpreted it as asking about project requirements, so he directed her to the course materials rather than answering her. When her response appeared to put significant responsibility on Dawson, he suggested a clarification of roles. As Julia continued to push Dawson, he had an opportunity to practice conflict management skills:

JULIA: Just so were clear, you’re still going to have to pull the information and revise it to fit into the flow of the paper, correct?
DAWSON: What do you mean by pull information?
JULIA: I mean you’re not going to copy and paste the whole thing I type out and push it somewhere into the draft.
DAWSON\textsuperscript{14}: Ok maybe we’re all confused about the paper. Although I’m the recommendation report manager, we are all doing some contributions to the report. Meaning we are all writing something. That was what that excel form was for…There’s a video and pdf file on blackboard that goes into detail how each section is supposed to be played out, so I recommend you all watch/read them if you already haven’t. I’m doing… So basically, if you all need to, look back to that excel file and look for your role and that’s what you need to do for the paper…if you need clarification on a particular section in the paper Mrs. Eastley has provided good information on blackboard. Or you can dm her. \@Riley, \@Brett you may want to read what I wrote.

JULIA: @Dawson In regards to the secondary research portion, it is my responsibility to gather the information and provide the corresponding resources. To put it in essay format is your job, because otherwise, all you are doing is creating an introduction and conclusion, which does not represent the allotted points that your portion has been given…The agreement was that I would do the bulk of the work on the second half of the project. I do not intend to write half of the first part as well.

At this point, rather than immediately continuing to engage in this confrontational conversation, Dawson reached out to me through a direct message in Slack. He did not ask me to intervene (although I was able to see the conversation in their Slack channel). Rather, he asked me some clarifying questions and then he responded to their conversation:

DAWSON: I checked with Mrs. Eastley to clarify on things. She says…Meaning…Also, I did not mean to come off as aggressive or belittling. I just wanted to make sure we are all on the same page since this is worth a lot of points.

JULIA: Ok, then in that case, we need to revisit who is doing what…

DAWSON: Yeah that makes sense

JULIA: I also do not mean to get aggressive, but I ended up doing all the work on the last project and with my job I just literally cannot carry that again (Not that that is what you were inferring, just what I was afraid of).

Through this conversation, Dawson addressed rather than avoided the conflict and managed it by asking questions, gathering additional information and suggesting a path to resolution. Both Dawson and Julia also seemed to recognize and address the challenges of written conversation.

\textsuperscript{14} This Slack conversation included a lot of specific project details within the posts. Since my analysis focused on their interactions rather than the project work, I removed project details from the posts which were not relevant to their interactions.
They appeared to clarify their intentions (not to get aggressive) and supported these intentions by explaining their views.

While Slack may have provided a forum for conflict, I believe that through its conversational nature, Slack also offered a means to practice conflict resolution. Although I was unable to ask these students directly, this conversation may have never occurred in other classroom collaboration contexts, such as face-to-face work. If it did occur, it is less likely that Dawson would have asserted himself or addressed the conflict in this way. Even if this situation occurred in other types of collaboration technology such as collaborative communication tools like email or OCWT like Microsoft Word, it is unlikely that this team would have had a dialogue about their challenges. Based on my experiences, it is far more likely that they would have either come to me to resolve the conflict or avoided conflict and attempted to work around it. In either case, these students may not have had the opportunity to develop these conflict resolution skills which are necessary for good collaboration.

**Coordinating is not Collaboration**

It seemed clear that Slack provided teams with an efficient means to manage their projects, as many teams used Slack to manage project logistics including meetings and meeting notes. In Team CheckIn, however, one team member used Slack to an extent that illustrates how Slack could encourage too much oversight and not enough collaboration. The moment the last person on Team CheckIn posted their introduction, Kendall asked if team members would be available to meet the next day on Slack. Three of the five team members agreed, and they met using a Slack call. As the call began, Kendall used Slack mentions of Brady and Edward
(@Brady and @Edward) to ask if they would be joining and a channel mention (@channel) to notify the entire team that the meeting would begin in 5 minutes. As soon as the meeting ended, Kendall posted and pinned detailed meeting notes in Slack. According to these notes, the meeting lasted almost two hours. At the end of the meeting notes, Kendall also wrote:

If you have missed this meeting, please don’t worry we will catch you up. Also, reminder that we have a meeting TOMORROW! NOV 19, AT 3PM! Please make sure you are available. All members are needed to determine some finalizations of roles and plan of action.

The next day five minutes before the meeting was scheduled to begin, Kendall posted, “Meeting today at 3pm!” Immediately after the meeting, Kendall once again posted and pinned detailed meeting notes. The day before the next scheduled meeting, Kendall posted, “@channel remember meeting at 12:30 p.m. tomorrow!” On meeting day, Kendall posted “@channel meeting with start soon” and once again posted and pinned meeting notes. The following Monday, Kendall posted, “Remember we have a group meeting on Wednesday at 3 pm. Please be there @channel.” The next day, she posted:

I meant to remind you guys that on Wednesday we have a meeting at 3 pm. This is a mandatory one because we have a lot to talk about. Please start putting information in the doc I shared, we only have a week and we still need to do some research and get on this report. @channel Thank you for reading.

Again, on meeting day, she reminded, confirmed, posted and pinned. Kendall continued to use Slack like this for the entire project.

At a high-level, it appeared that Kendall made great use of Slack’s features such as mentions, pinning and calling to keep her team on track. More interesting than Kendall’s Slack use, however, is other team members’ lack of use. The more Kendall used Slack, the less everyone else on the team used it. Each person on the team posted their Slack introductions as
assigned and the entire team participated in Slack at the beginning of the project. When Kendall proposed the first meeting, Raymond replied he was available and asked, “what are we meeting on?” Edward also replied he was available. Throughout the rest of the project however, other than Kendall there were very few Slack posts. When the team posted, they did not engage in conversation and appeared to defer to Kendall, even for their project responsibilities. For example, Brady posted, “I’m having trouble finding fundraiser information.” Kendall responded, “it’s ok just start looking into the organization itself and add on more on what I wrote.” Thus, Brady did not have to take any initiative to contribute to the team and Kendall supported him in doing so. Even as Kendall posted meeting reminders, there were minimal team member responses and they seemed to want Kendall to solve all their issues, including those not directly related to the project:

    KENDALL: Remember 3pm meeting! It’s the last one!
    EDWARD: Are there any open computer labs on campus or is everything closed?
    KENDALL: I don’t know there is probably one at the library?

The final project due date was the first and only time after their introductions that the entire Team CheckIn engaged in a Slack conversation. Just hours before the final project was due, they chatted in Slack to give writing and editing status updates and confirm their project had been submitted. While Team CheckIn used Slack to finish the necessary work, it seemed that Kendall acted as a team of one for the majority of the project. The collaborative work was completed, but they did not work as a team and they did not collaborate on it. Unfortunately, I did not have a means to follow-up with the team and ask how Kendall’s Slack use may have impacted their team dynamics.
Slack and the Elements of Teamwork

As mentioned earlier, all of these competencies related to collaboration include the core elements of teamwork. Even teams with comparatively limited Slack usage communicated with their teammates through Slack and used this technology to facilitate some level of responsibility and accountability. Slack also provided opportunities, even small ones, to build team relationships. Since it was a project requirement, every team communicated through Slack in some manner. At a minimum, every student created a Slack account and interacted with their team at least once during each project. The interactions of students in Slack demonstrate the point I made in Chapter 2 that communication is the core element of teamwork that runs through all of the other elements. By requiring that students use Slack, I set the expectation that students must communicate with their teammates and I believe I provided an easy way for them to do so. All of the collaboration skills that students demonstrated and the competencies that emerged in Slack were a result of in their communication with each other.

Simply through managing project logistics in Slack, students demonstrated varying levels of responsibility, accountability and relationship building in addition to communication. A fundamental aspect of teamwork and accountability is ensuring that everyone on the team is responsible in some manner for the overall success of the team. In the context of the team projects in this course, every student had an assigned role and assigned tasks. In most teams, the students used Slack to communicate role and task responsibilities. For some teams, this meant simply using Slack as the central location to share the project planning document, so everyone knew their assigned tasks. Other teams used Slack to view the planning document together and engaged in real-time conversations in Slack to determine roles and responsibilities.
Typically a more challenging aspect of responsibility in teamwork is building a diversity of voices. While the composition of each team was determined outside of the Slack environment, many teams used Slack as a means to give all team members a voice in their team activities. As I discussed earlier, one of my goals in choosing Slack was to provide equal access to one technology that gave every person the same means to communicate. Although not all students chose to take the opportunities that Slack offered for collaborating with their teammates, many did. As we saw with Team SpeakUp, teams used Slack to encourage participation from teammates and facilitate a diversity of voices in their team decisions.

Most teams used Slack to facilitate accountability. As I analyzed how teams used Slack to manage project logistics, I observed that Slack prompted students to assume more accountability to their teams, especially for communicating about their responsibilities and whereabouts. The interactions in Slack suggest that students may have assumed more accountability for their meeting attendance with Slack available to facilitate their communication. Minimally, Slack likely increased a student's ability and accountability to communicate with their teams about absences and tardiness. Students also used Slack to provide general status updates. Similar to meeting attendance, it appeared Slack may have contributed to students taking responsibility for their portion of the team’s overall work and demonstrating accountability to their teammates. Without Slack, it is more likely that some students may have gone quietly missing from the team’s work.

Students also demonstrated accountability as they shared ideas and worked on their projects in real time through Slack. One aspect of accountability is the commitment of team members to the goals of the team. In the Slack interactions of Team IdeaShare, I found that the
students on this team expressed pride in their work and the potential value of the work beyond the assignment. Their conversation demonstrated that they were engaged and invested in their work as a team. It also showed their collective commitment to achieving a positive outcome. Through their Slack interactions, teams such as Team InCommon and Team MyReaction demonstrated that small opportunities to develop personal connections also contributed to increased personal accountability.

An aspect of accountability which many students find challenging is holding others on the team accountability and doing so in a non-confrontational manner. As I found with Team TenseTalk, Slack also fostered collaboration skills when interactions were not necessarily positive. In some teams, Slack seemed to help students address rather than avoid conflict. While it requires further research, it appears that students may have been more likely to practice conflict resolution, and address situations on their own rather than immediately coming to me to solve them.

One of the most apparent elements of teamwork that I observed in the Slack interactions of students was relationship building. The simple act of students posting their required introductions in Slack enabled students to start building relationships with their teammates. In general, the conversational nature and easy access of Slack also seemed to foster personal relationships. In some cases, the small personal interactions that students had while scheduling meetings helped build relationships. In other teams, students used the features within Slack to establish deeper connections. For example, Claire addressed a specific point from each person’s introduction to start creating personal connections with each team member. Claire used Slack's mention feature to address her personal comments to each of her classmates individually while
still engaging the entire team in the conversation. Other teams, like Team GoodJob used Slack to offer each other continual positive reinforcement on their work and used language that bonded them together as a team. In the next section, I will discuss some specific features of Slack that I believe facilitated these types of interactions.

As I have discussed elsewhere, Slack became invaluable when the spring 2020 course unexpectedly moved online in the middle of the semester. In this course, using Slack encouraged relationship building by supporting opportunities for personal connection and support. For these virtual teams experiencing a global pandemic, Slack provided an additional touchpoint. In both semesters where students were collaborating virtually, students used Slack to connect over things they had in common and these connections helped build team relationships. In addition, Slack also gave me another means to connect with students when we were physically separated. Even in less uncertain times, virtual teams need opportunities to connect and offer support. As discussed in previous chapters, relationship building is a key element of teamwork and collaboration, especially when students are working with distributed team members.

**Why Use Slack?**

Throughout this chapter, I have discussed and demonstrated how students in this course engaged and collaborated using Slack. I believe the affordances of a technology designed specifically for easy interactions and collaboration facilitated an organic emergence of these behaviors and skills. As I said at the beginning of this chapter, I have not seen these types of student interactions when I taught courses using only a learning management system. For example, I have not seen multiple teams of students proactively create connections through
discussion forums. The LMS also did not easily afford collaboration in real time except via video technology. Furthermore, I have not typically observed students offering ongoing feedback and encouragement throughout a project when they were working in the LMS. Students may have given feedback as part of peer or document review sessions, but they seemed less likely to reach out to their teammates and share ideas or offer feedback.

In this course, students engaged in more real-time collaboration using Slack than I have typically observed when using other types of collaboration technology. Even when students used OCWT to write their collaborative work, they still used Slack to collaborate on it. Slack also gave students more opportunities and means to provide feedback. Rather than posting feedback to a shared document, students used Slack to brainstorm and collaborate on ideas and discuss their feedback. Using a TCP, like Slack, to facilitate collaboration skills encouraged interaction and dialogue in situations where virtual students may not have interacted at all. It encouraged students, and enabled them to encourage others, to have a voice in their collaborative work.

As I studied the interactions of students in Slack, they all used the affordances of the Slack platform in some way. When I compared Slack to other technologies that I have used in the classroom, I found that there were specific features of the Slack environment that encouraged students to engage in collaboration. While other technologies provide some of these same features, the Slack environment combines them into a single location. Slack provided a single designated means for students to communicate with their teams. The chat, document sharing, and integrated calling enabled students to have one location for all of their project materials and interactions. When students shared project materials in Slack, a small thumbnail appeared in the Slack conversation, so students were able to easily identify what was being shared. (See Figure
8). In addition to making it easier for students to contact each other and share information, I believe having only one designated location eliminated challenges (and excuses) that students were unable to find something or did not know how to contact their teammates.

Figure 8: Document Sharing in Slack

Slack also offered a variety of ways for students to access project information, contact each other and engage in collaborative activities. Students were able to use Slack through a browser, desktop or phone app, so they seemed to use it more frequently than they may have accessed other types of collaboration technology. As I have already discussed, the flexibility to access their Slack team channels from multiple devices made it easier for students to work with their teams regardless of their schedules. I also believe that because students were aware of how easy it was to access and use Slack, they had increased expectations and a greater sense of obligation to communicate and respond to their teammates. Since all of their conversations and work was saved in their team’s channel and this information was searchable, students were able to keep in contact and be part of their teams’ collaboration even if they missed a meeting or were
not able to work on the project synchronously. In addition, students were able to use Slack's search feature to quickly find the details of a particular conversation or locate a shared document. (See Figure 9). As I noted earlier, some teams also used Slack's pin feature to make it easier for the team to indicate and access important information such as meeting notes and shared documents.

Figure 9: Slack Search Feature

One of the most significant advantages of using Slack is that students were able to interact with their team in ways that was not necessarily possible with email, shared document technologies or LMS discussion forums. The instant messaging design of Slack fostered interactive exchanges. Unlike some other technologies, students were able to interact with single-sentence posts rather than paragraphs of text. The option to access Slack from multiple devices combined with Slack’s notifications allowed for immediate touchpoints and real-time live interaction. As I have already discussed, by using Slack’s mentions, students were able to easily reach out to their entire team, specific teammates and even me to encourage participation, foster engagement and connection, and receive more rapid responses. In addition to the instant
messaging design, multiple access points, and mentions, Slack also allowed students to start a video or voice call directly in their Slack channels. I observed Slack interactions where students were having trouble communicating or needed clarification while messaging back and forth, and they used Slack's integrated calling features to start a quick video call. (See Figure 10).

![Figure 10: Calling within Slack](image)

I believe one of the primary reasons that Slack interactions appeared to significantly contribute to developing the collaboration skills of students is because these interactions were conversational and humanized. In addition to Slack's instant messaging interface design, Slack includes direct messaging, threaded conversations and reactions. While I did not specifically analyze direct messaging in this study, during the course I observed that most students used direct messaging to interact. I believe that having the option to connect with someone one-on-one directly within the designated collaboration environment made it easier and more likely that students would reach out to each other. Even though students were physically distanced, Slack's direct messaging gave students a means to connect with individual students in a way that more closely resembled a face-to-face interaction. Unlike email, direct messaging in Slack seemed to
encourage students to engage in conversations rather than simply information exchange. Students also frequently used direct messaging to contact me, especially with quick questions that they may not have otherwise asked.

In addition to direct messaging, threaded responses and reactions encouraged conversations. When student posted a message in a Slack channel, other students could respond to the full channel or engage in a threaded conversation with the student who wrote the original post. I believe this opportunity to have a conversation with an individual made the interaction feel more like a conversation between two human beings. The reactions built into Slack further enhanced the humanization of students' interactions. Whenever a student posted in the Slack channel, the design of Slack encouraged other students to engage and react. When a student moused-over a Slack post, the options to add a reaction or reply directly in a thread displayed. (Figure 11). Slack also provided students with an extensive list of reaction emojis, including "handy reactions." (See Figure 12). Thus, the design of Slack can help develop collaboration skills through conversation rather than passing information back and forth. In other words, I believe Slack provided a way to demonstrate that collaboration is more than just bringing together individual work. In addition, because Slack's design encourages conversation, it offered opportunities to navigate and learn ways to resolve any issues. When conflict occurs and other technologies such as email are used, I have found that students are more likely to avoid the situation and develop feelings of animosity. Students are also more likely to misinterpret information or ruminate on issues. As mentioned earlier, it appears that the conversational nature of Slack encouraged students to proactively address conflict and clarify misunderstandings.
The emojis and reactions built into Slack supported more than conversation. I believe the emojis contributed to creating a collaboration environment that is engaging and encourages fun, positivity and connection. In addition, Slack’s integrated reactions and emojis made feedback a
natural part of the collaboration environment. Thus, students may have provided feedback and positive reinforcement, and did it more often, because of the technology affordances encouraging them to do so. I also believe that the many opportunities to add emojis and the wide variety of emoji options set a light-hearted tone in the environment. When I compare the look of Slack's interface to other collaborations technologies used in the classroom, Slack appears more inviting and does not look like it is for "serious work" only. (See Figure 13). Slack also more closely resembles the social media environments where students typically interact. The ease of embedding images and videos (with them appearing directly in the Slack conversation) combined with the familiar social media design seemed to encourage students to have some fun in Slack. Based on their Slack interactions, student appeared more engaged, and thus invested, in their collaborative work, and students connected on personal interests. By incorporating Slack into this course, I believe I gave students an established way to connect with their classmates, especially when the pandemic unexpectedly changed their lives. Having Slack available and taking advantage of its conversational nature, students were able to establish common connections with teammates. These connections fostered trust and allowed students to build their collaboration communication skills.
Conclusions

The results of this study have confirmed the benefits of incorporating Slack into this particular course. While my decision to integrate Slack resulted from my personal work experiences and prior semesters’ feedback, analyzing how virtual students engaged in collaboration through this technology has given me clear reasons to continuing using it. Much like the results of other studies using technology in the technical communication classroom, the results of my research go beyond the Slack platform and speak to using workplace-based team communication platforms (TCP).

I did not conduct this study to determine whether we should use collaboration technology in the technical communication classroom, but rather to examine a particular type of technology and how it might be used. My research questions focused on the role technology created and designed for workplace team communication could play in supporting and developing
collaboration skills in the classroom. More specifically, I wanted to learn how students interacted and engaged in collaboration when a team communication platform, like Slack, is used in the classroom. The interactions of students in Slack demonstrated how this technology, and more generally team communication platforms (TCP) can contribute to encouraging and developing the skills and behaviors that shape collaboration literacy. This study supports incorporating technology that has been specifically created for the competencies we are trying to develop. Slack was created to facilitate workplace teamwork and collaboration. In this particular classroom, using Slack, students interacted in a manner that I do not believe would have occurred if they had simply used existing or traditional classroom technologies. As I have discussed, Slack seemed to afford students opportunities to proactively create connections, collaborate in real-time, share ideas, and offer ongoing feedback in ways that may not have occurred or been possible with more conventional academic technologies or simply using an LMS.

This study also suggests that we continue to extend our use of technology in the technical communication classroom. In this study, I chose technology that facilitated the collaboration skills I wanted students to learn and the competencies I wanted them to gain. By looking to the workplace and emerging technologies in that context, I was able to find technology that was explicitly designed for the skills I wanted to teach. My research also supports exploring technologies that go beyond collaborative writing and facilitate other aspects of collaboration and teamwork. Using a team communication platform (TCP) like Slack offered additional opportunities for students to interact and fostered collaboration that likely would not have occurred if students had only used more traditional types of collaboration technology like
collaborative communication tools, publicly available online services (PAOS), and online
collaborative writing tools (OCWT). Students still used Google Docs, Microsoft Word, email,
etc., however, their collaborative work seemed to occur predominately in Slack. It appeared in
many cases that students were able to identify a technology’s purpose and best use and applied it
accordingly, but they could not do this if they are not aware of the technologies available to
them.

Using a TCP like Slack offered these students additional opportunities and means to
collaborate rather than just produce collaborative work. Even if students are not going to be
using Slack in the workplace, its classroom use enabled new skills. Thus, technology designed
for workplace teamwork and collaboration can be used to facilitate and teach it. This suggests
that other workplace-based technologies can be used to teach technical communication skills and
enhance important competencies. Since new technology tends to emerge in the workplace first,
we have an opportunity to look to the workplace and bring these emerging technologies into the
classroom. We can expose students to new types of technology and facilitate the skills these
technologies are designed to address. Furthermore, we can approach integrating emerging
technologies in a manner similar to how we bring social media into the classroom. When
incorporating social media, Vie (2017) encourages us “to consider the technological tools with
specific TPC [technical and professional communication] goals in mind rather than simply
relying on those that are familiar” (p. 349).

Similar to increasing the collaboration literacy of our students by extending our use of
collaboration technology to include team communication platforms, we can apply the same
approach to other technical communication learning objectives. Since there is limited research
about using these and other types of emerging technologies, there are many opportunities for future study. Creating a classroom culture where new technologies are welcomed, explored, and critiqued can also encourage students to share and incorporate additional technologies they have used in other contexts. One team decided to use Trello (in addition to Slack and Microsoft Word) to collaborate on their project. Trello is a technology I have recommended when I provide consulting to organizations about their remote and distributed management strategies. I did not share Trello in this course; however, a student shared it with her teammates, and they used it for their project. Future research opportunities can examine the role of these other technologies, how students use them, and the impact of students taking technology from other contexts and incorporating them into their learning process.

Although neither topic was a focus on this study, I believe it is important to acknowledge the implications of using Slack for both critical literacy and diversity, equity and inclusion in the classroom. Collaboration literacy includes critical literacy. Therefore, there are research opportunities to examine who benefits most from using the Slack technology environment and who might be disadvantaged or excluded. In addition, future studies can determine what normative social values are inscribed in Slack and how Slack might be used to promote values such as social justice and inclusion. As I have highlighted when discussing my selection of the Slack platform, I chose it because I believe that Slack offered a means for greater inclusion in classroom collaboration. I considered the multiple device options and the flexibility of Slack as an opportunity to give the same collaboration tools to all students in the course, including those who may not have the same access to technology. The interactions (or lack of interactions) in Team CheckIn raise additional questions about how the use of Slack might influence inclusion in
the classroom. All of the team members had access to the same technology and the same Slack features, yet the majority of the team chose not to use them. I wonder if Slack might confer some power imbalance and Kendall's approach prevented others from collaborating or whether her approach simply enabled other team members to be less engaged or feel less responsibility and accountability.

I believe that my research demonstrates the benefits of considering technology in the technical communication classroom from the perspective of not only teaching students how to use technology they may experience in other contexts, or asking them to critically assess technology’s role, but also as a means to teach other skills and develop additional competencies. In this particular case, I found that technology designed specifically as a workplace team communication platform facilitated students’ team behaviors and engaged them in collaboration with classmates, even when they were physically distributed. As a result, these students learned collaboration skills by engaging in teamwork and began building competencies which will contribute towards greater collaboration literacy.
CHAPTER 5: A FRAMEWORK FOR TEACHING COLLABORATION LITERACY

Collaboration and teamwork can make our interactions with other people more engaging, productive and satisfying. Collaborating with others enhances problem-solving, facilitates creativity and contributes to learning. On a personal level, collaboration and teamwork can create a greater sense of community and add to individuals’ happiness. The Association of American Colleges and Universities’ annual survey rated the “ability to work effectively in teams” as the most important skill for workplace success (Finley, 2021, p. 6). Therefore, it is not surprising that collaboration appears as a learning outcome at many academic institutions. My current university expects students pursuing a baccalaureate degree to meet eight learning outcomes including the ability to “collaborate with others to achieve specific goals” (Northern Illinois University, 2021). As a result, collaboration-related learning outcomes span many disciplines including our writing programs.

Within technical communication, teamwork ranks in the top five most important qualities (U.S. Bureau of Labor Statistics, 2021). In his foundational work about the value of technical communication, Johnson-Eilola (1996) urges us to consider technical communication beyond employers’ perspectives and think about “what technical communication should be” (p. 248). He believes that technical communication should be viewed as symbolic-analytic work. Drawing on Robert B. Reich’s classifications, Johnson-Eilola argues that “symbolic-analytic workers rely on
skills in abstraction, experimentation, collaboration and system thinking to work with information across a variety of disciplines and markets” (p. 245). Therefore, even when we expand our thinking of technical communication beyond the demands of the workplace, collaboration skills are essential for developing students’ critical thinking and creative capabilities as well as preparing students to bring individuals together and move them toward action.

Historically, the field of technical communication has struggled to gain the recognition and respect it deserves. Scholars have argued that technical communication is a means of effectively participating in a community, technical communicators have power through their abilities to articulate and rearticulate meaning, and technical communication is knowledge work rather than production work (Johnson-Eilola, 1996; Miller, 1979; Slack et al., 1993). Regardless of these arguments, people often view technical communication in service to other disciplines as well as only playing a supporting role in the workplace. Some scholars have argued that a lack of understanding about the value of technical communication and individuals downplaying the complexities of technical communication work have contributed to these perceptions (Johnson-Eilola, 1996; Starke-Meyerring, 2005). In many cases, these viewpoints have relegated technical communicators to roles as documentation creators and transcribers of others’ knowledge. By looking closer at technical communicators’ activities and associated skills, I see opportunities for technical communicators to lead change. Technical communication work requires interactions with others across multiple contexts, which provides technical communicators with access to many diverse connection points. As writers, individuals in technical communication roles can have a voice and through technology have increasing options for reaching others. Therefore, if
we can expand their collaboration and teamwork capabilities, I believe we can empower technical communicators as change agents and give them a means to further demonstrate their competencies and contributions beyond document creation. Through collaboration and teamwork literacy, technical communicators may have more opportunities to assume leadership and other influential roles. With enhanced collaboration literacy, technical communicators can leverage their power as knowledge creators and not simply act as knowledge reporters. In addition, collaboration literacy can better equip our students to extend their reach into other professional areas, thereby expanding their opportunities to act as agents of change.

**Collaboration Literacy**

Scholars and educators have linked literacy to education for centuries, and literacy definitions seem to continually evolve and expand. Within the field of technical communication, Cargile Cook (2002) proposed a layered literacies model as a framework to synthesize the wide range of skills that others have suggested are necessary for technical communicators. Over the years, scholars have proposed modifications, additions and expansion of these literacies to reflect changes in the field including technology, globalization, and extensions into other areas (Bivens et al., 2018; Hannah, 2011; Spilka, 2010; Starke-Meyerring, 2005). Henschel and Meloncon (2014) combined Cargile Cook’s proposed layered literacies with Johnson-Eilola’s symbolic analytic work ideas to develop five conceptional skills for technical communicators. These models include collaboration, but they present collaboration as a skill and/or as an element of another type of literacy. In the layered literacy model, collaboration is an element of social literacy (Cargile Cook, 2002). While I am not debating that writing is a social activity and that
collaboration involves social interactions, there is more to collaboration and its role within the field of technical communication. Collaboration goes beyond participating in a team and supporting others. Competent collaborators facilitate teams’ effectiveness, innovation and problem-solving. In addition to the social interaction and cooperation skills represented in other literacy models, collaboration competencies promote leadership, knowledge creation, and action. By broadening technical communication students’ collaboration literacy beyond social proficiency, we enhance their opportunities and abilities to foster and promote changes in technical communication and the wide range of fields technical communicators support. For example, within a technology development team, technical communicators proficient in the more extensive list of collaboration skills represented in my proposed framework below can initiate critical conversations during development instead of simply documenting the work of others. I believe that rethinking current technical communication literacy models and expanding our view of collaboration literacy beyond social proficiencies emphasizes collaboration’s value and influence. Employers and educators clearly value the idea of collaboration. Other fields, such as business and technology where collaboration and teamwork skills are emphasized, have demonstrated collaboration’s contributions to driving decisions, action and change. Therefore, explicitly defining collaboration literacy as part of technical communication pedagogy can enhance technical communications’ value and influence. As I put forth at the beginning of this dissertation, one of our responsibilities as educators is to prepare our students for success in the workplace and beyond. My proposed framework offers an approach for teaching collaboration in the technical communication classroom that supports the future needs of our students and
demonstrates the wide range of skills that collaboration and teamwork competence requires beyond social proficiency.

**Determining the Elements of Collaboration Literacy**

I am offering a framework for teaching the skills and competencies important for collaboration literacy. To create this framework, I began by examining collaboration skills and competencies through a case study of a technical communication course, a review of current textbooks and a survey of technical communication educators. Utilizing my own background spanning the business world and academia, and the reciprocal relationship between the workplace and the classroom, I chose to integrate workplace-based collaboration concepts, activities and technology into teaching technical communication. My research resulted in a construct for this framework.

**Chapter 2: Using Workplace-Based Practices to Teach Collaboration Literacy**

Chapter 2 discusses a one-semester case study incorporating workplace-based practices into classroom pedagogy. My goals in this case study were to discover skills and competencies important for collaboration literacy and to explore the influence of integrating workplace-based collaboration practices into pedagogical approaches. I created a model that equates collaboration with teamwork and I used four core elements of teamwork to inform my teaching as well as a means to examine the case study results. I used these elements as a foundation to identify skills (abilities) and core competencies (a combination of skills, knowledge and behaviors) which I believe are essential for technical communicators to learn. These four elements (responsibility,
accountability, relationship building and communication) are the foundational elements of the framework I present later in this chapter. For the case study, my data collection focused on students’ assessments of their teamwork and collaboration experiences in the course.

The case study results confirmed that equating collaboration to teamwork can provide a solid foundation for teaching collaboration and teamwork in the technical communication classroom and supported the value of using workplace-based practices as means to enhance students’ collaboration literacy. The case study also suggested a hierarchy for the types of collaboration skills we teach. Most instructional strategies combine people, process and technology skills in some manner. The results of this case study highlight the importance of prioritizing some types of skills over others if we want to enhance the overall collaboration literacy of our students. Specifically, the results indicate that we should prioritize interpersonal or people proficiency, followed by technology competence, and then process skills within technical communication pedagogy. This is especially true when teaching students to engage in distributed and remote collaboration. My survey of educators and textbook analysis presented in chapter 3 confirmed and further refined the importance of this prioritization.

Using workplace-based collaboration practices contributed to teaching collaboration and teamwork skills, and I believe enhanced students’ collaboration literacy. The instructional strategies I used in this case study emphasize collaboration competencies and illustrate that successful workplace-based practices can support students’ teamwork efforts. In some cases incorporating standard workplace-based practices as a matter of course shifted learning and enabled students to focus on collaboration activities rather than administrative tasks. For example, by simply having students use templated project plans typically used within the
workplace to manage tasks rather than spending time delving into project management, students were able to focus their attention on building more transferrable collaboration competencies. In addition, workplace-based practices offered students experience with leadership, relationship building, and communication in ways they may encounter outside academic settings.

Since the case study occurred during the COVID-19 pandemic, I was able to look at how workplace-based practices contribute to learning when students are distributed. Students experienced challenges in the classroom such as technology problems, inability to read social cues and distracted participants, which were similar to those experienced in a distributed virtual workplace. As a result, I shared practices I had used in the workplace to address similar difficulties and gave students an opportunity to implement and critically assess these potential solutions. The results highlighted that collaboration literacy requires additional competencies when teams are distributed. As noted previously, the outcomes of the case study suggest the need to create a hierarchy of people, technology and process skills when we teach collaboration. Looking specifically at the results from distributed and remote students indicate that as classroom teams collaborate in a more distributed manner, workplace processes enabling them to get their work done fade into the background, and technology and personal interactions become even more important.

Chapter 3: Classroom and Textbook Approaches to Collaboration Literacy

In chapter 3, I examined contemporary strategies for teaching teamwork and collaboration. I surveyed current technical communication teachers and analyzed popular textbooks to learn how classroom activities and technical communication textbook content can
shape students’ collaboration literacy. I wanted to understand how teachers think about the meaning of the terms collaboration and teamwork, and how they are approaching these topics in their classrooms. I also wanted to know how textbooks address collaboration and teamwork and specifically what they say about it. Although all of the teachers surveyed indicated that collaboration skills are very important and almost 80% of them rated these skills as essential, not all technical communication textbooks include chapters dedicated to collaboration and teamwork. Of the ten textbooks I analyzed, only one textbook emphasized collaboration and teamwork as an innate element of technical communication.

As I analyzed teachers’ survey responses and the textbooks’ content, three types of collaboration and teamwork skills emerged - process/task skills, interpersonal skills, and personal skills. These skill types, which I will discuss and further define later in this chapter, provide additional information for my proposed teaching framework for collaboration. Using this skills classification, I found that technical communication teachers and textbooks emphasize collaboration processes, tasks and process-related skills. This data is in contrast to the collaboration skills prioritization suggested by my case study. The case study results indicate that people skills should come first and process skills last. When I studied current classroom activities and textbooks, the opposite is occurring. Even when teachers and textbooks discuss or teach interpersonal and personal collaboration skills, they are still placing a greater emphasis on the processes and procedures related to these skills rather than the skills themselves. As noted earlier, these priorities reinforce technical communicators as documentation creators and doers, instead of leaders, influencers and change agents. If we want technical communicators to have
more than supporting roles, we must push the collaboration skills and experiences of our students beyond processes and tasks.

The survey and textbook analysis results also provided insight into how definitions of collaboration and collaboration-related terms can influence our students’ collaboration literacy and specifically their interpersonal collaboration skills. When I asked teachers to identify words they most frequently associated with collaboration, they most often chose the interpersonal terms that are related to classroom challenges with collaboration such as conflict. This may indicate that we are aiming our current teaching strategies at addressing classroom collaboration difficulties rather than building positive collaboration skills. Furthermore, the way we define some collaboration-related terms may exacerbate the emphasis on process/task skills instead of interpersonal or personal skills. For example, when we define feedback as synonymous with peer review, we lose the critical difference between the two. Typically, we can align peer review with process/task skills and consider feedback an interpersonal skill. The same thing can occur when we use leadership interchangeably with team management. As discussed in multiple chapters, team managers may reference their job title of “team manager” when directing the activities of others. Leaders, on the other hand, provide direction for the activities of others through guidance, support and their own actions as part of the team. Thus, teaching team management focuses on processes and tasks while teaching leadership emphasizes interpersonal and personal skills. Generally, prioritizing processes and tasks over other types of collaboration skills can inadvertently increase the frequency of technical communicators being relegated to supporting roles in the workplace and limit the abilities of our students to transfer their learning from the technical communication classroom to other contexts.
Chapter 4: Using Slack to Develop Collaboration Skills

In chapter 4, I studied the role that workplace-based technology created specifically for teamwork and collaboration can play in developing collaboration literacy in the technical communication classroom. In particular, I looked at how students engaged in collaboration when they used a technology platform designed for the workplace, Slack, in the classroom. I explicitly chose Slack because I believed Slack could enable additional aspects of collaboration beyond collaborative writing and information exchange. I discovered student interactions that I had not typically seen in the past. Through Slack, I observed that students proactively created connections with other students, engaged in real-time collaboration, and offered ongoing feedback and encouragement throughout a project. While traditional academic technology such as learning management systems (LMS) may offer discussion forums, video technology and peer review, I have not found that these types of LMS features result in the same collaboration activities as those I observed when students used Slack.

In this case study, I analyzed students’ interactions in Slack as they completed team projects. Although I asked students how they used Slack, I was more interested in what students actually did in Slack and how they went about doing it. As I studied students’ Slack interactions, I identified specific competencies related to collaboration that emerged organically as the students worked together in Slack. These competencies reflected one or more of the four core elements of teamwork (responsibility, accountability, relationship building, and communication). I was also able to correlate specific aspects of the Slack environment that seemed to facilitate the skills and behaviors that support these competencies. The defined central location, ease and perhaps even increased expectations of communication afforded by Slack appeared to encourage
students to assume responsibility and be more accountable to their teams. In addition, Slack provided students with small ongoing opportunities to build relationships with each other.

Students engaged in important collaboration skills which seemed to evolve naturally as they interacted in Slack. The case study results showed how one team enhanced their interpersonal and personal collaboration skills using Slack’s features to give everyone on the team a voice. Through their interactions, these students gathered and engaged differing viewpoints and demonstrated respect for individual diversity. Other teams used Slack’s affordances to collaborate through real-time conversations rather than shared documents, thereby building their interpersonal skills as they communicated with each other. Some teams also initiated team collaboration and modeled collaborative decision-making skills through their Slack interactions. These students demonstrated active listening, provided feedback and engaged constructively in asking clarifying questions and offering additional ideas.

In addition to facilitating collaboration, Slack seemed to pull collaboration behaviors out of students simply by the nature of its design and features. Students’ conversations in Slack demonstrated that they were engaged and invested in their work as a team. Slack’s reaction and emoji features facilitated feedback skills and relationship building. Students used these features to offer frequent positive reinforcement. Slack also supported immediate touchpoints and real-time, live interactions with other people. Having Slack available and taking advantage of its conversational nature, students were able to establish shared personal connections with their teammates. In addition, Slack’s emojis and reaction capabilities facilitated quick responses and provided additional humanization to students’ interactions, despite the fact that they were using
technology. These affordances appeared to help build personal collaboration skills that typically require human interactions such as empathy and trust.

While Slack’s ease of use and multiple collaboration features may have also provided a forum for conflict or a means for people to commandeer a project, I believe these situations offered learning opportunities and teachable moments. In cases when Slack made it easier for issues to occur, students were able to practice conflict management skills. Slack’s real-time communication also allowed students to actively engage in conflict resolution rather than ruminating on team issues and disengaging from the team or project. Even in situations when a particular teammate took control of a project, using Slack helped to provide everyone with equal access to communication and presented opportunities to teach students the skills that can differentiate team management and leadership.

**Framework for Teaching Collaboration**

Regardless of whether collaboration literacy is a distinct layer in our pedagogical approach or an element of social literacy, a framework for teaching collaboration can provide a roadmap to identify competencies and relevant skills to incorporate into our classrooms and instructional materials. I propose the following framework as a starting point to foster additional research and conversation about how we define and teach collaboration in technical communication. Although I created this proposed framework from a limited study, I believe it provides a structure for determining skills (abilities) and core competencies (a combination of abilities, knowledge and behaviors) that are essential for technical communicators to become literate in collaboration and teamwork.
This model begins with acknowledging three factors that influence collaboration and teamwork – technology, team composition, and physical location. Four foundational elements of collaboration (responsibility, accountability, relationship building, and communication) establish core competencies within the scope of these factors. Finally, three categories (process/task skills, interpersonal skills and personal skills) define skills within the foundational elements which contribute to technical communication students’ collaboration literacy. (See Figure 14).

![Figure 14: Framework for Teaching Collaboration](image-url)
**Influential Factors**

While there are many ways to describe how collaboration and teamwork operate in technical writing teams, I have found three variables which impact how students view collaboration, whether presented in textbooks or taught in technical communication classrooms. First, the results of my research suggest that the individuals who comprise a team and the purpose of forming that team can influence the collaboration skills we chose to teach. Second, when we think about collaboration literacy, we also must consider where technical communication work is occurring. As we have seen throughout the COVID-19 pandemic, the need for collaboration and the success of teamwork can vary greatly based on the physical locations of team members. Finally, technology is an inherent part of technical communication and thus, a mandatory consideration when discussing technical communication pedagogy.

**Team Composition:**

As we think about team composition in the context of teaching collaboration, individual skillsets, team permanence and team setting are important. While the foundational elements of collaboration remain the same, their priority and the specific skills within these elements may vary. For example, teams with homogenous skillsets may require less focus on responsibility-related collaboration skills than teams with greater diversity in their areas of expertise. Students within a single discipline or professionals holding similar organizational roles will have a better understanding of roles and expectations about how others can contribute to the overall success of the team. As a result, there is less need to focus on collaboration skills such as task distribution and recognizing diverse perspectives. On the other hand, when team composition spans
disciplines or areas of expertise, there is a greater need to teach students how to gather, understand and respect different points of view. A classroom study of multidisciplinary team projects with technical communication students and engineering students paired together showed that students had trouble understanding the expertise of others on the team (Wojahn et al., 2001).

The permanence or longevity of a team can also influence the value of some collaboration skills over others. As a reminder, Spinuzzi (2015) presents the potential for organizations to become all-edge adhocracies, which he defines as:

[Organizations] able to rapidly link across organizational boundaries, combine into temporary work groups, swarm a project with a team of specialists, and disperse at the end of the project, often to re-form in a different configuration, with some different members, for the next project. (2)

He argues that these team compositions require social interactions, relationship building and trust. As such, building students’ competencies in these collaboration skills becomes increasingly important as organizations move away from permanent teams.

Finally, team setting influences how we teach collaboration. We need to recognize the differences and ask our students to compare collaboration in workplace and classroom settings. A significant difference between these two settings is individuals’ motivation to collaborate. For example, workplace collaboration may be a job requirement and people engage in teamwork to keep their jobs or advance their careers. If an individual does not successfully participate in workplace collaboration, the consequences can be significant. In the classroom however, a wider variety of factors with lower-stake consequences influence students' motivation to collaborate with others. As teachers, we need to design collaboration assignments that account for these varied levels of student motivation. In addition to accounting for the motivational factors created by the classroom setting, we also need to adjust collaboration approaches for the reduced
timeframes and other course or classroom constraints. Teaching collaboration in the classroom requires that we also teach students about the influence of the classroom setting on collaboration and how collaboration skills taught in the classroom can be adapted to workplace settings in the future.

**Physical Location:**

With the unexpected global pandemic affecting this project, my research demonstrates why we must teach collaboration skills that support distributed teams when individuals are physically separated but working together. Prior to the pandemic, technical communication scholarship discussed an increase in distributed work (Spinuzzi, 2007). Due to COVID-19, distributed and remote work has increased exponentially in schools and the workplace. Among people who can feasibly complete their jobs from home, 20% said they worked from home prior to the pandemic, 71% of them were working from home in the fall of 2020, and 54% said that they will want to continue working from home (Parker et al., 2020, p. 4). As a result we can anticipate that the need for distributed, remote and virtual collaboration will increase. My research supports the importance of explicitly teaching collaboration skills necessitated by the varying physical locations of team members. For example, the experiences of students in my case study showed that with distributed teams, collaboration literacy requires additional competencies aimed at relationship building such as creating connections and fostering trust when everyone is only able to interact through technology.
Technology:

Technology is a significant factor as we identify the collaboration skills that technical communication students need. Other pedagogical literacy models consider digital and technical literacy as well-established requirements of technical communication pedagogy (Cargile Cook, 2002; Kastman Breuch, 2002; Selfe & Hawisher, 2002; Henschel & Meloncon, 2014; Spilka, 2010). As I was studying collaboration skills, I looked at how other technical communication teachers are incorporating technology into their classrooms and how textbooks discuss technology and collaboration. My study using Slack technology in my technical communication course reinforced the importance of choosing the right technology to support what we want students to learn. Thus, we need to consider technology skills that support collaboration competencies in addition to technology for collaborative document creation. Furthermore, we must think about the collaboration skills that technology specifically designed for collaboration can foster in students even when we do not explicitly teach these skills. For example, I found that Slack, a workplace-based technology designed for collaboration, provided a single location where students were able to share project information, contact each other and engage in collaborative activities. Furthermore, the instant messaging design and the availability of reactions and emojis fostered interactive, conversational and humanized interactions. In addition to encouraging collaboration, Slack offered a safe environment for students to experiment with different collaboration skills.
Foundational Elements

Four elements are the building blocks for this framework. I identified these foundational elements by drawing on my personal experiences leading teams, as well as collaboration and teamwork scholarship from technical communication, organizational management, psychology, and other disciplines.

Responsibility:

Responsibility includes defining team roles and work or task distribution. Within the context of collaboration, responsibility goes beyond the roles and tasks assigned to an individual and includes recognizing and utilizing individual diversity to achieve a common purpose.

Accountability:

Accountability focuses on individual commitment to the team and other team members. Accountability includes individuals completing their own responsibilities. It incorporates holding other team members to their commitments as well.

Relationship Building:

Relationships are the threads running through and holding together all elements of teamwork. Relationship building includes creating and fostering personal connections with other individuals.
Communication:

Within this context, communication focuses on interactions between individuals as they engage in collaborative activities and teamwork with others. Communication includes verbal and written interactions both face-to-face and using technology.

Collaboration Skills

Through the case study of my technical communication course, I identified that collaboration and teamwork skills fall into one of three categories. When I gathered data from technical communication teachers and textbooks, I found a similar pattern. As a result, I have defined collaboration and teamwork skills as process/task skills, interpersonal skills or personal skills.

Process/Task Skills:

Process/task skills are procedural skills aimed at achieving a specific end-result through a series of steps or activities. From the perspective of collaboration and teamwork, these types of skills can include project management, editing or revising documents and facilitating meetings.

Interpersonal Skills:

Interpersonal skills are skills related to interacting with another person. Often broad terms such as "communication with others" or "listening" can describe interpersonal skills. Alternatively, interpersonal collaboration skills can also use more specific terms such as "accountability," "compromise" and "consideration of diverse viewpoints."
**Personal Skills:**

Personal skills demonstrate a quality, characteristic or even mindset of an individual person. These can include flexibility, adaptability, and empathy. Some people may label these as traits since they are individual characteristics. Since I believe we can teach people how employ these characteristics, I also consider them skills.

**Teaching Collaboration and Teamwork**

As we apply this framework to our teaching, we must acknowledge the connections between the workplace, our classrooms and the materials we use to teach. When we examine these relationships, we will find significant opportunities for one to influence the other. In addition, we have to recognize and rethink how we are currently defining collaboration and collaboration-related terms. These definitions can have a direct impact on what we choose to teach about collaboration. We can then turn our attention to how we teach collaboration. Much like other proficiencies we deem important for technical communication students, we must deliberately focus our attention on developing collaboration competencies. In addition, we need to direct our efforts to those areas that can have the greatest impacts on our students. As distributed work continues to increase and our reliance on technology for collaboration expands, we should not implement this framework without explicitly addressing distributed teams and collaboration technology in our plans.
Connecting the Workplace, Classroom and Textbooks

To reiterate an earlier point, the workplace, textbooks and classroom activities collectively establish that we should be teaching collaboration skills to technical communication students and that the workplace, teachers and textbooks each influence the activities and beliefs of the other. There is a correlation between the skills that students learn from textbooks and the classroom and the roles that technical communicators occupy in the workplace. Specifically, when we teach students collaboration skills for supporting roles rather than more influential jobs, we are perpetuating perceptions that technical communicators are simply document creators and we limit their abilities to hold more substantial positions, exert influence and enact change.

The teacher survey and textbook analysis show a correlation between how textbooks cover collaboration and teamwork and what teachers are teaching in classrooms. For example, the relative attention to process/task skills, interpersonal skills and personal skills is similar in textbooks and the classroom. The classroom underscores ideas that textbooks focus on and the collaboration concepts and skills receiving the most attention in textbooks are also those highlighted in classroom instruction and activities. In many cases, textbooks teach students how to complete processes related to collaboration. For example, a textbook will focus on how to assemble and edit a collaborative document or schedule meetings and take notes. Even when textbooks present interpersonal skills such as feedback, the books often include a feedback process without discussing how to provide effective feedback within that process. As teachers shared course materials, collaboration-related assignments, and their experiences teaching collaboration, I found that many teachers are highlighting these same types of process/task collaboration skills. In some cases, the collaboration and teamwork skills technical
communication teachers are teaching do not necessarily reflect the collaboration skills teachers say are most important.

While many teachers have autonomy to determine the content they teach and the materials they use, we also know that there is still a significant reliance on graduate teaching assistants and adjunct instructors to teach technical communication courses. This increases the dependency on textbooks to determine what we teach. If textbooks transition their attention from collaboration processes to interpersonal and personal skills, they can influence what is taught in the classroom. By placing a greater emphasis in the classroom on interpersonal and personal collaboration skills, we can expand how technical communication students view their roles and enhance their contributions in team projects. In a collaboration case study of multidisciplinary teams, researchers found that technical communication students saw the written document as the primary project deliverable while engineering students saw this document as serving a supporting role. The researchers concluded that these views may have come about because technical communication students are not aware of the contributions they can bring to a team (Wojahn et al., 2001). As we refocus the collaboration skills of technical communication students beyond process/task skills, we can shape the collaboration abilities that these students bring to cross-discipline projects in school as well as in the workplace and other contexts. By advancing the collaboration competencies of technical communicators, we can influence how others perceive the field. As perceptions change, students’ opportunities to obtain more influential roles increase, giving students more power to act as agents of change.
Defining Collaboration-Related Terms

To determine new approaches for teaching collaboration within technical communication, we must start with rethinking how we define collaboration-related terms. If technical communication teachers continue defining collaboration and collaboration-related terms in the current manner, we will continue teaching process skills. As I have already stated, we must emphasize interpersonal skills over processes and tasks. I do not believe that the problem results from explicitly defining collaboration in terms of processes. When I asked teachers to identify words they associate with collaboration, they often selected interpersonal skills. The issue lies with the interpersonal terms teachers chose most often. Their choices seemed to reflect classroom challenges with collaboration. By selecting terms such as problem-solving, conflict, cooperation and accountability, teachers appear to define collaboration as a reaction to their own experiences with classroom collaboration rather than as an opportunity to build students’ skillsets. As a result, teaching efforts may focus on conflict management rather than relationship building. Furthermore, concentrating on collaboration challenges may cause teachers to focus on process/task skills over other types of collaboration skills. In my professional experiences, organizations often use process improvements to address business challenges. Perhaps, teachers are also looking at process and task skills to solve classroom collaboration issues. If we define collaboration using terms such as relationship, trust, leadership and purpose, it is more likely that our teaching will emphasize interpersonal and personal collaboration skills.

In addition to reconsidering how we define collaboration, we must also clearly define and distinguish terms associated with specific collaboration skills. As I analyzed textbook content, it became even more evident that making these distinctions is necessary as we plan activities to
teach collaboration. For example, by clearly defining *leadership*, we focus our teaching on building important collaboration leadership skills such as motivating others, providing constructive feedback and building team relationships. In the classroom, students can examine motivational strategies and role-play activities where they implement them. Perhaps in another assignment, students can critically analyze leadership case studies and identify the differences between leadership and team management. Since feedback is a significant aspect of leadership, I have found that activities and assignments that explicitly focus on providing performance feedback in addition to work product (document) review develop students' collaboration skills. For example, the feedback activity discussed in Chapter 2 emphasized relationship building. By integrating these types of leadership skills into instructional activities, we give students opportunities to contribute to team projects in new ways and equip them with more advanced skillsets and practical experiences to bring to their future workplace. As I discussed earlier, leadership capabilities can enable students to drive rather than simply participate in collaborative teams. Ultimately, students will benefit from learning relationship development, teambuilding and other leadership competencies as they apply these skills in a wide range of contexts beyond the classroom.

**Collaboration Skills for Distributed Teams**

The results of this project highlight that we need to consider collaboration skills, competencies, and ultimately collaboration literacy, from the perspective of distributed teams. As a reminder, within technical communication, Spinuzzi defines distributed work as “work that splices together divergent work activities (separated by time, space, organizations, and
objectives)” (Spinuzzi, 2007, p. 266). As such, we must continually expand our teaching strategies to support collaboration between individuals located outside the boundaries of a physical location or single organization. Although it was an unexpected contribution to my research, the pandemic raised awareness of virtual collaboration’s importance and the opportunity to integrate remote and distributed work into technical communication instruction. When I surveyed teachers, I learned that many of them did not address virtual collaboration in their technical communication classrooms until the COVID-19 pandemic made it necessary. Even then, they still did not specifically teach virtual collaboration. During the pandemic, teachers focused on collaborative learning in online environments rather than explicitly teaching virtual collaboration and teamwork skills. In addition, the textbooks I analyzed do not consistently represent distributed teams and virtual collaboration as significant aspects of technical communication. Thus, the unique considerations and skills related to distributed teams are not currently a standard part of technical communication curriculum.

We have an opportunity to teach students about the specific challenges that can occur when collaborating with distributed team members. In my classroom research, virtual students raised collaboration challenges similar to those experienced by distributed and remote teams I have managed in the workplace. Using case studies which specifically discuss distributed teamwork allows students to explore collaboration within distributed, remote and virtual teams. Additionally, students can analyze and suggest ways to address collaboration issues in these types of settings. To challenge students further, we can ask them to engage in distributed work even when we are teaching a course face-to-face. Students will learn by experiencing remote teamwork and solve the challenges that arise in these situations. In addition, we can have
students critically reflect on their experiences and specific practices enabling them to take what they have learned into future distributed work situations.

I also found that in many cases when teachers and textbooks considered teamwork outside a single physical location, they focused on virtual communication rather than the broad range of collaboration skills required by remote work, teleworking and distributed work. Similar to rethinking how we define collaboration and collaboration-related terms, we must expand our nomenclature related to virtual work and include terms such as distributed work and remote teams. With these changes, we better represent and address distributed technical communication work. Teaching activities can include process/task skills such as how to lead virtual meetings, interpersonal skills aimed at more intentional communication and relationship building, and personal skills that include change agility and self-advocacy. We can also have students think critically about how technology can both promote or distract from collaboration between distributed team members. One example is challenging students to determine how to address the difficulties faced when attempting to collaborate while physically separated, such as the inability to read social cues.

I am hoping that the combination of increased distributed work in the classroom and heightened awareness of the skills necessary to collaborate in these types of work configurations will prompt new teaching approaches. In addition, since the textbooks I analyzed were created before COVID-19, I am interested in observing any changes resulting from the pandemic’s impact on the ways we work with others in both the classroom and the workplace.
Make Teaching Collaboration Intentional

We must make collaboration literacy an intentional part of our courses if we want to develop the collaboration and teamwork skills of our students. Without an explicit focus on collaboration, classroom activities and assignments will continue to emphasize collaboration process/task skills, if collaboration is taught at all. Since collaboration is not currently acknowledged as a distinct type of literacy, it is not necessarily a core element of technical communication instruction. My research on classroom activities and textbooks also demonstrates that generally speaking, collaboration is not a critical aspect of our teaching. Some teachers may include collaboration in their classroom activities. In other cases, collaboration is optional. I find this interesting because in most contexts, collaboration with others is a necessity rather than an option. Regardless, my research indicates that it is unusual for teachers or textbooks to incorporate collaboration as a foundational aspect of technical communication courses.

Beyond making collaboration a standard element of projects and classroom activities, we must purposely teach collaboration skills. As noted throughout this dissertation, we are primarily emphasizing and teaching collaboration process/task skills rather than interpersonal or personal collaboration skills. Perhaps this occurs because teachers do not view collaboration skills as important as other skills. Maybe teachers are not sure what collaboration skills to teach or how to teach them. The case study I have presented uses my proposed framework and offers suggestions for collaboration skills that we should be teaching in technical communication courses and some ideas for teaching them. For example, results from the survey indicate that when teaching collaboration, many teachers are focused on conflict management and meeting processes. As a result, students are spending most of their time learning how to address the symptoms of
ineffective collaboration and teamwork. If we redirect our focus to teaching collaboration skills such as leadership, accountability and relationship building, we have an opportunity to minimize poor collaboration experiences and reduce the need to focus on conflict management. Instead, we will have more time to build students’ interpersonal and personal collaboration skills, thereby setting students up for future success in these areas.

As I have discussed, we must explicitly focus some of our teaching on personal collaboration skills. Since empathy, adaptability and flexibility are personal characteristics typically demonstrated through other actions and subjectively evaluated, they may be more difficult to teach and measure. For example, teaching flexibility or adaptability may require creating a situation, unexpectedly changing the situation, and assessing students’ reactions to the change. Therefore, we may have to be more intentional, and perhaps creative, in weaving these concepts into our collaboration teaching strategies.

Teaching with Collaboration Technology

My case study also provides some ideas for incorporating collaboration technology into technical communication instruction. I found that incorporating workplace-based technology into the technical communication classroom offers valuable learning opportunities for students. Supplementing academic tools with workplace-based tools was a successful strategy for teaching collaboration and teamwork skills. Unlike many academic-focused learning management systems, workplace-based collaboration technology is specifically designed to encourage and facilitate collaboration. Typically, this technology addresses the needs of stable teams in a single location as well as teams that bring together disparate contributors who may be co-located or
distributed. I found that using this technology to teach collaboration gave students a safe environment to discover and apply teamwork skills. In addition, by using technology that facilitates other aspects of collaboration and teamwork, students were able to experience technical communication activities beyond document creation.

The success of using workplace-based technology to teach collaboration and teamwork suggests that we should look for other opportunities beyond collaboration and teamwork to incorporate workplace-based technology into our technical communication instructional approaches. By incorporating workplace-based and new technologies into the classroom, we enhance students’ skills related to other types of literacy. We expand students’ digital literacy by exposing them to new technology and encouraging them to incorporate existing technology knowledge into their technical communication work. In my case study, I found that once I introduced students to the new technology, they were eager to use it and quickly identified various ways to employ it. Students cannot do this if they are not aware of different technology. I also created a classroom culture where new technology was welcomed and explored. As a result, students were encouraged to share and incorporate additional technology they had used in other contexts. Additionally, incorporating workplace-based technology contributes to students’ critical literacy. As we extend our use of collaboration technology to include team communication platforms and other emerging collaboration technology, we provide additional opportunities for students to explore and critically evaluate the affordances as well as the limitations of these tools.
Future Research Opportunities

My initial research into collaboration literacy has opened the door for additional research opportunities. Since my research was limited to one group of students, there are opportunities to conduct additional classroom studies about collaboration in technical communication. In a broader sense, the results of this study support continuing research about the benefits of collaboration literacy in technical communication, the competencies that comprise collaboration literacy, and ways to teach the necessary collaboration skills.

Collaboration Competencies and Skills

As I reviewed my observations throughout this research project, I identified opportunities to take a deeper look at data I collected from students and existing technical communication teachers. I gathered interesting and important insights from asking students about their experiences as they engaged in collaborative projects. There are still more details contained in some of their lengthier responses that may provide additional information about why students interacted in particular ways. There is also an opportunity to delve further into the responses and materials I received from technical communication teachers. I may also be able to conduct additional follow-up research with the teachers to gather more information about their answers to specific questions and to learn more about how they use the classroom materials they submitted to me. This additional data and further analysis can offer more insights into collaboration literacy, competencies and skills. Furthermore, I can also use new discoveries from this data to refine the framework that I have shared above.
We can also study how students’ beliefs about collaboration shape their current team interactions and how these teamwork experiences shape their views about collaboration in the future. As I asked students about their Slack use, I noticed that students said they increased their use of Slack to collaborate with each other as the semester progressed. While this may be a result of greater comfort with the technology or a recognition of Slack’s benefits, I also wonder if having a means to easily and freely interact with others influenced students’ views about collaboration. More specifically, I question whether students began to change their definitions of collaboration and considered more of their interactions as collaboration. This observation suggests that there is an opportunity to study how students define collaboration, both when they begin a course as well as after they progress through collaborative course activities.

**Collaboration Technology**

While this study only included one course at one university examining a specific technology platform for collaboration, the results suggest that we should study the impacts of incorporating other types of workplace-based technologies aimed at specific skills we want to teach. This includes expanding our technology selections further outside the boundaries of traditional classroom technology and studying the impacts of new emerging technologies within technical communication. There is the potential to bring other workplace-based technology into the technical communication classroom to address specific learning objectives. Similar to studying technology specifically designed for collaboration, we can study technology specifically designed for usability testing or content management. Future research opportunities might examine the role of other technologies, how students use them and the impact of students
taking technologies from other contexts and incorporating these technologies into their learning processes. We might also examine using other technologies for skills we are already teaching. For example, we can study how project management technology such as Monday.com and Basecamp impacts students’ technical communication project management skills.

Although in this study I did not teach students to explicitly assess collaboration technology or its use within the context of technical communication, including critical assessment of collaboration technology in classroom instruction is an important next step. Now that I have a better understanding of how students are interacting and collaborating through a team collaboration technology like Slack, I can also conduct critical analyses of these types of technology. This includes expanding my own research efforts as well as studying teaching approaches that incorporate critical analyses of inclusivity and social affordances of these technologies. Furthermore, since there is limited research about using these and other types of emerging technology, there are many options for future studies.

Finally, there are opportunities to study Slack in more detail and further explore how a technology platform can directly teach or shape users interactions and collaboration. This includes using the data from this research to study Slack’s interface and features in addition to how students used them. This further study can answer questions such as whether there is something in Slack’s user design that encourages collaboration because it makes users feel like they are interacting with humans rather than technology, or whether Slack is simply a tool that makes collaboration easier and more accessible.
Impacts of COVID-19

Although studying the influence of COVID-19 was not an intentional part of this research project, conducting a case study that examined classroom collaboration experiences throughout the various stages of the pandemic presented new research questions. First, the changes in how we are teaching courses and how people are completing work has resulted in a need for additional research related to collaboration and teamwork between distributed, remote and virtual individuals. This research may consist of examining how students and employers view collaboration skills going forward and how learning as distributed learners impacts the ability of students to collaborate in the future. I am interested to know whether individuals will view classroom collaboration more positively or negatively since the beginning of the COVID-19 pandemic and how these views will impact what we choose to teach as well as how students learn.

One interesting finding of my research is that students’ confidence in their collaboration skills grew as the semesters progressed from in-person to virtual work. This suggests that virtual interactions required by the pandemic may have enhanced people’s view of their overall collaboration abilities. Future studies may focus on students’ beliefs about their own collaboration skills. My results also invite future studies about the correlation between the forced distributed interactions necessitated by COVID-19 (personal, school and work interactions) and the collaboration competencies of students. In the broader context, we can ask how the need for collaboration literacy will increase as a result of the pandemic and how the experiences of students during the pandemic contribute to their confidence and abilities related to teamwork and collaboration.
Concluding Thoughts

While collaboration is not a new concept in technical communication pedagogy and research, I believe my research study demonstrates the benefits of rethinking collaboration as a distinct literacy. There is little, if any, debate about the value of collaboration competencies in the workplace and the important contributions collaboration skills bring to students’ education. If we consider collaboration as more than just an element of social literacy, it is likely that we will teach students a broader range of skills and that they will leave our classrooms with increased options to act as change agents in other contexts. By distinguishing collaboration literacy as its own literacy and building on my proposed framework for teaching collaboration, we can advance perceptions of technical communication and increase opportunities for our students to exert their influence as they go out and interact in the world.

Given that ideas established in the classroom are carried into the workplace, we can change our views of collaboration competencies and the collaboration skills we teach and influence how those outside the academy perceive technical communication. If we expand perceptions of technical communication beyond documentation creation and other supporting roles, we extend technical communicators’ influence. Furthermore, if we change perceptions of technical communicators' value in the workplace, it may eventually encourage additional shifts in how those within academic institutions view technical communication, ultimately further expanding and increasing the perceived value of the field of study.

Incorporating workplace-based practices and technology into the technical communication classroom also increases opportunities to teach collaboration and enhance our teaching approaches. Within the workplace, many professionals use practices such as project
management approaches to reduce the administrative tasks associated with teamwork. If we use these practices in the classroom, we refocus students’ learning on interpersonal and personal collaboration skills. By utilizing workplace-based technology designed specifically for collaboration, we can use the affordances of this technology as a means for students to organically develop their collaboration skills.

As we begin to think about how to address collaboration literacy in technical communication classrooms, my proposed framework, which includes process/task skills, interpersonal skills, and personal skills across the foundational elements of collaboration provides a good starting point. Defining these skills within the context of team composition, physical location and technology enables us to focus our teaching efforts on collaboration skills that will have the greatest impacts on the technical communication field, our students, and ultimately the influence they have on society.
REFERENCES


https://collegecrisis.shinyapps.io/dashboard/.


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Slack Technologies Inc. (2019). *Amendment No. 3 to Form S-1 Registration Form*. https://www.sec.gov/Archives/edgar/data/1764925/000162828019007428/slack-s1a3.htm#sC9C346D78943772D97FB567D8BF6BBDD.


APPENDIX A: BLOG POST ASSIGNMENT PROMPTS
Fall 2019 Blog Assignment Prompts

Blog Post Assignment 1: Technical Writing and Visual Communication
The purpose of this blog is to share your reflections, thoughts, ideas and reactions to the concepts covered during our first weeks of class. Your first blog post should be your reflection about the information you have read (Chapter 1 and the online design readings), the class activities we completed, and the various topics we discussed, including the course syllabus. If you are struggling with how to begin, here are some questions to consider (you do not have to answer these questions, they are just a couple of suggestions to help if you are stuck for ideas):

- How do you define technical communication? What was your definition before starting this course and reading chapter 1? How has your definition changed? How has this influenced your feelings about technical communication and/or this course?
- What have you found surprising and/or interesting in the things you have read this week or activities you have completed? What was surprising and/or interesting about it? How has or will this information influence you in the future?
- What are your thoughts about beginning a writing class by looking at visual communication? What is your reaction to what you have read and/or the first project? What have you learned about visual communication? How might this be important to you now and/or in the future?

Blog Post Assignment 7: Teamwork and Collaborative Projects
The purpose of this blog post is to share your reflections, thoughts, ideas and reactions to the concepts of teamwork and collaborative projects. Your goal is to discuss concepts related to our conversations, materials and class activities about teamwork and collaborative projects including project management techniques. Choose one option:

Option 1: Sources of inspiration - Review one of the following TED talks and focus your blog post on your reactions to the material and relate the material to both your personal experiences and our coursework.

- “How to Turn a Group of Strangers into a Team” – Amy Edmondson (2010)
- “Massive-Scale Online Collaboration” – Luis Von Ahn (April 2011)

Option 2: Your experience - Share your personal experiences with teamwork and collaborative projects both in this class and other places. Focus on the overall situation, your role and behaviors, your feelings and reactions to the situation(s), your successes, your challenges, and suggestions for others resulting from your experiences. You must relate these experiences to specific information covered in our class.

Blog Post 8: Reflection on ENGL308
The purpose of this blog post is to share your reflections and thoughts about your experiences this semester as well as provide some advice to new students coming into this course in the future. Here are some questions you should address in your post. As always, please feel free to add to this list and cover additional topics.

- Complete the following sentences…One thing I was surprised to learn in this course is…I was surprised to learn this because…
- If you could share one idea from this course with others, what would it be and why?
- If you were going to change one thing about how this class is taught in the future, it would be…
- Your favorite thing in this class was…
- The thing you are most proud of in the class is…
- Your experience this semester with the writing assignments
• Your experiences this semester with in-class activities and group collaboration
• Something students should make sure they do
• Something student should make sure they never do
• One thing you wish you had done differently

Spring 2020 Blog Assignment Prompts

Blog Post Assignment 1: Technical Writing

The purpose of this blog post is to help others get to know you a little better and to share your reflections, thoughts, ideas, and reactions to our first week of class. Before you begin writing your first blog post, read the blog I have posted about writing blogs this semester.

Your first blog post should be an introduction of yourself (beyond what you shared in our first meeting) and your reflection about the information you have read in Chapter 1, the class activities we completed, and the various topics we have discussed, including my class blog post and the course syllabus.

Since this is your blog, you have the flexibility to address the topic as you choose. If you are struggling with how to begin, here are some questions to consider (you do not have to answer these questions, they are just a couple of suggestions to help if you are stuck for ideas):

• When you meet new people, what do you tell them about yourself? What adjectives do you use to describe yourself? What are you hoping to accomplish this semester in this course? What do you want us to know about you?
• What is your reaction to my blog post about writing blogs? What are your initial thoughts about writing a blog for the class? How has my blog post influenced your thinking at this point?
• How do you define technical communication? What was your definition before starting this course and reading chapter 1? How has your definition changed? How has this influenced your feelings about technical communication and/or this course?
• What have you found surprising and/or interesting in the things you have read this week or activities you have completed? What was surprising and/or interesting about it? How has or will this information influence you in the future?

Blog Post Assignment 7: Decision-Making and Teamwork

The purpose of this blog post is to share your reflections, thoughts, ideas, and reactions to the concepts of decision-making and teamwork. Your goal is to discuss concepts related to our conversations and materials about assessing problems, analyzing choices, making decisions, and providing recommendations, or about teamwork and collaborative projects including project management techniques. Choose one of the options below:

Your Experiences with Decision-Making/Recommendations: Discuss your experience with decision-making and providing recommendations. Recount one experience or multiple experiences where you have had to make an important decision either for yourself or to advise someone else. Share the problem you were attempting to solve and the process you used to make your decision/recommendation. How did you go about defining the problem? How did you determine the criteria for making your decision? How did you weigh/factor the various criteria? How did you figure out the various options to address the problem? What was your ultimate decision/recommendation? In retrospect, how do you feel about your decision? How do you feel about your process to arrive at the decision? What would you do differently if you were to do it again?

Your Experiences with Teamwork and Collaboration: Share your personal experiences with teamwork and collaborative projects both in this class and other places. Focus on the overall situation, your role and behaviors, your feelings and reactions to the situation(s), your successes, your challenges, and suggestions for others resulting from your experiences. You must relate these experiences to specific information covered in our class.
TED Talks: Take some time to review one or more of the following TED talks. Focus your blog post on your reactions to the material and relate the material to both your personal experiences and our coursework.

- “How to Turn a Group of Strangers into a Team” – Amy Edmondson (2010)
- “Massive-Scale Online Collaboration” – Luis Von Ahn (April 2011)
- “The Greatest Ted Talk Ever Sold” – Morgan Spurlock (TED2011)
- “Perspective is Everything” – Rory Sutherland (May 2012)

Blog Post 8: Reflection on ENGL308
This prompt is the same as the prompt in Fall 2019.

Fall 2020 Blog Assignment Prompts

Blog Post Assignment 1: Technical Writing
This prompt is the same as the prompt in Spring 2020 with the addition of one more question:

- What are your thoughts about the course content and our approach to the course this semester? How do you feel about the collaborative nature of the course? In reviewing the Guide to English 308 infographic and syllabus, what interests/excites you the most? What concerns do you have?

Blog Post Assignment 5: Teamwork and Collaborative Projects:
The purpose of this blog is to share your reflections, thoughts, ideas and reactions to the concepts of teamwork and collaborative projects. Your goal is to discuss concepts related to our conversations, materials and class activities about teamwork and collaborative projects including project management techniques. Choose one option:

Option 1: Discuss your thoughts about the relationship of collaboration and teamwork in professional contexts to your educational experiences. What collaboration and teamwork skills, experiences and abilities do you believe are most important in professional contexts? How do you believe your educational experience has prepared you for future teamwork and collaboration? What do you believe should occur (or not occur) in this course and others related to teamwork and collaboration? Why do you feel this way? Support your perspective with specific examples.

Option 2: Share your personal experiences with teamwork and collaborative projects both in this class and other places. Focus on the overall situation, your role and behaviors, your feelings and reactions to the situation(s), your successes, your challenges, and suggestions for others resulting from your experiences. You should relate these experiences to specific information covered in our class.

Blog Post Assignment 8: Reflections on ENGL308
The prompt is the same as the prompt in Spring 2020 with the following changes:

- Your experience this semester with the writing assignments was removed from the list of questions.
- Your experience this semester with in-class activities and group collaboration was changed to remove in-class activities.
APPENDIX B: PRE-PROJECT TEAM CREATION QUESTIONNAIRES
Project 3: Pre-Project Team Creation Questionnaire:

1. What is your name?

2. What strengths do you believe you can contribute to a team? (Check all that apply).
   - Above average writing ability
   - Above average information finding/research skills
   - Above average presentation skills
   - Above average visual design/graphic skills
   - Above average creativity/brainstorming/idea generation skills
   - Above average leadership/management skills
   - Above average technical skills including website creation

3. What is your level of commitment to this project? (Check the one that best applies).
   - I plan to get an A on this project and will make whatever sacrifices are necessary
   - I want an A but I am limited in time/effort I can dedicate to this project
   - I am satisfied with a B on this project
   - My goal is simply to receive a passing grade on this project

4. What scheduling issues and other commitments do you have that might interfere with this project? (Please include dates/times you are completely unavailable).

5. What concerns do you have about your skills or abilities that might affect how your team views your performance on this project?

6. Would you like to negotiate an agreement with the team that assigns you less responsibility for the project in exchange for a lower grade? (yes/no)

7. How do you think your team should handle missed deadlines?

8. How do you think your team should handle poor quality contributions?

9. Who in the class would you like to have for a partner and why? Please be specific.

10. Is there anyone in this class who you would rather not be on a team with? (Remember all of your responses are confidential).

Project 4: Pre-Project Team Creation Questionnaire:

1. What is your name?

Before beginning this questionnaire, please be sure that you have watched all proposal presentations. The project names in this questionnaire enable your selections, however, they do not provide a description of the proposed project. Please do not make your project selections based solely on the names listed in this questionnaire.
2. Have you completed watching all presentations? (yes/no)

3. Rate the project proposals in the order of your favorite to least favorite. (1=the one you like the best and n=the one you like the least). (List of submitted project proposals)

4. Check three projects that you would be interested in working on. (List of submitted project proposals).

5. What is your first choice if you could choose any of these projects to work on? (List of submitted project proposals).

6. Please indicate any projects where there are special circumstances which would prevent you from working on the topic.

7. Please rate your skills in the following areas:
   - Project management
   - Research
   - Persuasive writing
   - Informational writing
   - Editing
   - Design
   - Team collaboration

   The choices are:
   - I’m a rock star
   - I’m good but this is not my strongest skill
   - I can do it, but it is challenging for me
   - I need work in this area

8. If your project is selected, please indicate who you would like to have on your team.

9. If your project is selected, please indicate who you do not want to have on your team.

10. Please provide any other information you want me to know as I am assigning topics and teams for this final project.

---

1 "n" depends on the number of proposals submitted by the students in the course.
APPENDIX C: POST-PROJECT TEAM ASSESSMENTS
Project 3 Post Project Team Assessment:

1. What is your name?

2. Rate each [person]’s overall contribution to your project. (1 is the lowest and 4 is the highest).

3. Why did you give this rating to [person]? (One question for each team member).

For each person on the team, the following questions were asked using the person’s name.

4. What primary responsibilities were assigned to [person] in your team’s project plan?

5. How well did [person] do meeting these responsibilities?
   - Did not meet commitments
   - Did the work but only an ok job
   - Met commitments and did a good job
   - Awesome – went above and beyond

6. If you were going to assign [person] an overall grade for this work, what would it be? (Sliding grade scale from A+ to F)

7. What is the single most important contribution [person] made to your project?

8. You have been given a total of 10 points to allocate for the successful completion of your Project Launch Website. Allocate these points among your team. Your total must equal 10.

9. You have been given a total of 10 points to allocate for the successful completion of your Digital Communication Plan. Allocate these points among your team. Your total must equal 10.

10. You have been given a total of 10 points to allocate for the successful completion of your Project Rationale. Allocate these points among your team. Your total must equal 10.

11. What advice would you give to [person] to improve teamwork skills?

12. What obstacles did your team encounter and how did you overcome them?

13. How did the team rules you created contribute to your work as a team?²
   - We wrote them because they were required, but never used them.
   - We referenced them occasionally during the project, but they didn’t really impact our success.
   - We referenced them occasionally during our project and they helped our success.
   - Our team rules were a critical piece of our success.

---

¹ Questions with [person] were presented as multiple separate questions with each team member’s name. [Person] is a reference to a specific name.

² Only fall 2020 students were asked this question.
14. How did your team use Slack for this project? (Please check all that apply).³
   - We used Slack to direct message each other
   - We used Slack to collaborate on times to meet
   - We used Slack to collaborate on our work
   - We used Slack as a means to get status updates
   - We shared work and documents through Slack
   - We held some of our meetings through Slack
   - We used Slack to ask the instructor questions about the project

15. Did your team use any other technologies in addition to Slack for this project? (yes/no). If answer=yes, then What other technologies did your team use for this project? (Please check all that apply).⁴
   - Blackboard Collaborate
   - Zoom
   - Google Hangouts
   - Microsoft Word
   - Microsoft One Drive
   - Google Docs
   - SnapChat
   - Discord
   - Other (Please indicate).

16. Would you want to work with [person] again?
   - Definitely yes
   - Probably yes
   - Probably not
   - Definitely not

17. Why or why not?

18. Overall, how successful do you feel your team collaboration was?
   - Extremely successful
   - Successful enough to get the job done
   - Not so great
   - We were a train wreck

19. What was the biggest contribution to its success or failure?

³ Only fall 2020 students were asked this question.

⁴ Only fall 2020 students were asked this question.
Project 4 Post Project Team Assessment:

The questions were the same as the Project 3 Post Project Team Assessment with the following changes:

The three questions asking respondents to allocate 10 points for completion of project deliverables were removed and replaced with a new question: Please rate [person] on the following: (Rating choices are below average, average or above average).

- Quality of work
- Quantity of work
- Timeliness of completion of work
- Leadership
- Communication
- Participation in team meetings
- Overall contribution to the team

The choices are

- Below average
- Average
- Above average
APPENDIX D: TEACHER SURVEY QUESTIONS
Survey Questions\(^1\)

A Bit about You

1. Choose the option that best describes your current institution:
   - 4-year public non-profit institution
   - 4-year private non-profit institution
   - 2 or 4-year for-profit institution
   - 2-year institution/community college
   - Trade or vocation school

2. What is your current position at this institution?
   - Graduate teaching assistant (instructor of record)
   - Adjunct/part-time instructor
   - Full-time instructor, lecturer or visiting professor (non-tenure track)
   - Tenure-track professor
   - Tenured professor (any rank)

3. How many years have you been teaching technical communication courses (at your current institution or others)?
   - 1 year or less
   - 1 to 3 years
   - 3 to 5 years
   - 5 to 10 years
   - 10 to 15 years
   - 15 years or more

Collaboration Definition

1. When you think about collaboration in your technical communication classroom, what terms come to mind? (Please check all that apply)

<table>
<thead>
<tr>
<th>Accountability</th>
<th>Cooperation</th>
<th>Peer review</th>
<th>Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Cross-discipline</td>
<td>Performance</td>
<td>Task</td>
</tr>
<tr>
<td>Collective</td>
<td>Discussion</td>
<td>Problem-solving</td>
<td>Team</td>
</tr>
<tr>
<td>Cohesion</td>
<td>Group</td>
<td>Project</td>
<td>Teamwork</td>
</tr>
<tr>
<td>Community</td>
<td>Individual</td>
<td>Purpose</td>
<td>Trust</td>
</tr>
<tr>
<td>Conflict</td>
<td>Integration</td>
<td>Relationship</td>
<td>Writing</td>
</tr>
<tr>
<td>Consensus</td>
<td>Leadership</td>
<td>Results</td>
<td></td>
</tr>
<tr>
<td>Contribution</td>
<td>Literacy</td>
<td>Social media</td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Not all survey questions were included in this study. This appendix only includes questions that I analyzed for this project.
2. How important are collaboration skills for technical communication students? Rating scale: Not important to Essential (1 to 5)

3. What collaboration skills, if any, do you think are important for technical communication students to have proficiency in?²

Technical Communication Course

For the remaining questions, please select a technical communication course aimed at broad technical communication theories, strategies, concepts and practices. This may be an advanced level course; however, it should provide broad coverage rather than specific focus on a single technical communication concept.

1. What term did you or are you scheduled to teach this course? (Please check all that apply)

<table>
<thead>
<tr>
<th></th>
<th>Spring 2021</th>
<th>Spring 2020</th>
<th>Spring 2019</th>
<th>Spring 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter 2021</td>
<td>Winter 2020</td>
<td>Winter 2019</td>
<td>Prior to Spring 2018</td>
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<tr>
<td>Fall 2020</td>
<td>Fall 2019</td>
<td>Fall 2018</td>
<td></td>
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<tr>
<td>Summer 2020</td>
<td>Summer 2019</td>
<td>Summer 2018</td>
<td></td>
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</tr>
</tbody>
</table>

2. What modality/modalities have you or are you teaching this particular course? (Please check all that apply)

- Online (institution-required due to COVID-19)
- Hybrid or flex (institution-required due to COVID-19)
- Online
- Hybrid (a combination of online and face-to-face instruction)
- Face-to-face

3. What textbook, if any, do you use for this course?

Course Syllabus

1. What percentage of your class focuses on collaboration and collaboration skills?

- % of my learning objectives is aimed at collaboration and collaboration skills
- % of my course instruction is aimed at collaboration and collaboration skills
- % of the overall course grade is aimed at collaboration and collaboration skills
- % of assignments is aimed at collaboration and collaboration skills

2. How do you address collaboration and collaboration skills in your course syllabus? (Please check all that apply).

- Collaboration and/or collaboration skills are explicitly stated in my course description
- Collaboration is specifically addressed in course learning objectives
- Collaboration is explicitly called out as a portion of students’ overall course grade
- Collaboration policies are included in my syllabus
- Collaboration and/or collaboration skills are referenced or implied within specific areas of my syllabus, but not explicitly called out
- I do not address collaboration in my course syllabus

² Questions without selection options requested free-form text responses.
Please share your most recent technical communication course syllabus.

If this syllabus is from the Spring 2020 semester and was modified due to COVID-19, please include both your initial syllabus and your revised syllabus.

Please remember that these materials are being used to gather your insights and are not being evaluated for design, accuracy or efficacy. Thus, please submit them in their current form and do not be concerned with revisions or critical review. These documents will remain confidential and in possession of the researcher; they will not be published outside the scope of this study.

**Teaching Approaches**

1. Rate your level of comfort with teaching collaboration. Rating scale is not comfortable at all to extremely comfortable (1 to 5)

2. How do you approach collaboration and collaboration skills in your technical communication course?
   - I have explicit instruction and assignments aimed specifically at collaboration and collaboration skills.
   - Collaboration is an underlying skill throughout my instruction and assignments, but I do not give it special attention.
   - I do not intentionally include collaboration or collaboration skills in my class.

3. What, if any, specific collaboration theories do you include in your technical communication course? (For example, Tuckman's model of team development, team effectiveness theories, collaboration methods, etc.)

4. What, if any, specific collaboration strategies or skills you include in your technical communication course? (For example, project management, resolving team dysfunctions, etc.)

5. Describe one or two of the biggest challenges you've faced when teaching collaboration.

**Collaboration Tools and Technologies**

1. What collaboration tools and technologies do you incorporate into your technical communication course? (Please select one response for each tool)

<table>
<thead>
<tr>
<th>Tool</th>
<th>Use of this tool is required</th>
<th>Use of this tool is suggested but not required</th>
<th>Students use this tool without prompting or instruction</th>
<th>We do not use this tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discord</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FaceTime</td>
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<tr>
<td>Google Docs</td>
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<tr>
<td>Google Hangout</td>
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<td>Microsoft Teams</td>
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<td>MS Word Track</td>
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<tr>
<td>Changes</td>
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<td>Skype</td>
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</tr>
<tr>
<td>Zoom</td>
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</tr>
</tbody>
</table>

2. What other collaboration tools and technologies do you use in your technical communication course?
3. Which, if any, collaboration tools and technologies do you provide explicit instruction for use in your course?

4. Which, if any, collaboration tools and technologies do you require explicit use for completing at least one assignment?

**Collaboration Assignments**

1. What types of collaboration assignments do you include in your technical communication course? (Please check all that apply)
   - Discussion forums
   - Peer review and response
   - Social media interactions
   - Collaborative writing
   - In-class paired or small group work
   - Graded paired projects (2 students working together)
   - Graded small group projects (3 to 5 students working together)
   - Graded large group projects (6 or more students working together)
   - Other
   - I do not include any types of collaboration assignments

2. What types of collaborative work products, if any, do you include in your technical communication course? (Please check all that apply)
   - Reports
   - Infographics
   - Websites
   - Instructions
   - Oral presentations
   - Other
   - I do not include any collaborative work products

3. How, if at all, do you address collaborative work/skills used in virtual environments or by remote/teleworkers?

4. How do you factor collaboration into grades for assignments requiring collaboration?
   - Collaboration is a separate grade from the overall assignment grade.
   - Collaboration is included in the overall assignment grade and explicitly indicated.
   - Collaboration is factored into the overall assignment grade but not specifically called out.
   - I consider collaboration, but it is not an explicit part of the assignment grade.
   - I do not consider collaboration into the assignment grade.

5. Describe one successful assignment or activity you’ve used for teaching collaboration.

6. What made it successful?

**Collaboration Instructional and Assignment Artifacts**

Please share assignment artifacts addressing collaboration and collaboration skills. These artifacts might include assignment prompts, instructions, and other supporting materials.
Please remember that these materials are being used to gather your insights and are not being evaluated for design, accuracy, or efficacy. Thus, please submit them in their current form and do not be concerned with revisions or critical review. These documents will remain confidential and in possession of the researcher; they will not be published outside the scope of this study.

**Impacts of COVID-19**

How, if at all, has COVID-19 impacted your views and/or approaches to teaching collaboration in your technical communication classes?
APPENDIX E: COLLABORATION TERMS
**Survey Results:** When you think about collaboration in your technical communication classroom, what terms come to mind? (Please check all that apply). N=27

<table>
<thead>
<tr>
<th>Term</th>
<th>Responses</th>
<th>%</th>
<th>Term</th>
<th>Responses</th>
<th>%</th>
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<tbody>
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<tr>
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<tr>
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<td>33%</td>
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