11. Designing a Team-Based Online Technical Communication Course

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Abstract: This chapter describes how team-based learning (TBL), a pedagogical strategy used in high-enrollment in-person business and science classes, can foster effective collaborative writing practices in online technical communication service courses. While collaborative writing projects reflect common workplace communication practice and can help to lessen students' perceptions of isolation in online courses, they often come into conflict with online students' needs for flexible schedules and with the difficulty of establishing interpersonal trust in online environments. TBL offers a conceptual structure for designing effective collaborative learning experiences by organizing courses into units with repeated stages for preparation, content application, and team accountability. The course design presented in this chapter also used the conceptual frame of multimodal editing, where professional writers start from preexisting documents rather than blank pages to create cases conducive to repeated, rapid units that helped students learn to work together over time. The units moved through cycles of collaborative analysis and evaluation of sample documents to a scaffolded, divided, and layered approach to collaborative writing. This course design offers a starting point for considering the strategic integration of collaborative writing processes throughout an online technical communication course.

Keywords: pedagogy, online course design, collaboration, team-based learning, multimodal editing

Key Takeaways:

- Collaborative writing assignments reflect common workplace practice and can help to reduce students' perceptions of isolation in online courses.
- Team-based learning (TBL) offers a strategic approach for creating a replicable group project structure that helps students learn to work together over time.
- Adapting TBL to the exigencies of an online technical communication course increases student communication, engagement, and retention.

My first online technical communication course was based on a flawed design. I copied much of the existing assignment sequence from the institution's face-to-face course while trimming or altering elements that seemed less suited to the online environment. For example, I eliminated many of the smaller in-class exercises to simplify due dates. I replaced real conversations and discussions with

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extended forum posts. And, based on advice from experienced colleagues, I also removed all collaborative writing assignments.

In retrospect, the primary flaw of the course design was the focus on perceived anti-affordances. When encountering objects or technologies, users perceive the potential for certain kinds of interactions or affordances. Anti-affordances are perceptions of "the prevention of interaction" (Norman, 2013, p. 11).[1] They are the interactions that users think are difficult or impossible with respect to a specific technology, but, as perceptions, anti-affordances need not reflect the actual capabilities of a technology. My initial course design was driven by my perceived anti-affordances of online learning environments: asynchronous student communication occurred slowly; disembodied, online communication curtailed students' mutual trust; and the lack of active conversation stymied collaboration.

This critique is not offered as a strawman representation of all online technical communication courses. The field's literature has provided ample evidence of robust, engaging, and varied approaches to teaching technical communication online: over the past 15 years, there have been two edited collections and two special issues devoted to the topic (Cargile Cook & Davie, 2013; Cargile Cook & Grant-Davis, 2005; Hewett & Bourelle, 2017; Hewett & Powers, 2007). The most recent special issue focused on training online technical communication instructors (Bartolotta et al., 2017; Bay, 2017; Grover et al., 2017; Vie, 2017), including for cross-cultural and global communication courses (Gonzales & Baca, 2017; St.Amant, 2017; Thrush & Popham, 2013). Other literature has discussed online program administration by examining the balance between instructor autonomy and curricular consistency (Maid & D'Angelo, 2013; Rodrigo & Ramírez, 2017; Tillery & Nagelhout, 2013) and assessing the effectiveness of online program orientations for students (Watts, 2019). Other authors have also adapted popular pedagogical practices such as service-learning (Bourelle, 2014; Nielsen, 2016; Soria & Weiner, 2013) and multimodal writing (Bourelle et al., 2017) to online environments. Finally, there have been discussions of best practices for organizing and scaffolding work in online technical communication courses (Grant-Davie & Hailey, 2014; Jones & Jenkins, 2013). So rather than acting as a generalization, the critique of my previous course design is only intended to depict the context for the subsequent redesign that re-centered student-to-student interaction in the form of team-based learning.

This emphasis on collaboration in the redesign sought to improve students' social learning experiences and to increase retention rates. Research has shown that students often feel isolated in online courses, which leads to lower retention rates (Bolliger & Inan, 2012; Bowers & Kumar, 2015). Collaborative projects have been shown to address this isolation and improve retention (Bergin, 2015; Bolliger & Inan, 2012; Hazari & Thompson, 2015), while also providing a real

1. Anti-affordances are slightly different from constraints, which are features of a technology that guide interactions in specific ways (Norman, 2013).

social context (Bruffee, 1984) and audience for the assignments (Blair, 2005). Additionally, collaborative writing is an important and challenging workplace communication practice, making it a core element of many technical communication service courses (Bremner, 2010; Burnett et al., 1997, 2013; Hewett & Robidoux, 2010; Johnson-Eilola, 1996; Lunsford & Ede, 2011; Stratton, 2015).

Despite these many benefits, there is evidence that online students often dislike and resist collaborative work. Students primarily choose online courses because of the flexibility and convenience they offer (Benbunan-Fich & Hiltz, 2003; Clark et al., 2018; Eaton, 2013; Jaggars, 2014; Jaggars & Bailey, 2010; Kariya, 2003; Mahoney, 2009; Smart & Cappel, 2006). Therefore, intensive group projects, which make students rely on each other's schedules, can conflict with this flexibility. Additionally, collaborative writing can be prone to unequal contributions (Hewett, 2015; Wolfe, 2010), thus increasing the potential for interpersonal discord. Furthermore, online students may not trust their group members, which can make it difficult to coordinate group work (Burton & Goldsmith, 2002). Even students in highly collaborative online writing courses have reported that "they did not benefit from interacting with their peers" and that they "could have gotten just as much out of it if it were individual work" (Stewart, 2018, "Findings," sec. 3.2.3).

However, there has also been an increase in research on online collaborative writing instruction. Scott Warnock (2009) briefly described a range of group projects online, including a collaborative argument website, peer review, and group message boards. Jeffrey Bergin (2015) adapted Karen B. LeFevre's (1987) classification of social learning approaches to describe online group writing as ranging from projects where students interact but submit separate deliverables (e.g., discussion boards or peer review) to projects where all students work together on a single deliverable (e.g., a wiki page).[2] Beth L. Hewett (2015) recommended small, permanent teams and pointed, low-stakes assignments—an approach that this chapter largely adopts and expands. And Teresa Mauri and Javier Onrubia (2015) and Carola Strobl (2015) described how providing students with a script of the recommended work process could help them to collaborate effectively online.

This chapter contributes to the ongoing discussion by presenting an additional pedagogical approach for building collective writing projects online. It argues

2. Bergin described the former as "collaborative writing" and the latter as "collective writing," but other authors have offered alternative ways of differentiating between similar terminology. For example, Pope-Ruark (2017) described "collaboration" as an intensive process with shared goals where the result is greater than the sum of its parts. Conversely, she described "cooperation" as focused on coordinating and combining individual efforts, thus aligning it more directly with Bergin's definition of "collaboration." Given the disagreement over definitions, this chapter will generally use "collective writing" and "collaboration" interchangeably to mean a writing process with shared goals and a single, shared product. Students might still divide up work during this process, but they must also do substantial work together to complete the final product.

that we can and should design more effective contexts for online student collaboration. It employs and adapts team-based learning (TBL), a popular pedagogical approach in high-enrollment science and business courses, to structure an online technical communication service course. And it provides examples of how a case-based, multimodal editing perspective can structure writing tasks according to the needs of online student writing teams.

In the following sections, I briefly review the literature describing the design of TBL classes and discuss the primary limitations of TBL for online writing courses. Then I present the adaptation of TBL for my technical communication course. Finally, I reflect on how the core elements of this course design can be expanded and adapted for the needs of other online technical communication courses.

Literature Review: Team-Based Learning and Its Limitations

Team-based learning is a teaching strategy for systematically integrating teamwork throughout a course. It was developed by Larry Michaelsen in the 1970s and has grown into a significant body of pedagogical literature. TBL has been used in a range of disciplines, including health, business, and science (Emke et al., 2016; Huang & Lin, 2017; Ratta, 2015; Sharma et al., 2017; Stepanova, 2018), and, more recently, in humanities courses as well (Harde, 2012; Restad, 2012; Roberson & Reimers, 2012). Despite this broad usage, there is no literature on implementing TBL in writing courses and only limited work on adapting TBL to online courses (Clark et al., 2018; Freeman, 2002; Hosier, 2013; Palsolé & Awalt, 2008).

TBL is best understood as a prescribed set of course design elements rather than a fully-fledged pedagogical theory. While TBL has a theoretical basis in social-constructivism and cognitive apprenticeship (Fink, 2002; Sweet & Michaelsen, 2012), most TBL literature has prioritized observed practical benefits over theoretical foundations. For example, Michaelsen invented TBL as a way to help instructors manage increasing course enrollments (Michaelsen et al., 2002). Likewise, other authors have highlighted benefits such as maintaining instructors' enthusiasm for teaching (Knight, 2002) and supporting nontraditional students (Goodson, 2002), diverse students (Croyle & Alfaro, 2012), and students with disabilities (Nakaji, 2002).

Michaelsen (2002) defined TBL against generalized student group work through four principles: 1) intentionally-designed student teams, 2) strong student-accountability measures, 3) assignments designed for active collaboration, and 4) immediate and regular feedback. These principles are built into the recommended TBL course and unit structures.

First, effective TBL teams are large, diverse, and permanent. Large teams of 5-7 students ensure "that the vast majority of groups will have ample resources" (Michaelsen, 2002, p. 40). Likewise, diverse teams fairly distribute student

knowledge and perspectives across the course. Finally, permanent teams help students to learn to work together over time (Michaelsen, 2002).

After teams are formed, TBL courses proceed through a series of units with three phases each: preparation, application, and evaluation (Fink, 2002; Sweet & Michaelsen, 2012). The preparation phase has three components. First, students read the assigned texts. Then they complete a Readiness Assurance Process (RAP), which includes both an individual and a team version of the same test. The individual test is meant to foster students' accountability to the content, while the team test is intended to encourage students to teach each other (Michaelsen, 2002). Finally, the instructor gives a corrective lecture focused on the most commonly missed questions in the tests.

During the subsequent application phase, student teams apply "course concepts to make and justify discipline-based decisions" (Sweet & Michaelsen, 2012, p. 10). To encourage deep learning and team cohesion, the application phase is structured as a series of increasingly difficult "4-S problems," where all teams work on the *same, significant* problem, answer with a *specific* choice, and report answers *simultaneously* (Sweet & Michaelsen, 2012, pp. 24-26). While the original version of TBL depicted 4-S problems primarily as challenging, case-based, multiple-choice questions, more recent work has described a range of deliverables, including posters, Excel charts, and overheads (Sibley, 2012).

The final phase of TBL units involves evaluating each student on their content knowledge and their contributions to the team. The evaluation of content knowledge has not been given much attention in TBL literature. For example, Fink (2002) alternately described it as an exam or as solving a 4-S problem individually. But team evaluations have been discussed in more detail. They are meant to build accountability among team members and to address issues of unequal contribution (Fink, 2002). They also encourage constructive feedback and improve team cohesion in future units (Lane, 2012). Overall, this unit structure of preparation, application, and evaluation is intended to create engaging and active collaboration.

However, there are two significant issues for adapting TBL to an online writing course. First, core TBL literature has explicitly rejected collaborative writing as an appropriate team activity:

> It is our experience that the worst assignment when trying to build group cohesiveness is to ask students to write a term paper as a group. Group papers seldom provide any support for building group cohesiveness and almost universally result in social loafing, or at least what is perceived by other students as social loafing. Writing is inherently an individual activity; therefore, the rational way to accomplish the overall task is to divide up the work so that each member independently completes part of the assignment. . . . As a result, there is seldom any significant discussion after the

> initial division of labor, and feedback is generally unavailable until after the project is handed in. . . . In fact, high-achieving students often express the feeling that getting an acceptable grade on a group term paper feels like having crossed a freeway during rush hour without being run over. (Michaelsen & Knight, 2002, p. 61)

By stating that writing is inherently individual, Michaelsen and Knight diverged from decades of research on how writing functions (e.g., Cooper & Holzman, 1989; Ede & Lunsford, 1990; Flower, 1994; Kroll, 1984; LeFevre, 1987; McComiskey, 2000; Swales, 2017). They also overlooked valid reasons for teaching team-based writing even if it is difficult, including the continued importance of collaborative writing practices in workplace environments (Blythe et al., 2014; Brumberger & Lauer, 2017). Finally, by arguing that collaborative writing projects lack support for building group cohesiveness, they ignored composition studies literature that has introduced numerous successful strategies for such projects (e.g., Beard et al., 1989; Bilansky, 2016; Conklin, 2017; Kittle & Hicks, 2009). Joanna Wolfe (2010), in particular, has offered an invaluable guide on effective team-based writing practices, including supporting diverse teams, managing projects, creating constructive conflict in discussions, and developing effective revision and feedback processes. She even described specific strategies to address the problem of an unequal division of labor, such as the development of task schedules around layered collaboration, where each student adopts a specific role within the project, such as researcher, writer, or editor (Wolfe, 2010).

However, if Michaelsen and Knight's criticism is limited solely to collaborative "term papers," it might merit further exploration. Some research has shown that extended report projects are effective collaborative writing assignments because the complexity of the genre requires meaningful contributions from multiple people (Rentz et al., 2009). And many instructors scaffold these projects through several phases and deliverables to create accountability and encourage discussion (Wolfe, 2010). Still, collaborative report assignments have sometimes been appended to courses where all other writing assignments are completed individually, and research has shown that students benefit from consistent online course design and structures (Dhilla, 2017; Swan, 2001). This shift from largely individual work to a high-stakes collective project at the end of the semester might not give students sufficient time to build mutual trust, leading to increased anxiety and group dysfunction (Allan & Lawless, 2003). In other words, while extended reports can be effective collaborative writing assignments, online courses likely need to build strong networks between students first.

The second significant issue for adapting TBL to an online writing course is that the major unit structures, including the RAP and 4-S application, assume in-class time when students can engage in regular synchronous communication. In fact, L. Dee Fink (2002) argued that teamwork should occur exclusively during class sessions to encourage students to work together rather than

splitting up work. While synchronous online meetings might address this issue, asynchronous modalities are often a better fit for online students' needs for flexible schedules (Mick et al., 2015). Consequently, instructors have sought to create best practices for adapting TBL to asynchronous online environments. The most comprehensive advice on this can be found in Michelle Clark et al.'s (2018) white paper, which built on previous articles describing online TBL practices in individual courses (Hosier, 2013; Palsolé & Awalt, 2008). The white paper described principles for aligning each of the main TBL phases with Quality Matters standards, a set of widely used principles for online education. Their primary advice for the RAP was to slow down the process so it takes several days, to use timed quizzes for the individual test, and to write questions that move beyond memorization (Clark et al., 2018). For the application phase, they discussed the difficulty of adapting the 4-S aspect of simultaneous reporting to online settings and thus recommended a two-step process where teams submit answers whenever they are ready and then gain access to other teams' responses at a predetermined time. They also suggested using the learning management system's tools to support collaboration and analytics to measure each student's contributions. For peer evaluation, they recommended using multiple formative and summative evaluations, being transparent about the impact of peer evaluations, and using analytics to support evaluation. Finally, in contrast to traditional TBL practices, they recommended assigning students the roles of team leaders and reporters to help facilitate the teamwork. Clark et al. offered useful advice, but they also had to generalize this information for a broad audience, and they often focused on technological solutions (e.g., learning management system tools) for fixing potential issues with asynchronous, online collaboration. In short, there remains room for further exploration of how technical writing courses specifically might adopt the TBL structure in an online environment.

Adapted-TBL Online Technical Communication Course Design

I adapted the online TBL model for ENC 3213: Professional and Technical Writing, an upper-division undergraduate course that introduces students to the expectations of writing in the workplace. It functions primarily as a multi-major technical communication service course that draws students from a range of disciplines, including engineering, computer science, nursing, healthcare administration, business, international relations, and English. Students also enter the course with a range of professional experience: some are already working professionals, while others have recently completed high school or community college and have little experience in writing for non-academic audiences. Other sections of the course at my institution have typically begun with two to three brief units on professional correspondence, job application documents, marketing materials,

or instruction sets. Then they transitioned to an extended project that included a research proposal, an analytic report, and a project presentation.

My adapted-TBL course situated students in the fictional Writing@FIU team, which provided freelance writing services for local organizations through a series of brief, rapid, low-stakes units. Each unit was focused on a multi-stage, complex, realistic case that asked students to make specific decisions and to craft documents within messy problem spaces. This case-based approach has been shown to help students develop teamwork skills (Thondhlana & Smith, 2013) and audience awareness (Robles & Baker, 2019). While technical communication scholarship has identified numerous benefits of online service-learning projects, including increasing students' self-accountability and engagement (Nielsen, 2016), the speed and structure of the adapted-TBL units largely precluded working with real community partners. As described below, the unit structure included elements of individual and team-based work, and it used the same structure across units to allow students to cohere and grow as teams throughout the duration of the course. Matching this structure with real partners' needs and schedules would have been difficult, though there is certainly room to explore this approach in the future. Still, by using messy, document-based cases as the foundation for each assignment, the course was able to keep some of the benefits found in work with real partners.

Each case was also intentionally designed as a multimodal editing process, which Claire Lauer and Eva Brumberger (2019) described as an essential practice in contemporary professional writing:

> Many writers actually act as multimodal editors—people who work with myriad modes of content—often encountered in medias res after the content has been originated by coworkers or consultants. Multimodal editors are responsible for modifying, adapting, designing, editing, selecting, and constructing content in ways that are dispersed, non-linear, collaborative, and responsive. (p. 637)

Throughout the article, Lauer and Brumberger (2019) gave numerous examples of multimodal editing, including revising rough content from a legal/compliance team, reworking and repackaging clients' video content, and translating technical content for lay audiences on social media. They also recommended adopting similar practices in technical communication courses:

> Setting up situations in which students start not with their own blank page, but with textual or visual material developed by others . . . can help situate them in a professional situation that might lead to more authentic, transactional writing experiences. (p. 657)

Within the adapted-TBL course, this meant that cases were built around existing, flawed documents: rough drafts of correspondence, a brief usability report, an email with ideas and notes for a proposal, etc. These documents grounded

students in the case and reduced the time needed for initial ideation phases. They helped students produce long and complex documents quickly while also prompting difficult decisions on content.

The overall unit sequence introduced progressively more complex genres and situations, but the later assignments were still structured to support rapid production cycles. While the exact assignments have changed throughout the iterations of the course design, the most recent unit sequence was:

- Unit 1: Students individually create functional résumés to apply to the Writing@FIU team.
- Unit 2: Student teams evaluate informal team charters and draft correspondence related to realistic group problems.
- Unit 3: Student teams evaluate an instructional video and remediate it as written instructions to help faculty update their bios on a local college's website.
- Unit 4: Student teams evaluate past grant proposals for a local fund and then produce a brief grant proposal to create a community garden.
- Unit 5: Student teams evaluate presentation graphics and speaker's notes and then produce and record a PowerPoint presentation for a local initiative to support bicycle safety.
- Unit 6: Students individually research the writing practices of professionals in their field and produce a memo connecting course topics to their profession.

The following three subsections will break down the key TBL concerns of team formation, unit phases, and student evaluation. Then I will provide some basic information on the results of the course design thus far.

Team Formation

The course was designed to have the first and last units completed individually by students in order to minimize anxiety at the beginning and end of the semester and to create more positive and productive team environments. The first unit covered the common principles of technical communication and document design to provide students with a shared knowledge set and language for the remaining assignments (though we also open room for problematizing and revising these principles throughout the course). The unit also gave the class an opportunity to build a positive social environment: we started by posting introductions and had additional channels for casual off-topic discussions. Finally, the first unit created a time buffer so course enrollment could stabilize while I intentionally constructed student teams.

During those two weeks, I gathered information through a survey and an assignment. I then constructed teams of four to five students based on three factors: 1) typical weekly availability (so teams could collaborate synchronously

if they wished to), 2) professional writing experience, and 3) performance on the functional résumé assignment. When the course was taught as multiple combined sections (allowing for a greater student population), factors such as students' majors and gender and cultural identities were also intentionally distributed amongst the teams. After the teams were formed, they were effectively permanent for the duration of the course. Over more than two years of using this course design, only one team has had to be reorganized. Two other teams that lost a member were offered the option to dissolve their membership into other teams, but they both chose to remain in a smaller team rather than divide up.

Finally, while official TBL approaches reject the practice of giving team members specific roles (Fink, 2002), the adapted-TBL course had a student assigned as the project manager for each unit. This role largely mirrored Wolfe's (2010) description of a project manager: they began conversations, scheduled teamwork, and produced meeting minutes. This role helped to improve overall team coordination while also offering project management experience to each student during the semester.

Unit Structure

While the team-based units have gone through several iterations, the general structure always followed the TBL phases of preparation, application, and evaluation. The first version mirrored Allison Hosier (2013) and Sunay Palsolé and Carolyn Awalt's (2008) course structures with interwoven RAP and 4-S processes, which each included individual and team-based elements. Recent iterations simplified this structure to create a more predictable weekly schedule. The most recent version used three-week team-based units with the following structure:

- Week 1: Preparation and case introduction
- Week 2: Cooperative organization and individual drafting
- Week 3: Collective revision and peer evaluation

Since this structure was identical across all units, I provide examples below from Unit 4, which introduced students to grant proposals.

Students began the first week of Unit 4 by reading excerpts from our textbook on proposal writing as well as a few outside texts on related topics. Then they completed a short reading quiz on grant proposals. This quiz has evolved over the course iterations from a ten-question, multiple-choice test focused on recall to a five-question short answer test with mixed recall and evaluation questions. For example, one recent question asked students to describe the purpose of the introduction section of a grant in their own words. Another question asked them to evaluate a specific example of a grant task description based on the information in our textbook. These quizzes were intended to encourage each student to familiarize themselves with the content of the unit in order to create more productive conversations throughout the rest of the teamwork.

During the second half of the first week, teams discussed and evaluated sample documents related to the unit's case. In Unit 4, teams were provided with a call for proposals and four sample grants for the fictional Keep Miami Beautiful Small Grant Program, which was based on the real Keep Oakland Beautiful Small Grant Program (*KOB Small Grant Program*, n.d.). The Call for Proposals (CFP) requested proposals for small, local projects that create or improve community spaces in Miami. The four sample proposals covered a range of topics, including the creation of a new mural in Wynwood, a beach cleanup in South Miami, and the construction of a pocket park in Sweetwater. Teams subsequently discussed, evaluated, and ranked the proposals. This discussion was designed to encourage constructive conflict, or "the healthy, respectful debate of ideas and competing solutions to a problem" (Wolfe, 2010, p. 51), through the following features:

- The discussion occurred on the team's private Slack channel. The structure of this software as an instant messaging platform encouraged a more fluid and active conversation than learning management system forums.
- Qualitative evaluations were tied to quantifiable ratings (e.g., asking students to rank the proposals), which increased the potential for disagreement and debate.
- The texts being evaluated were of varying quality, but they all included both effective and ineffective features. For example, the beach cleanup proposal had a persuasive problem statement, but it included only a generalized budget with no itemized breakdown. This created room for debate around the relative importance of various features.
- Students controlled their own discussions, with two limitations: each team member needed to contribute actively, and the work could not be subdivided amongst the group (i.e., everyone needed to be able to discuss every grant proposal).
- Finally, most group members were given credit simply for participating actively. The only deliverable for the assignment was a set of meeting minutes created by the project manager. These minutes were expected to summarize the discussion while clearly attributing contributions to individual team members.

During the second week, students were introduced to the team writing task for the unit, which built on the situation introduced in the first week's discussion. For Unit 4, teams were asked to develop a grant proposal for starting a community garden in response to the Keep Miami Beautiful Small Grants Program. The prompt for the assignment was presented as an email from Josiane, a representative of the community garden who asked for help with the grant. The email included both relevant and irrelevant information. For example,

> Our proposed garden is at 58th St. and NE 4th Ave. We have a contract for a 10-year, low-cost lease in hand. The owner of the plot

> is a local resident who is very supportive of our project. So, we're pretty secure in the longevity of the garden. We hope to expand to similar plots in the Little Haiti area in the coming years but decided that we want to get this one up and running first. We might also try to expand our goals in future years to support in-home gardens of local residents, but again, we don't have enough resources yet.

The lengthy email went on to list the potential uses for funds (e.g., hedge plants for boundary beautification, lumber and soil for creating raised garden beds, a rototiller, compensation for volunteers, etc.), the potential positive impact of the garden (e.g., improving the local availability of fresh vegetables and herbs, increased physical activity, stress release, etc.), and other thoughts on the project. Eventually, the email asked the Writing@FIU team for their help in developing the proposal. I passed this email on to the team with some additional instructions for the project, including a schedule for initial drafts and an expected final completion date. Students were then prompted to divide the work into four sections that aligned with key pieces of information in the grant proposal: 1) problem statement, 2) benefit statement, 3) methods plan, and 4) itemized budget. They drafted these sections individually but had to coordinate the work, so all the sections contained consistent information. They then submitted the sections both to me on our learning management system and to their teammates in a shared Google Doc. While this initial divided approach did not reflect Wolfe's (2010) recommendation for layered collaboration, it has helped students to establish more individual accountability to initial drafts, which has lessened some of the concern over fully team-based grades in the online class.

At the outset of the final week of the unit, teams were given new correspondence with slight alterations to the existing prompt, such as new length limits, new content expectations or limitations, or new formatting procedures. For Unit 4, these changes included 1) a reduced availability of funds (from $1,200 to $800 per grant), 2) additional requested information (on the community garden organization's ethos for carrying out the project), and 3) an email response to Josiane that explained the team's decisions in crafting the proposal. These changes were designed to prompt alterations to the existing content so that individual drafts could not simply be pasted together. It also allowed teams to focus more on a layered, actively collaborative approach to designing their final drafts.

The final phase of each adapted-TBL unit asked students to complete a 180-degree performance review by evaluating both their own and their teammates' contributions to the teamwork. These evaluations had three parts:

1. A self-reflection that described their contributions and identified their effective and ineffective professional writing and teamwork strategies.
2. Numerical evaluations of each peer's contributions. Based on TBL literature, the evaluation scale was effort above or below the average for the team. This evaluation system intentionally foregrounded perceived effort

over the perceived quality of contributions. This way students who were active throughout the group project were rewarded rather than those who simply wrote effective prose at the last minute. Also, the rating system intentionally limited scale inflation: if one student contributed more than average effort, another had to be rated as contributing less than average.

3. Constructive feedback to peers. Students were provided with models for constructive feedback, and all comments were reviewed before being distributed to other students.

Overall, these regular team evaluations ensured an additional level of accountability while providing channels for discussing and improving teamwork.

Grading

Collaborative learning causes anxiety partially due to shared grades (Allan & Lawless, 2003). For that reason, this course was designed around low-stakes projects and a mix of individual and team grades. For each of the four team-based units, students received grades on five assignments: a reading quiz, a team discussion, an individual draft, a collective draft, and a team evaluation. Only one of these assignments was a fully shared grade (the collective draft). The other grades were either entirely individual or included individualized elements (e.g., the team evaluation grade included credit for completing the evaluation and credit for peers' evaluations of the student). In total, there were 26 graded assignments in the most recent version of the course, making most relatively low stakes (3-4% of the final grade). And many of the projects (e.g., participation in discussion and individual drafts) were graded on a full credit/no credit basis. Collectively, this meant that final grades were primarily based on completing the assigned work and on contributing actively to the team's efforts. If a student received positive peer evaluations and completed all the quizzes, discussions, and individual drafts, they universally earned a passing grade in the class.

This grading strategy was explained to students at the beginning of the semester and was reinforced throughout the course. Reassuring students that they truly did have individual control over their grades helped to ease initial fears about the potential chaos of an online team-based course.

Course Design Results

I can only provide anecdotal evidence of the success of the course design, but by most available measures, every iteration of the adapted-TBL design has been effective:

- Student retention rates were high: Many institutions use a DFW rate, or the percentage of students earning Ds, Fs, and withdrawing from the course, to identify students at risk of dropping out. The adapted-TBL

course had a 6.5 percent DFW rate. During the same time period, other online sections of the same course had a 15.8 percent DFW rate.

- Most students were engaged: They asked and answered questions about course concepts, related content to their own experiences, and talked to each other about topics outside of the course (e.g., they recruited each other for student clubs or online gaming guilds, shared information about events, posted pictures of pets, etc.). Over the 12-week collaboration, team channels had an average of 953 messages (or approximately 20 messages per student per week). Some messages were short affirmations or project management questions, but many messages engaged in substantive conversations on the assignment cases or the rhetorical decisions for documents.
- Anxiety over teamwork appeared to be minimized: After they started working in teams, students generally did not complain about the course structure. Only one student directly requested to complete the coursework on their own (due to personal reasons unrelated to the class). Students also regularly rated their teammates and their teamwork highly in their peer evaluations.
- Student teams grew more effective over time: Their initial projects had some confusion over the best way to schedule and structure the teamwork, but these processes became much smoother by the second or third time through the same unit structure. The teams also continued to submit more and more effective final products throughout the semester.
- Finally, students valued their teams: they recognized and discussed the value of collaborative writing in their end-of-semester reflections and course evaluations, and they regularly reported learning useful strategies for professional writing simply by managing and negotiating shared online writing projects with their peers.

Likewise, my experience of teaching the course also shifted. My first online course design was focused on managing course content and feedback: recording lecture videos, explaining assignments, getting in touch with missing students, giving feedback on drafts, and grading assignments. In the adapted-TBL design, students did some of this work themselves: they explained the core concepts to each other as they worked through the cases, contacted teammates who were falling behind, and offered feedback on each other's drafts. The instructional work shifted more toward the so-called "guide on the side" role, which is characterized by "being a facilitator who orchestrates the context, provides resources, and poses questions to stimulate students to think up their own answers" (King, 1993, p. 30). The instructional role also shifted toward higher-level management of team dynamics and production: I set up teams, handled disagreements, made suggestions, and amplified students' ideas. Even with the rapid unit structures, the grading load decreased significantly so more time could be spent on providing additional resources and engaging students in conversations about professional communication practices.

Conclusion

This chapter has argued that TBL structures can create a consistent and productive approach to building collaborative writing assignments in online technical communication courses. Of course, this specific course design is not universally applicable. The collective writing projects were pertinent to a multi-major survey course, but they might not be as effective in advanced courses. Likewise, the rapid, low-stakes units might not be ideal client-based or service-learning projects. Still, there are elements of the adapted-TBL design that can transfer relatively easily across contexts.

First, the creation of permanent teams and of units with repeated, predictable structures allowed students to know what to expect. TBL can help reorient us to seeing teamwork as a practice that grows and improves over time. By providing students with opportunities to practice their teamwork, we can help them develop into high-performing teams.

Second, TBL ensures that we hold students accountable both for their knowledge of the course content and for their contributions to teamwork. The regular assignments and discussions encouraged positive practices of preparation and engagement, which, in turn, helped to build trust among teammates.

Third, changing the grading structure to primarily assess labor and effort gave control over final grades back to individual students. And making this grading philosophy and students' individual control explicit in course documents helped to minimize anxiety over shared grades. At the same time, retaining shared grades for the collective drafts ensured that students were encouraging each other to do their best work.

Finally, by framing professional writing as multimodal editing, the course gave teams concrete starting points, sped up the planning phases of teamwork, and grounded the work in realistic contexts. At the same time, the projects built in multiple decision points to create a range of potential results. This encouraged real discussions about priorities while maintaining student engagement throughout the duration of the assignment.

In closing, we can return to the broader question of collaboration in our online courses. Collaboration is a powerful pedagogical tool. It can combat feelings of isolation, encourage student engagement and persistence, and contribute to deep learning. It can also conflict with students' desire for flexibility and autonomy. But rather than focusing on potential anti-affordances of online communication systems, we can use the affordances of the environment to construct better teamwork online. This project started by centering collaboration at the outset of course design so it was strategically integrated throughout the semester in a consistent and cohesive manner. This process can require a significant re-thinking of existing course structures, but it can also build better learning experiences for students.

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