DEVELOPING AN ENHANCED FEEDBACK LOOP FOR VIRTUAL LEARNING: PERSPECTIVES FROM GRADUATE TEACHING ASSISTANTS

Ryan Arellano, University of California Santa Barbara
Mary C. Franitza, University of California Santa Barbara
Jin Sook Lee, University of California Santa Barbara

ABSTRACT

The role of graduate students in undergraduate students' learning experiences is often overlooked despite the fact graduate students are usually the ones that work most closely with undergraduates in courses. As the world shifted to online education during the COVID-19 pandemic, instructors had to quickly learn to teach via online platforms. This study focuses on the perspectives of graduate teaching assistants (GTAs) as they adapted their pedagogy to meet the demands of remote instruction. Utilizing critical reflections through an enhanced feedback loop model, we found that the success of strategies to promote student engagement with content and other class members were dependent upon our response to students' psychosocial states such as Zoom fatigue and stress, and the effective integration of students' feedback to our teaching strategies. Based on the findings, we present implications for teaching assistant training.

Keywords: *critical reflections, enhanced feedback loop, undergraduate experiences, COVID-19, online instruction, teaching assistant training*

INTRODUCTION

The transition to remote learning and teaching in Spring 2020 was abrupt and unplanned and presented new challenges for undergraduates, graduate teaching assistants (GTAs), and faculty alike. Nearly 1,300 colleges canceled in-person classes and transitioned to online-only instruction (Davidson College, 2020). It is important to note that at the start of the Fall 2019 academic year, only 37.2% of all universities offered any online courses, and 19.7% required students to take an online course (National Center for Education Statistics, 2020). The abrupt adjustment to online courses revealed how unprepared universities were to adapt their curriculum online. Shortly after campuses transitioned to virtual courses, research showed online learning was less effective than in-person instruction for many students (SimpsonScarborough, 2020). Undergraduate students found online courses to be less enjoyable and uninteresting, and they required less attention and effort while incorporating less cultural content. This was reflected in poorer grades, lower retention rates, and higher deferrals for incoming students in public four-year universities (Garris & Fleck, 2022; SimpsonScarborough, 2020). This information, coupled with "Zoom fatigue," has taken a toll on online classes for undergraduate students during a pandemic. Zoom fatigue is described by Nadler (2020) as a "third skin," which highlights how interacting online flattens social interactions due to spatial repositioning. Engaging in these flattening interactions from physical to virtual spaces requires high cognitive demands from students.

It becomes more challenging because this high cognitive demand is now competing with undergraduates' other responsibilities, like their mental and physical health concerns, time management skills, and increased stress due to financial burdens brought on by the pandemic (SimpsonScarborough, 2020; 2021).

Consequently, online learning obstacles that emerged revealed inequities in higher education institutions, particularly for nontraditional students (e.g., low income, first generation, full-time working adults, and/or students of color). Restricted housing options on campuses meant that students often had to go back to their home communities, which had poor Wi-Fi connections, a lack of quiet places to study, and increased family responsibilities that competed with their coursework (SimpsonScarborough, 2020; 2021). In addition, while research has shown that flexible course options, like online and hybrid courses, allow nontraditional students to fit their academic career into their busy schedules and can lead to higher retention rates (Taylor et al., 2015), studies have also shown that nontraditional students may not have access to the support and resources needed to succeed in online learning that is often given in face-to-face classroom (ftf) experiences (Bancroft, 2016). In other words, nontraditional students who seek out online learning because of their current financial circumstances may actually be the least prepared to succeed in online learning settings. Given the inequities that have emerged, universities are struggling to transition back to in-person teaching due to the continued rise of COVID-19 cases throughout the country (Jaschik, 2021), but there is a strong possibility that many universities will consider hybrid or continue virtual courses going forward (Gallagher & Palmer, 2020; McKenzie, 2021; Taparia, 2020).

Yet, there is still much to be understood about what constitutes effective practices online and how instructors, including GTAs, should be trained to implement such practices. This is particularly true for GTAs who rarely receive sufficient pedagogical training, especially in the humanities and social sciences, before they are tasked with working with undergraduate students (Reeves et al., 2018; Wheeler et al., 2017). With the shift to remote teaching, the burden on GTAs increased. As many universities continue to consider integrating online courses into their curriculum, these obstacles are the new realities for graduate students. Considering these challenges, the aim of this study is to examine the experiences of GTAs, an understudied population, as they learned to identify instructional challenges, modify pedagogical decisions, and assess the effectiveness of these adaptations to enhance student engagement. We are specifically interested in the relationship between GTAs and undergraduate students not only because meaningful interactions between students and instructors are key for enhancing learning (Bolliger & Martin, 2018), but also because GTAs tend to have more direct contact with students in large undergraduate courses. We approach this study through a critical self-examination of our experiences as GTAs, in tandem with feedback from our undergraduates regarding their learning experiences. Toward this end, we asked (1) What kinds of pedagogical challenges emerged? and (2) How did GTAs learn to adapt their pedagogy to respond to students' needs? Based on the findings, we share insights on how to better support student engagement online and how GTAs should be supported in their professional development.

SETTING THE CONTEXT

Due to the pandemic, our teaching team prepared an online version of an undergraduate course titled Culture, Development, and Education, a core requirement for the education minor degree. This course was taught over ten weeks with a weekly two-hour lecture by the primary instructor (the third author) and one-hour discussion sections led by the GTAs (the first and second authors). Sixty students were enrolled in the course.

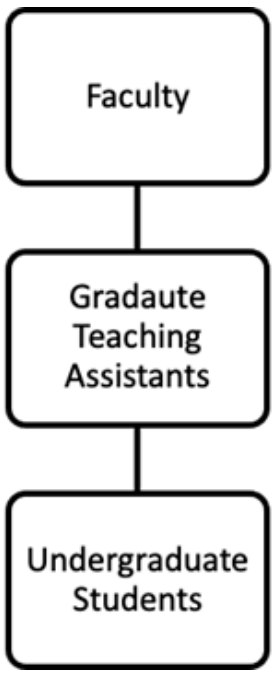
In addition to lectures, every week a synchronous discussion section with 15 students each was held by the GTAs. The GTAs were responsible for the instructional activities in the discussion section and worked together to plan the sessions, but often they differed depending on the specific needs of the students. The GTAs also set up weekly meetings to plan their sections and update each other on difficulties they encountered. The GTAs used these weekly meetings to brainstorm alternative solutions to learning obstacles students reported in the course. These discussion sections were also recorded so that students could do the alternative assignments if they were unable to attend

that week. Our instructional team designed flexible options to access content, like the option to view the recorded lectures, recognizing how the pandemic exacerbated inequities for nontraditional students.

During the course, the students were required to (a) complete weekly readings (2–3 articles on average); (b) preview lecture slides and multimedia content; (c) if possible, attend synchronous lecture and discussion section via Zoom; (d) submit weekly reflections on their online learning experiences; (e) submit weekly discussion questions about course readings; (f) write two short essays; and (g) work on one group project. The teaching team also held regular office hours and were available to meet with students for individual appointments via Zoom. While we openly encouraged our students to meet with any of us when they had questions, we found it more common for our students to reach out to the GTAs first, before the primary instructor, when it came to questions about course content. This is seen in most classrooms where the power dynamics typically position faculty as the highest status in the classroom, followed by GTAs, and lastly undergraduate students.

Given this power dynamic, GTA experiences with making pedagogical decisions within an education course is interesting because of the limited professional development opportunities available in the humanities and social sciences. Literature on professional development training for GTAs has primarily focused on those teaching within the Sciences, Technology, Engineering, and Mathematics (STEM) (Reeves et al., 2018; Wheeler et al., 2017).

Figure 1. Model of Classroom Hierarchical Power Dynamics



CONCEPTUAL FRAMEWORK

When the teaching team discussed the organization of the course before instruction started, it was imperative that the course be set up to enhance student engagement. To create the conditions necessary for student engagement online, we drew from three bodies of literature to guide our teaching approach to enhance student engagement. First, we used Moore's (1993) interaction framework to cultivate engagement within our virtual course. Second, we engaged in the process of critical reflection to understand our students' needs and how best to address them. Third, we utilized an enhanced feedback loop to assist in our reflection of our pedagogical practices to improve our teaching by enhancing student engagement.

Moore's Interaction Framework

In order to create the conditions necessary for student engagement online, we drew from Moore's (1993) interaction framework as a guide to organizing our course. Moore's (1993) interaction framework distinguishes three types of interactions needed for effective virtual courses: (1) learner-to-instructor interaction, (2) learner-to-learner interaction, and (3) learner-to-content interaction.

Learner-to-Instructor Engagement

High-quality learner-to-instructor interaction can lead to higher engagement within virtual learning environments. Research has shown that building relationships between students and instructors in a community-based environment influences student engagement and success (Dixson, 2010; Garrison et al., 1999; Gaytan & McEwen, 2007; Stenbom, 2018). Assigning group work, delivering constructive feedback, and having multiple channels for communication are key components to high-quality learner-to-instructor interaction (Dixson, 2010; Gares et al., 2020; Gaytan & McEwen, 2007; King, 2014). In addition, instructor qualities and presence online can affect student engagement. Garris and Fleck (2022) found that instructor confidence in transitioning courses online influenced overall course evaluations during

the initial stages of the pandemic. It has also been recommended that instructors be mindful of their own tone and responsiveness when communicating online with students (Dixson et al., 2017; Zhu et al., 2019). Moreover, online instruction should include opportunities for the learner and the instructor to interact with one another and decide what makes their learning meaningful (Dixson, 2010; Gaytan & McEwen, 2007; Oyarzun, et al. 2018). Instructor presence is very important to online students; Martin and Bolliger (2018) found that students rated supportive interactions between instructors and learners as more important than engagement strategies aimed at interacting with content or their peers.

Learner-to-Learner Engagement

Creating structured social activities is also essential to building engagement among learners within the online environment. These curated activities, when done well, can assist in creating an inclusive community that prevents boredom and isolation (Garrison et al., 1999; Lear et al., 2010; Martin & Bolliger, 2018). For example, Shea et al. (2001) found that when a large percentage of a student's grade rests on discussion, students tend to report more satisfaction and higher levels of learning. Moreover, research has shown that technological tools like discussion boards, blogs, chat sessions, group tasks, and peer review assignments can foster student-to-student interactions within distance learning environments (Banna et al., 2015; Dixson, 2010; Petillion & McNeil, 2020). During these interactions, students may use different levels of social presence to build community with their peers (Armellini & De Stefani, 2016) and these virtual socializing tasks can facilitate that process because students are experiencing a shared goal together (Garrison et al., 1999). Student-to-student interactions can also be encouraged by using social media as a tool in online courses to promote social interaction as well (Everson et al., 2013; Hamadi et al., 2022; Tess, 2013).

Learner-to-Content Engagement

Moore (1993) states that learner-to-content engagement occurs when students intellectually interact with the course content, which can affect a student's understanding or perspective of the course subjects. While synchronous and asynchronous content delivery are seen as effective options that can aid in student engagement, instructors must devote enough time curating interactive materials and designing purposeful assessments with the intention of fostering student-to-content engagement (Altermatt et al., 2021; Banna et al., 2015). Students should not just be given a list of resources but instead be offered opportunities to examine course tasks from different perspectives and utilize relevant knowledge during that process (Revere & Kovach, 2011; Zhu et al., 2019). Stavredes and Herder (2014) recommend choosing and designing instructional activities that foster exploration, discovery, and cultivation of students' skills and knowledge. In addition, projects with real-world applications have been shown to reinforce critical thinking and content mastery including examples such as case studies, reports, research papers, and presentations (Britt et al., 2015; Martin & Bolliger, 2018; Purinton & Burke, 2020).

We used Moore's (1993) interactional model to create an environment that would increase virtual engagement. Specifically, we wanted to see if this model would sustain engagement in a virtual course that was similar to the level of engagement we had seen in previous face-to-face courses. However, despite utilizing Moore's interaction model, we still found it challenging to engage students in discussions. We also identified conflicts in the group project, and students reported feeling overwhelmed with the course load and confused about major course concepts. This prompted our current investigation to identify what and how these pedagogical challenges emerged despite using Moore's (1993) guidelines. Subsequently, we needed to address how the GTAs could adapt their pedagogy to respond to these student needs in discussion sections. We developed and utilized an enhanced version of a feedback loop process that focused on transparency and critical reflection to support our pedagogical adaptations. These feedback loops were dependent on students' weekly reflection on their remote learning experiences to figure out why our initial attempts at fostering online engagement were unsuccessful.

Critical Reflection

An important component of our enhanced feedback loop was critical reflection. Dewey (1933) stated that reflection was the most important quality when it came to teaching and defined it as, "an active, persistent, and careful consideration of any belief or supposed form of knowledge in light of

the grounds supporting it and future conclusions to which it tends" (Dewey, 1933, p. 6). Zeichner and his colleagues (Tabachnick & Zeichner, 1991; Zeichner & Liston, 1987) extended this conversation by claiming the techniques performed in classrooms should consider social, historical, and institutional limitations that influence prominent educational practices. They also claimed it was a moral imperative to reflect because this identifies and questions existing assumptions in educational systems (Tabachnick & Zeichner, 1991; Zeichner, 1981; Zeichner & Liston, 1987). As Fook (2015) states, "critical reflection, when used specifically to improve professional practice, is reflective practice that focuses on the power dimensions of assumptive thinking, and therefore on how practice might change in order to bring about change in the social situations in which professionals work" (p. 441). We adapted two main ways that distinguish the critical components of reflection. The first is the ability to examine our own deeply held assumptions about the world (Mezirow, 1991). The second is the awareness of power and how power dynamics affect relationships (Brookfield, 1995).

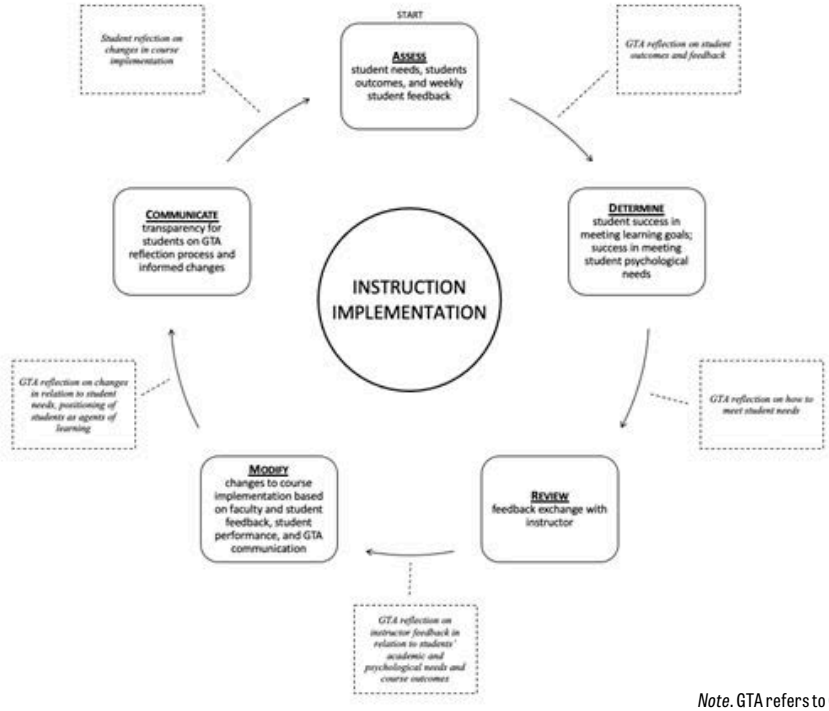
As a teaching team, it was important to critically reflect on our teaching practices not only because we are aware that our own assumptions, biases, and positionality affect how we teach, but also because it was important for us to ask ourselves why students appeared to need more support than seen in previous quarters. We also needed to figure out how to effectively work with them in a short amount of time. While research has shown that utilizing critical reflection is beneficial in teacher education programs, there has been limited focus on how to teach critical reflection strategies to GTAs and how effective these practices are for improving pedagogy for GTAs (Boman, 2014; Loughran, 1995; Liu, 2015; Mann et al., 2009; Matthews & Jessel, 1998; Pretorius & Ford, 2016; Watson & Kenny, 2014; Yost et al., 2000). So, we aimed to incorporate critical reflection within our feedback loop model to see if similar benefits were obtained in improving GTAs' pedagogical practices.

Feedback Loop Model

Traditionally, the process of feedback in an educational context emphasizes a unidirectional model for interactions between the educator and students with the goal of improving students' achievement. For example, Hattie and Timperley (2007) define feedback as "information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding" (p. 81). They also differentiated four distinct types of feedback: task, process, self-regulation, and self, which they claim have different impacts on students' performance. *Task feedback* highlights relevant information with the purpose of clarifying aspects of the learning task; *process feedback* emphasizes what the student can do to continue progress with a learning task; *self-regulation feedback* focuses on how the student evaluates their own learning strategies; and *self-feedback* centers personal attributes, like how well the student has performed in the class (Hattie & Timperley, 2007). This traditional view of feedback aligns with more recent definitions of feedback, where it is described as a process where learners evaluate various sources of information and attempt to make sense of it to enhance their performance and learning strategies (Boud & Molloy, 2013; Carless, 2015). In these models, educators give feedback to the student, and responsibility is placed on the student to use that feedback to improve. In addition, this model of feedback is seen as an end product, or a consequence of student performance, rather than a continual process.

Alternatively, there are feedback models that encourage a more facilitative process. Within a socioconstructivist paradigm, Archer (2010) described a feedback process that involves giving students the agency to make their own revisions and help them gain new understandings of course content without the educator dictating what those understandings are to be. The process is considered a continual dialogue between the student and the educator. However, it is important to note that students are not involved in the negotiation of feedback or asked to provide their own feedback regarding course content. Another example comes from Carless et al. (2010), who adapted a coconstructivist perspective that focuses on how the lecturer learns from the students through dialogue and participation in shared classroom experiences. This process highlights how educators can learn from the student, which creates a more multidimensional relationship for feedback interactions. However, the complexity of feedback processes can be challenging due to the imbalance of power

Figure 2. Model of the Enhanced Feedback Loop



Note. GTA refers to Graduate Teaching Assistant

within the classroom and the fact that there is a need to structure the environment to encourage the dialogue of shared experiences.

While these more recent models highlight the importance of continual feedback where the educator can learn from the students, less attention has been paid to how students' ongoing feedback about a course can be a mechanism for change to support educator's pedagogical decisions. Students' course feedback in higher education often focuses on the organization of assessment activities, timing, content, and lack of clarity about requirements (Higgins et al., 2001; Huxham, 2007; Panadero & Lipnevich, 2022). Yet, it is also well established that there are issues around students not making use of feedback or acting on that feedback from an educator's perspective (Higgins et al., 2002; Lew et al., 2010). Both criticisms stem from a feedback gap between the teaching team and the students as well as the lack of recognition for the dynamics of graduate teaching assistants in the students' learning processes. In large undergraduate courses, GTAs often have more direct contact with students and a greater influence on student experiences than faculty. To address this feedback gap, we propose an enhanced feedback loop model that emphasizes transparency and reflection— two components that were critical to addressing our pedagogical concerns as well as GTAs' pedagogical development.

Enhanced Feedback Loop Model

In this model, the teaching team first assesses student needs and outcomes in addition to weekly student feedback. Although the requirement to assess students' needs and outcomes is like traditional feedback models, we integrated the component of reflection on students' learning goals, outcomes, and psychological states. The emphasis on responsibility shifts from student to the teaching team, which is different from other feedback models.

The next step highlights how GTAs review feedback from faculty and subsequently modify instruction based on faculty feedback, student feedback, student performance, and reflective practices on behalf of the GTAs. Importantly, we focus on transparency, a component students continually state as important in their classroom learning experiences (Anderson et al., 2013) and that we found lacking within traditional feedback loops (Archer, 2010; Carless et al., 2011; Hattie & Timperley, 2007). It is vital to communicate with students how the teaching team reflected on their

course feedback and modified the course. This addresses the lack of attention we have seen on how student feedback can be a direct mechanism for changing the teaching team's pedagogical decisions within a course. Not only does this encourage student agency within the course, it also influences the trusting relationship between students and the teaching team. This whole process then impacts how and when we implement the modified instruction for the course.

We find that traditional feedback loops are often unidirectional (educator to student interactions), are a means to an end (student performance outcomes), and lack transparency on how students are able to be direct mechanisms for change in educational pedagogy (Archer, 2010; Boud & Molloy, 2013; Carless, 2015; Carless, et al., 2011; Hattie & Timperley, 2007). Our enhanced feedback loop involves a multidirectional relationship with students and the teaching team that is a dynamic, continual process (not stagnant), and emphasizes how transparent dialogue with students on how they effectively changed our pedagogical decisions fostered student agency and relationships with us. Moreover, we found that this model has the potential to support the professional development of GTAs by acting as a guide to becoming a reflective practitioner. As stated previously, GTAs not only lack the opportunity for continual professional development in the social sciences (Reeves et al., 2018; Wheeler et al., 2017), but less attention has been paid to teaching GTAs critical reflection strategies as a means to improve pedagogy (Boman, 2014; Loughran, 1995; Liu, 2015; Mann et al., 2009; Matthews & Jessel, 1998; Pretorius & Ford, 2016; Watson & Kenny, 2014; Yost, et al., 2000). By utilizing our enhanced feedback loop model within the classroom, GTAs are given multiple opportunities to practice reflective strategies over a short period of time.

METHODS

Data Collection

Following institutional review board approval, data were collected to test our enhanced feedback loop in the course. We gathered data in two ways. First, 38 students in the 10-week, Culture, Development, and Education course consented to allow us to use their weekly reflections as a data source (see Appendix A). We focused on reflections from Weeks One, Five, Six, Seven, Nine, and Ten because the questions asked in those weeks were most relevant to our research questions. To ensure anonymity, we did not collect any demographic information and all weekly reflections were anonymized. The total class composition of undergraduate students were predominantly women (85%) with some men (15%) in their third or fourth year at the university, and most identified as Latino/a/e. Participant identification numbers and pseudonyms were assigned to all students to maintain confidentiality.

Second, we created a critical reflection protocol (Appendix B) for GTAs that addressed three main areas: (1) relationships/learning communities created with and among students, (2) teaching strategies, and (3) instructional challenges. The GTAs engaged in a two-hour recorded conversation about their responses. Some examples of the questions were, "How did our identities as graduate students influence our teaching?" and "How were our perceptions of engagement different from students' perceptions?" This two-hour conversation was later transcribed by an undergraduate research assistant. The GTAs met weekly throughout the quarter to discuss section ideas based on weekly student reflections, to accommodate for specific student needs, and to discuss with the primary instructor issues that needed solving. In addition, the primary instructor and GTAs debriefed after each lecture via Zoom to address any immediate concerns that were identified in the students' weekly reflections. These conversations with our primary instructor were not recorded.

GTA Subjectivity and Reflexivity

In this paper, we focus on the experiences of the GTAs in an undergraduate social science course. One GTA is a multiracial, cisgender, heterosexual, nondisabled female-identifying student who shares a Filipino, Mexican, and Italian mixed cultural identity. She grew up on the West Coast in a lower middle-class area that was primarily White and Latinx. The other GTA is a white, second generation eastern European immigrant from the Midwest with close multigenerational family ties. She grew up in the Midwest with one foot in the predominantly white rural community where her family lived and one foot in the racially mixed city area where she received her public education. They had previously been GTAs for other courses.

At their university, GTA training is required for all graduate students even if they are not given immediate assignments for the academic year. This training is a required orientation that begins in the fall and has the following components: (a) participate in interactive workshops facilitated by faculty and seasoned GTAs, (b) share teaching strategies with colleagues from other departments, (c) learn about the rights and responsibilities of GTAs, and (d) explore the campus-based resources available for GTAs. GTAs are required to be at the introduction orientation and participate in two available workshops of their choice within two days. Afterwards, any additional workshops or support offered throughout the academic year are optional. GTAs are not required to do this annually; they are only required to do this once in their entire academic career. While the university offers additional professional development opportunities for GTAs, these are optional and often compete for the limited time that graduate students have.

One GTA went to the required orientation and workshops in her first year as a graduate student. Since then, she had chosen to participate in two additional workshops the following year that focused on equity-driven practices for engaging diverse students to participate in class and how to effectively grade written assignments. The other had also attended a university-required orientation at the start of her first year. Afterward, she had frequented professional development events that focused on nontraditional approaches to classroom engagement in an in-person learning environment. Neither graduate student author participated in additional workshops on how to facilitate online teaching practices. These GTA trainings are reflective of what is offered at most public universities. Moreover, the little attention paid to GTAs training programs in the literature often focuses on GTAs in science, technology, engineering, and mathematics (STEM) as opposed to the humanities and social sciences (Reeves et al., 2018; Wheeler et al., 2017). It is also important to note that the required training workshops did not include teaching critical reflection strategies to GTAs as a means for their own professional development.

Data Analysis

The weekly reflections from the students and the recorded reflections from the GTAs were analyzed using thematic coding. Thematic analysis is a method that systematically identifies and organizes patterns of meaning across a data set (Clarke & Braun, 2017). This method allowed us to make sense of shared themes and experiences that were related to our specific research questions (Clarke & Braun, 2017). Specifically, deductive thematic analysis was conducted as these themes were derived from concepts found in the literature review and theoretical framework (Braun & Clarke, 2006; LeCompte & Schensul, 1999). First author and second author, the GTAs, reviewed the weekly student reflections and the GTAs self-reflection to identify initial codes (e.g., accessibility of course content, engagement, relationships between students and the teaching team, pedagogical practices, identity reflection, and power dynamics) that were informed by prior research on online learning and teaching. The codes were re-examined and discussed with third author, the primary instructor, to evaluate the reliability of the codes and to identify larger patterns in the experiences of the students and GTAs that were found in the data.

RESULTS

The top two codes were feelings of isolation among students (57% of student responses) and frustrations in navigating an unmanageable load for class on-line (51% of student responses). To illustrate how we utilized the feedback loop for curricular and pedagogical change, each of these pedagogical issues will be examined separately following the five steps of the proposed feedback loop.

Flexibility in Addressing the Psychological States of our Students

To address the feelings of isolation, we asked students to turn on their cameras while we designed breakout room activities and assigned a group project with peer review assignments (Banna et al., 2015; Dixson, 2010). Despite initial student reflections stating a desire for curated activities to encourage social interaction, nearly all the participants turned off their cameras, were silent in their breakout rooms, and most did not enjoy the group project or the peer review process. Using our enhanced feedback loop, we began to assess these student outcomes (low participation and conflict in group projects) and weekly student feedback to gain an understanding of why these events were occurring in discussion sections.

Step 1: Assess and reflect on student needs, outcomes, and weekly feedback

Students reported that self-reflection on Zoom was exhausting and distracting. This resulted in less outward engagement in breakout rooms, as demonstrated by silence. Also, Shawn mentioned that camera use was, at times, dependent on other peers:

> I don't mind having my camera on. I turn on my camera once I enter the meeting and see the rest of the class. I do not normally feel comfortable having my camera on and then like 50 other students with it off. (Shawn, undergraduate, journal response)

What was clear was that students were having difficulty facilitating conversations when speaking to the "black" boxes on Zoom. Moreover, although Tony suggested that to counter the awkward silences, "you should reach out because once someone breaks the ice usually great convos get started," Sydney stated, "Sometimes no one speaks in the breakout room during discussion. It makes me feel embarrassed because no one reacts after I say something." Turning off the cameras and not speaking up also appeared to be mechanisms to save face in public spaces.

When reflecting on why students didn't feel comfortable socializing on Zoom, it was clear that we were unaware of just how much Zoom could curtail our initial efforts to enhance classroom socialization. One GTA recalls camera usage in the first weeks:

> A couple students [turned on cameras] but it got to the point where it became so minimal that…students turned off their cameras because they felt awkward. It wasn't just Wi-Fi issues, which are real things, or like limited space, or quiet space. It was one: "I don't like looking at myself in my camera," and two: "no one else does it, I'm not going to do it." So, I think there were a combination of factors that just didn't work in our favor. (GTA, critical reflection)

Research has shown that online tools, like discussion boards or breakout rooms, can foster peer interactions with online courses (Banna et al., 2015; Dixson, 2010). However, this previous research paid little attention to the effects of Zoom fatigue. Additional research on Zoom fatigue recognizes why undergraduates who are spending vast amounts of time on their screens are reporting high levels of stress and exertion. Bailenson (2021) claims that Zoom reinforces long stretches of direct eye contact with faces that are seen close up. This amount of intense eye contact can be seen as intimate, and this behavior is typically associated with close loved ones. Behavior traditionally reserved for intimate relationships has suddenly become the way students interact with their peers and professors online (Bailenson, 2021).

Moreover, Bailenson (2021) theorizes that seeing your own reflection for multiple hours a day leads to higher self-criticism. Previous research has indicated that seeing a mirror image of yourself leads people to self-evaluate and can be stressful, particularly for women, over long periods of time (Duval & Wicklund, 1972; Fauville et al., 2021; Gonzales & Hancock, 2011). For example, Jamie stated:

> I prefer to keep my camera off. Having it on feels like inviting strangers into my home. Additionally, sometimes I'm eating during class or just got out of the shower. Other times, I feel disgusting and ugly, and I don't want to put the effort into easing my dysphoria for others to see me. (Jamie, undergraduate, journal response)

Bailenson (2021) hypothesizes that this constant "mirror" on Zoom may increase negative self-evaluation over an extended period and produce detrimental effects among users on Zoom. This theory explains the distress our students were experiencing by being online for school for multiple hours a day.

In addition, students' feedback revealed that the group projects had the unintentional effect of creating stress due to technical difficulties, scheduling issues, and group disagreements. While peer-to-peer conflict is natural and expected in diverse classrooms, we reflected on how more difficult it was for students to mediate their own conflicts via Zoom due to the lack of visual social cues since most students were likely not turning

on their cameras when meeting outside of class time to work together. In reference to challenges faced throughout the course, Leslie noted, "Not having face-to-face contact with other students made discussion difficult because we weren't able to interpret reactions." Further, one GTA recalls a group conflict that arose at the end of the course. One student reached out to seek a grade change based on group engagement while having been noted by other group members as doing very little work. In this group conflict, this GTA stated earlier intervention could have happened if she had been able to see the group interact:

> I wouldn't have let that fly because I probably would have been able to catch that like a week or two ahead of time, looking at the dynamic of the groups, because I would have been physically there, in-person, and be able to look at their body language. You can tell when group projects are not going well, it's very easy. But in this case, I couldn't. And all the time we're in section, I was called into other groups, so I wasn't going around, I just assumed they didn't need my help. (GTA, critical reflection)

In addition, in face-to-face classrooms, GTAs typically have physical office hours where students can come in and ask for help when navigating group conflict. This same GTA remarked that during online office hours, "There were other groups who had issues collaborating on even deciding on a topic. And I helped mediate that." Virtually, this may have been less feasible since students were already experiencing Zoom fatigue and were unlikely to join online office hours all together in a group.

Step 2: Determine and reflect on how to successfully meet students' psychological needs

After reflecting on why and how students were feeling using Zoom in discussion sections, we had to also determine how to foster a sense of community while balancing students' psychological states. During the weekly meetings the GTAs reviewed initial Zoom policies (i.e., having cameras on) and how group projects were initially structured (work to be done outside of class time). After reflecting, it was determined that revoking the need for cameras to be on and restructuring discussion sections to allow students time to work during them would be the best modifications to the curriculum. While one GTA noted that with little visibility or large group conversation, "Verbal participation was pulling teeth. I feel like that emotional investment was there for a lot of students," the other GTA reflected that:

> We did the best we could. They were saying it was so difficult to plan outside of class time, so we gave them the next three sections of class time to literally work on it, like 20–25 minutes. There were students for whom I feel like we caught a lot of things, like students were like, can you look at this and I was like, "well, you know…" and I gave them constructive feedback. (GTA, critical reflection)

Step 3: Review student feedback with primary instructor and reflect on instructor feedback

GTAs were the mediators between students' needs and the primary instructor's facilitation of their learning processes. When advocating for course modifications, we had to examine the power differentials between the students, us, and the primary instructor. In doing so, we had to reflect on our relationship with the primary instructor to ensure our ideas were seen as constructive and not criticism. Fortunately, due to our positive relationship with the primary instructor, we felt encouraged to propose curricular changes and were involved in making decisions about specific student incidents. However, in hindsight, we initially felt obliged to defer the ultimate decision to the primary instructor even though we may not have agreed with it. For example, when one student was accused by her group members of not contributing to the workload, the GTA that was working with the group reflected:

> I was like, "why didn't you tell me? You know...I could have helped you." And so that was frustrating because I always want to advocate for the student, and I don't want to punish a student for something that they can't prove that I'm kind of accusing them for. But also, if I'm being honest, I don't know what else I could have done to prevent that. And you know, when we brought it up to [the lead instructor] to consider that, instead of taking off points for not doing

> anything, she let [the student] write a one-page reflection which, I'm not sure was like the best option for that student, considering she hadn't done anything… (GTA, critical reflection)

However, over time, as the primary instructor and GTAs engaged in this process, there were several opportunities to negotiate disagreements. Through our discussions we were able to come to individualized resolutions. For example, we came to understand the broader context of this particular student's class performance by considering her highly graded previous assignments. Because of this, having the student complete a one-page reflection of her role in the group project would yield a better learning outcome than deducting points. This process provided the space for the members of the teaching team to discuss our perspectives for how, and to what degree, students should be accommodated, which further solidified what our roles would be in student learning.

Step 4: Modify changes to course implementation and reflect on how changes position students as agents of learning

Based on student feedback, we made some immediate changes. For example, cameras were not required to be on to ease the burden of Zoom fatigue, discussions sections were modified to enable students to work on their group projects in class, and we "lingered" in our Zoom rooms after lecture and discussion sections so that students had an opportunity to ask questions and seek support. These strategies seemed to help alleviate some of the students' stress with online engagement. In particular, many students engaged with us during postlecture sessions to have conversations not only about the class content but also about how things were going in their lives and what additional support they needed in their learning. As Sammy stated, "[A] con is that some students find it more difficult to ask for more help when it is online and recorded or through email than for instance, in person after class has ended." These modifications created a space for students to be agents of their learning, while having the support they needed to succeed in a more accessible format.

Step 5: Communicate transparency on how GTA reflection on student feedback informed changes

Before the above changes were implemented, we set aside time to discuss students' feedback and how it informed the modifications we were proposing. This transparency is a key component in the enhanced feedback loop model because it was foundational to building a trusting relationship with our students. For instance, a GTA shared, "I did have a couple of students who are consistent in the reflection saying that they noticed we took feedback in and they felt like they were learning more and that they were understanding the concepts more." Moreover, students were able to see how they were a mechanism for change in their learning experience. Thus, utilizing this feedback loop as a continual process offered a method for making long-lasting meaningful changes based on the lived experiences of our students.

Addressing Academic Rigor and Instructional Support for our Students

The course was initially organized to make the content accessible, the expectations clear, and the assignments manageable. All lectures and discussion sections were recorded to make reviewing possible, readings and resource links were posted on our learning management website, and assignments that check for student understanding of course content were embedded throughout the course. Additionally, we posted clear deadlines with reminders for our students. Despite this initial organization, student reflections quickly reported an unmanageable workload in the class. It was also clear when grading the assignments that students were confused about course concepts and were not able to keep up with deadlines.

Step 1: Assess and reflect on student needs, outcomes, and weekly feedback

When we started to assess students' comprehension of the content, there were clear indications of confusion on the course materials. Moreover, when reflecting on student feedback, we found that students reported that their expected coursework for this class was unmanageable and overwhelming. This resulted in assignments being turned in late and confusion in breakout rooms because students were overwhelmed with readings and perplexed by course concepts. For example, Taylor stated:

> In my opinion, the main impediment to my learning this week was the sheer amount of material that we went over. In lecture

> and section, the instructors did a good job of highlighting important points, but the readings were so long and dense that it was difficult to identify and retain key concepts, which ended up confusing me and making me lose interest. (Taylor, undergraduate, journal response)

The overwhelming course load resulted not only in lower academic performance but also had impacted students' engagement with the course materials. In addition, because students were struggling to understand the concepts and keep up with coursework, there were repeated requests for extensions. Riley mentioned:

> Sometimes, professors assume that online courses need to have more material and more work to make up for the supposed loss in class time but seeing as this is an unprecedented and stressful time for everyone, being restrained in the assigned coursework can go a long way for making students feel comfortable and allowing them the proper time to complete the work. (Riley, undergraduate, journal response)

Findings indicated that our initial organization of the course was not structured in a way to facilitate engagement with course materials due to the type of readings, the amount of work required, and the lack of clarification on major course concepts. Students were not able to intellectually interact with the course content because they were not given enough time or support in learning the foundational elements of the class. What was interesting was that the materials and workload had been vetted in previously taught, in-person classes and were further altered based on anticipations of what students would need or how they would learn online, yet students' feedback told us a different story.

Step 2: Determine and reflect on how to successfully support students' learning goals

After reflecting on student feedback and assessments, it was clear that students needed more flexibility with their assignments and clarification on course concepts. The GTAs had to consider how to meet students' needs and support their learning goals while maintaining the level of academic rigor that was required for the course. To build off Moore's (1993) learner-to-content engagement strategies, the GTAs integrated more interactive activities to continuously check for student understanding while concepts were being taught. This parallel assessment strategy enabled us to go more in-depth in examining concepts, but it also meant that we could not cover supplemental materials that we had prepared for our sections. Students appreciated this approach as we saw a decrease in their expressions of frustration in their journal responses.

Step 3: Review student feedback with primary instructor and reflect on instructor feedback

The GTAs met with the primary instructor to propose a rethinking of the initial policies and assignments. Students are often much more comfortable and honest when talking with GTAs. As one of the GTAs stated:

> I got a lot of, not backlash, but a lot of students arguing over certain things that I kind of wish had been put in the rubric in the first place, and unfortunately, you and I can't really fix that because we're not the instructors of the course. (GTA, critical reflection)

As GTAs we believe that one of our roles is to be an advocate for the students. It was an uncomfortable situation to suggest a redesign of class policies, even though the instructor made it a point to always ask us for our input. But receiving several emails from students about not having clear instructions or enough time, we suggested an extension of all the deadlines and a rewriting of the assessment rubrics. Further, we learned that the students would benefit much more via deeper explorations of a few major topics rather than covering a broad range of topics. Because this situation did not reflect previous quarters, where the same assignments and materials were used, we discussed why this was happening and how to solve these issues to meet our students' needs. Together, the instructional team was able to revisit the syllabus and content to make the necessary changes. What became clear was that the enhanced feedback loop gave us a mechanism to continuously adjust our teaching to meet the needs of our current students

and made visible where the changes needed to be made.

Step 4: Modify changes to course implementation and reflect on how changes position students as agents of learning

After agreeing with the proposed changes, the GTAs extended deadlines on assignments, which provided more flexibility for students and offered them additional time to master the course content. Students were now given more control on when and how to show their mastery of course content. We took the extra time needed to curate Zoom activities that would highlight key course concepts and ensure proper understanding of the materials. While these activities took more time than expected, we found that it was better to rebuild foundational knowledge, even if that meant going back to the previous week's course content. During COVID-19, research has shown that online courses are less effective than in-person instruction for undergraduates and that students find these courses to be less enjoyable and uninteresting, which has resulted in lower grades and retention rates (Garris & Fleck, 2022; SimpsonScarborough, 2020; 2021). Taking the time to rebuild foundational knowledge would ensure equitable learning circumstances that are imperative during a pandemic where inequities in higher education are emerging due to the online nature of courses.

Step 5: Communicate transparency on how student feedback informed changes and student reflection on changes in course implementation

In discussion sections, the GTAs discussed their reflection on student feedback and informed the proposed course modifications that would be taking place. Student feedback revealed satisfaction with these course changes as the students expressed gratitude for being flexible with extensions and initiating contact with students who had not turned in assignments. Midway through the quarter, Alex expressed:

> Something that has surprised me so far in terms of online course experience is how easy it is to communicate concerns with professors and TAs about anything we may encounter...They understand the current circumstances and also acknowledge that there are many factors which can affect students. (Alex, undergraduate, journal response)

Not only did our modifications create more opportunities to showcase their learning, it also fostered a sense of trust needed to establish positive relationships with students. This is important because research has shown that the quality of the student-faculty interaction is most important when predicting academic outcomes for students, especially for nontraditional undergraduates (Carter et al., 2013; Zilvinskis, 2019). Creating an avenue for stronger communication between the teaching team and the students also helps shift the power that is traditionally held in the classroom hierarchy (see Figure 1).

In addition, students can more deeply interact with the course content when they are offered different ways to examine them from diverse perspectives. We found that content understanding increased *only* when we modified activities to include accessible support, like providing time in discussions sections for students to reach out, and when we offered multiple ways to gauge understanding. We told students that we would be allocating more time on assignments within discussion sections so they could ask us directly for help when needed. We also designed interactive activities to see if students understood key concepts by utilizing Google Suites (e.g., Jamboard, Google Slides, Google Sheets) and other social learning platforms (e.g., Padlet, Kahoot). Later, student reflections revealed how they better understood the assigned readings and course concepts. As Mikah stated:

> The most surprising thing so far is how engaged [the] TAs has been able to keep us during section...I also appreciate that y'all have listened to our feedback and have incorporated our wants/needs into the curriculum. I know I was a person who said that there were a lot of terms, and it was difficult to learn them all. It was a pleasant surprise to see [my TA] begin having us discuss terms in section to make sure that we understood them. (Mikah, undergraduate, journal response)

Once we were able to bridge any gaps in learning course content, we saw increased participation in the discussion sections and the quality of these conversations revealed a better understanding of

key concepts. In addition, the reflections throughout the quarter highlighted how students felt they were learning and keeping pace with the content compared to previous reported difficulties. Thus, using our enhanced feedback loop informed better pedagogical decisions that helped us meet students' academic learning goals without reinforcing traditional power dynamics that are typically present in classrooms.

Implications: GTA Professional Development

In this paper, we highlight how an enhanced feedback loop that integrates critical reflection and transparency can be used to inform pedagogical decisions. Critical reflection strategies were key in helping us understand how our own biases and assumptions affected students' learning outcomes. We came into this course assuming that students would have had practice with online learning a year into the pandemic and that there would be few obstacles navigating a course online. This was not the case, and we ended up having more challenges than in previous online course offerings.

Secondly, critically reflecting on our teaching practices enabled us to see how important it was to include student feedback and promote a sense of agency within our classroom. This continual feedback was imperative to improving the course for our students. We used student feedback as a direct mechanism to modify curriculum to meet their needs. This transparency aids in shifting the power dynamic that is typically held in traditional classrooms from the teaching team to the students. Through their ongoing feedback, our undergraduates advocated for changes in the course to create a better learning environment for themselves and were aware of how they informed these changes. Moreover, because it was the GTAs collecting the students' feedback, it seemed that students felt more comfortable to share their perspectives and experiences, because they perceived GTAs to be somewhat closer to them in the hierarchical structure of academia.

Lastly, our enhanced feedback loop created an open dialogue between the GTAs and lead instructor, which ultimately strengthened our relationships with each other. Our lead instructor was a mentor who provided insight into how we can inform our pedagogy to meet the needs of our students rather than become an obstacle to our professional development, and coupled with our roles as instructors, we became a source of insights into the experiences of students.

In this paper we call attention to the common assumption that GTAs can effectively serve as instructors with only minimal training. Given the lack of pedagogical training for GTAs coupled with the significant roles that they play in undergraduate student education, multiple mechanisms to support their professional development as instructors are necessary. We found the utilization of a feedback loop to be a tool for this purpose as it provides step by step guidance in becoming a reflective practitioner. This tool can be used to unearth assumptions, experiences, and relationships between instructors and students that need to be re-examined when teaching undergraduate students.

CONCLUSION

The findings of this study can contribute to the higher education literature in multiple ways. First, we originally situated our work with Moore's (1993) interactional model to give us guidance in promoting engagement within our virtual course. In doing so, we thought of each interaction (learner-to-instructor, learner-to-learner, learner-to-content) as distinct areas in which we could engage students. Yet, as we neared the end of the course, we noticed that these interactions overlapped and affected one another. Specifically, we noticed a similarity to the Community of Inquiry (CoI) framework, which posits that teaching presence as a driver of learning may be mediated by peer interaction (Garrison et al., 1999; Stenbom, 2018). Despite hindered efforts at promoting initial social interaction, the interactions students had with the GTAs influenced their overall learning within the course. The quality of GTAs' teaching presence may provide a buffer to the challenges of limited socialization in online courses. Secondly, the challenges of fostering socialization within our online course were compounded by the nuances of Zoom fatigue and group dynamics. Specifically, research on the stress students, especially women, may feel with their Zoom presence (Bailenson, 2021) is worth investigating in future research. In addition, future research on the diffusion of responsibility within online group projects and how that is mediated by the interaction of gender and Zoom fatigue is also warranted.

Next, this investigation introduced the use of an enhanced feedback loop with the components of

critical reflection and transparency. This enhanced feedback loop provides a more efficient way to learn about our students compared to traditional forms of needs assessments that generally happen once at the beginning of a course. Continually checking in with them with weekly student feedback gives us richer insight into how our students are developing and learning in classrooms. Students have continually changing needs as they grow into their own identities. Moreover, transparency and critical reflection components embedded in the feedback loop enable student agency for their learning and give them the opportunity to see how they can be a direct mechanism for curriculum changes.

In addition, we highlight the role of GTAs and how the dynamics between GTAs and professors can impact undergraduate engagement. Traditional hierarchies in classes often see students with the least agency, primary instructors with the most authority, and GTAs being somewhere, uncomfortably, in between. What became clear was the distinct roles that each of the stakeholders had in the education of undergraduate students and how important it was to have open channels of communication and negotiation to come to a shared vision of how to conduct the class. Lastly, learning does not thrive on stagnation, and neither does professional development for GTAs. Just as we use the continuous feedback loop to inform pedagogical decisions, GTAs need continuous professional development to aid in their teaching abilities. We encourage GTAs to use this enhanced feedback loop as a form of professional development that can be applied both online and in person.

References

Altermatt, E., Teodorescu, R., & Iverson, E. R. (2021). Teaching strategies predict instructors' perceptions of their effectiveness in engaging students in introductory physics for life sciences courses. Physical Review Physics Education Research, 17(2), 020133. https://doi.org/10.1103/PhysRevPhysEducRes.17.020133

Anderson, A. D., Hunt, A. N., Powell, R. E., & Dollar, C. B. (2013). Student perceptions of teaching transparency. The Journal of Effective Teaching, 13(2), 38–47. https://eric.ed.gov/?id=EJ1092137

Archer, J. C. (2010). State of the science in health professional education: Effective feedback. Medical Education, 44(1), 101–108. https://doi.org/10.1111/j.1365-2923.2009.03546.x

Armellini, A., & De Stefani, M. (2016). Social presence in the 21st century: An adjustment to the 76 community of inquiry framework. British Journal of Educational Technology, 47(6), 1202–1216. https://doi.org/10.1111/bjet.12302

Bailenson, J. N. (2021). Nonverbal overload: A theoretical argument for the causes of zoom fatigue. Technology, Mind, and Behavior, 2(1). https://doi.org/10.1037/tmb0000030

Bancroft, J. (2016). Multiliteracy centers spanning the digital divide: Providing a full spectrum of support. Computers and Composition, 41, 46–55. https://doi.org/10.1016/j.compcom.2016.04.002

Banna, J., Lin, M.-F. G., Stewart, M., & Fialkowski, M. K. (2015). Interaction matters: Strategies to promote engaged learning in an online introductory nutrition course. Journal of Online Learning and Teaching, 11(2), 249–261.

Bolliger, D. U., & Martin, F. (2018). Instructor and student perceptions of online student engagement strategies. Distance Education, 39(4), 568–583. https://doi.org/10.1080/01587919.2018.1520041

Boman, J. S. (2014). Does reflective writing enhance training? An evaluation of a skills-based teaching assistant training program. Transformative Dialogues: Teaching & Learning Journal, 7(2), 1–18. https://journals.psu.edu/td/article/view/1209/665

Boud, D., & Molloy, E. (2013). Rethinking models of reedback for learning: The challenge of design. Assessment & Evaluation in Higher Education, 38(6): 698–712. https://doi.org/10.1080/02602938.2012.691462

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Britt, M., Goon, D., & Timmerman, M. (2015). How to better engage online students with online strategies. College Student Journal, 49(3), 399–404.

Brookfield, S. (1995). Becoming a critically reflective teacher. Jossey-Bass.

Carless, D. (2015). Excellence in university assessment: Learning from award-winning practice. Routledge.

Carless, D., Salter, D., Yang, M., & Lam, J. (2011). Developing sustainable feedback practices. Studies in Higher Education, 36(4), 395–407. https://doi.org10.1080/03075071003642449

Carter, D. F., Locks, A. M., & Winkle-Wagner, R. (2013). From when and where I enter: Theoretical and empirical considerations of minority students' transition to college. In J. C. Smart & M. B. Paulson (Eds.), Higher education: Handbook of theory and research (pp. 93–149). Agathon Press.

Clarke, V., & Braun, V. (2017). Thematic analysis. The Journal of Positive Psychology, 12(3), 297–298. https://doi.org/10.1080/17439760.2016.1262613

Davidson College. (2020). The college crisis initiative. C2i Dashboard. https://collegecrisis.shinyapps.io/dashboard/

Dewey, J. (1933). How we think: A restatement of the relations of reflective thinking to the educative process (2nd ed.). D.C. Heath.

Dixson, M. D. (2010). Creating effective student engagement in online courses: What do students find engaging? Journal of the Scholarship of Teaching and Learning, 10(2), 1–13. https://files.eric.ed.gov/fulltext/EJ890707.pdf

Dixson, M. D., Greenwell, M. R., Rogers-Stacy, C., Weister, T., & Lauer, S. (2017). Nonverbal immediacy behaviors and online student engagement: Bringing past instructional research into the present virtual classroom. Communication Education, 66(1), 37–53. http://doi.org/10.1080/03634523.2016.1209222

Duval, S., & Wicklund, R. A. (1972). A theory of objective self-awareness. Academic Press.

Everson, M., Gundlach, E., & Miller, J. (2013). Social media and the introductory statistics course. Computers in Human Behavior, 29(5), A69–A81. https://doi.org/10.1016/j.chb.2012.12.033

Fauville, G., Luo, M., Queiroz, A. C., Bailenson, J., & Hancock, J. (2021, April 5). Nonverbal mechanisms predict zoom fatigue and explain why women experience higher levels than men. Social Science Research Network. https://doi.org/10.2139/ssrn.3820035

Fook, J. (2015) Reflective practice and critical reflection. In J. Lishman (Ed.), Handbook for practice learning in social work and social care: Knowledge and theory (3rd ed., pp. 440–454). Jessica Kingsley Publishers.

Gallagher, S., & Palmer, J. (2020, September 29). The pandemic pushed universities online. The change was long overdue. Harvard Business Review. https://hbr.org/2020/09/the-pandemic-pushed-universities-online-the-change-was-long-

overdue

Gares, S. L., Kariuki, J. K., & Rempel, B. P. (2020). Community matters: Student–instructor relationships foster student motivation and engagement in an emergency remote teaching environment. Journal of Chemical Education, 97(9), 3332–3335. https://doi.org/10.1021/acs.jchemed.0c00635

Garris, C. P., & Fleck, B. (2022). Student evaluations of transitioned-online courses during the COVID-19 pandemic. Scholarship of Teaching and Learning in Psychology, 8(2), 119–139. https://doi.org/10.1037/stl0000229

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment: Computer conferencing in higher education. The Internet and Higher Education, 2(2-3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Gaytan, J., & McEwen, B. C. (2007). Effective online instructional and assessment strategies. American Journal of Distance Education, 21(3), 117–132. https://doi.org/10.1080/08923640701341653

Gonzales, A., & Hancock, J. (2011). Mirror, mirror on my Facebook wall: Effects of exposure to Facebook on self-esteem. Cyberpsychology, Behavior, and Social Networking, 14(1-2), 79–83. https://doi.org/10.1089/cyber.2009.0411

Hamadi, M., El-Den, J., Azam, S., & Sriratanaviriyakul, N. (2022). Integrating social media as cooperative learning tool in higher education classrooms: An empirical study. Journal of King Saud University—Computer and Information Sciences, 34(6B), 3722–3731. https://doi.org/10.1016/j.jksuci.2020.12.007

Hattie, J., & Timperley, H. (2007). The power of feedback. Review of Educational Research, 77(1), 81–112. https://doi.org/10.3102/003465430298487

Higgins, R., Hartley, P., & Skelton, A. (2001). Getting the message across: The problem of communicating assessment feedback. Teaching in Higher Education, 6(2), 269–274. https://doi.org/10.1080/13562510120045230

Higgins, R., Hartley, P., & Skelton, A. (2002). The conscientious consumer: Reconsidering the role of assessment feedback in student learning. Studies in Higher Education, 27(1), 53–64. https://doi.org10.1080/03075070120099368

Huxham, M. (2007). Fast and effective feedback: Are model answers the answer? Assessment and Evaluation in Higher Education, 32(6), 601–611. https://doi.org/10.1080/02602930601116946

Jaschik, S. (2021, January 4). Colleges delay in-person instruction. Inside Higher Ed. https://www.insidehighered.com/news/2021/01/04/colleges-adjust-calendars-again

King, S. B. (2014). Graduate student perceptions of the use of online course tools to support engagement. International Journal for the Scholarship of Teaching and Learning, 8(1), Article 5. https://doi.org/10.20429/ijsotl.2014.080105

Lear, J. L., Ansorge, C., & Steckelberg, A. (2010). Interactivity/community process model for the online education environment. Journal of Online Learning and Teaching, 6(1), 71– 77. https://jolt.merlot.org/vol6no1/lear_0310.htm

LeCompte, M., & Schensul, J. (1999). Designing and conducting ethnographic research. AltaMira Press.

Lew, M. D. N., Alwis, W. A. M., & Schmidt, H. G. (2010). Accuracy of students' self-assessment and their beliefs about utility. Assessment & Evaluation in Higher Education, 35(2), 135–156. https://doi.org10.1080/02602930802687737

Liu, K. (2015) Critical reflection as a framework for transformative learning in teacher education. Educational Review, 67(2), 135–157. https://doi.org/10.1080/00131911.2013.839546

Loughran, J. (1995). Practising what I preach: Modelling reflective practice to student teachers. Research in Science Education, 25(4), 431–451. https://doi.org/10.1007/BF02357386

Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. Advances in Health Sciences Education: Theory and Practice, 14, 595–621. https://doi.org/10.1007/s10459-007-9090-2

Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. Online Learning, 22(1), 205–222. https://doi.org/10.24059/olj.v22i1.1092

Matthews, B., & Jessel, J. (1998) Reflective and reflexive practice in initial teacher education: A critical case study. Teaching in Higher Education, 3(2), 231–243. https://doi.org/10.1080/1356215980030208

McKenzie, L. (2021, April 27). Students want online learning options post-pandemic. Inside Higher Ed. https://www.insidehighered.com/news/2021/04/27/survey-reveals-positive-outlook-online-instruction-post-pandemic

Mezirow, J. (1991). Transformative dimensions of adult learning. Jossey-Bass.

Moore, M. J. (1993). Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), Distance education: New perspectives (pp. 19–24). Routledge. https://doi.org/10.4324/9781315003429

Nadler, R. (2020). Understanding "Zoom fatigue": Theorizing spatial dynamics as third skins in computer-mediated communication. Computers and Composition, 58, 102613. https://doi.org/10.1016/j.compcom.2020.102613

National Center for Education Statistics. (2020). Digest of Education Statistics 2020, Table 311.15. U.S. Department of Education. https://nces.ed.gov/programs/digest/d20/tables/

dt20_311.15.asp

Oyarzun, B., Stefaniak, J., Bol, L., & Morrison, G. R. (2018). Effects of learner-to-learner interactions on social presence, achievement and satisfaction. Journal of Computing in Higher Education, 30(1), 154–175. https://doi.org/10.1007/s12528-017-9157-x

Panadero, E., & Lipnevich, A. A. (2022). A review of feedback models and typologies: Towards an integrative model of feedback elements. Educational Research Review, 35, 100416. https://doi.org/10.1016/j.edurev.2021.100416

Petillion, R. J., & McNeil, W. S. (2020). Student experiences of emergency remote teaching: Impacts of instructor practice on student learning, engagement, and well-being. Journal of Chemical Education, 97(9), 2486–2493. https://doi.org/10.1021/acs.jchemed.0c00733

Pretorius, L., & Ford, A. (2016). Reflection for learning: Teaching reflective practice at the beginning of university study. International Journal of Teaching and Learning in Higher Education, 28(2), 241–253. https://files.eric.ed.gov/fulltext/EJ1111149.pdf

Purinton, E. F., & Burke, M. M. (2020). Engaging online students: Using a multisensory exercise for deeper, active learning. Marketing Education Review, 30(1), 29–42. https://doi.org/10.1080/10528008.2019.1677478

Reeves, T., Hake, L., Chen, X., Frederick, J., Rudenga, K., Ludlow, L., & O'Connor, C. (2018). Does context matter? Convergent and divergent findings in the cross-institutional evaluation of graduate teaching assistant professional development programs. CBE Life Sciences Education, 17(1), 1–13. https://doi.org/10.1187/cbe.17-03-0044

Revere, L., & Kovach, J. V. (2011). Online technologies for engaged learning: A meaningful synthesis for educators. Quarterly Review of Distance Education, 12(2).

Shea, P., Fredericksen, E., Pickett, A., Pelz, W., & Swan, K. (2001). Measures of learning effectiveness in the SUNY Learning Network. http://hdl.handle.net/1802/2764

SimpsonScarborough. (2020, April). Higher Ed and COVID-19 national student survey. https://f.hubspotusercontent30.net/hubfs/4254080/SimpsonScarborough%20National%20Student%20Survey%20.pdf

SimpsonScarborough. (2021, March). The impact of COVID-19 on higher education. National student survey, Pt. IV. https://impact.simpsonscarborough.com/covid19/

Stavredes, T., & Herder, T. (2014). A guide to online course design: Strategies for student success. John Wiley & Sons.

Stenbom, S. (2018). A systematic review of the Community of Inquiry survey. The Internet and Higher Education, 39, 22–32. https://doi.org/10.1016/j.iheduc.2018.06.001

Tabachnick, B., & Zeichner, K. (Eds.) (1991) Issues and practices in inquiry-orientated teacher education. Falmer.

Taparia, H. (2020, May 25). The future of college is online, and it's cheaper. The New York Times. https://www.nytimes.com/2020/05/25/opinion/online-college-coronavirus.html

Taylor, J. M., Dunn, M., & Winn, S. K. (2015). Innovative orientation leads to improved success in online courses. Online Learning, 19(4). https://doi.org/10.24059/olj.v19i4.570

Tess, P. A. (2013). The role of social media in higher education classes (real and virtual): A literature review. Computers in Human Behavior, 29(5), A60–A68. https://doi.org/10.1016/j.chb.2012.12.032

Watson, G., & Kenny, N. (2014). Teaching critical reflection to graduate students. Collected Essays on Learning and Teaching, 7(1), 56–61. https://doi.org/10.22329/celt.v7i1.3966

Wheeler, L., Maeng, J., Chiu, J., & Bell, R. (2017). Do teaching assistants matter? Investigating relationships between teaching assistants and student outcomes in undergraduate science laboratory classes. Journal of Research in Science Teaching, 54(4), 463–492. https://doi.org/10.1002/tea.21373

Yost, D., Sentner, S., & Forlenza-Bailey, A. (2000). An examination of the construct of critical reflection: Implications for teacher education programming in the 21st century. Journal of Teacher Education, 51(1), 39–49. https://doi.org/10.1177/002248710005100105

Zeichner, K. M. (1981) Reflective teaching and field based experience. Interchange, 12(4), 1–22. https://doi.org/10.1007/BF01807805

Zeichner, K. M., & Liston, D. P. (1987) Teaching student teachers to reflect. Harvard Educational Review, 57, 23–48. https://doi.org/10.17763/haer.57.1.j18v7162275t1w3w

Zhu, M., Herring, S. C., & Bonk, C. J. (2019). Exploring presence in online learning through three forms of computer-mediated discourse analysis. Distance Education, 40(2), 205–225. https://doi.org/10.1080/01587919.2019.1600365

Zilvinskis, J. (2019). Measuring quality in high-impact practices. Higher Education, 78(4), 687–709. https://doi.org/10.1007/s10734-019-00365-9

APPENDIX A

STUDENTS' WEEKLY WRITTEN JOURNAL ENTRY (WRITTEN REFLECTIONS)

Each table was presented via an online course administrator for students to complete as a weekly assignment. Students submitted their responses in the Response column each week.

Table A1. Week One Journal Prompts

Prompt	Response
Have you ever been in an online course before? If so, briefly explain what platform was used and how it was.	
What kinds of expectations do you have for this online course from the instructors?	
What are your concerns about learning online?	
What aspects about online learning are you looking forward to?	

Table A2. Week Two Journal Prompts

Prompt	Response
Were there any challenges or difficulties in this week's module? If so, what were they?	
What tool or strategy helped you in your learning this week?	
What could have been done better to help you learn? Suggestions?	

Table A3. Week Five Journal Prompts

Prompt	Response
Although this might seem similar to previous journal questions... thinking in terms of a midway point to the quarter, **what has surprised you so far in terms of the online course experience?** What do you think was overlooked by yourself or, seemingly, by professors, TAs, and UCSB administration? (for better, worse, or neutral)	
How do you feel learning, specifically, about "culture, language, and development" is changed or affected by online instruction of the subject? (for better, worse, or neutral)	

Table A4. Week Six Journal Prompts

Prompt	Response
Have you developed any new/different ways of studying or working over the past weeks of taking classes online? Describe them. What have you had to get used to?	
Please describe your experiences in the discussion section. What role has your TA played in facilitating your learning?	

Table A5. Week Seven Journal Prompts

Prompt	Response
Do you prefer asynchronous or synchronous remote classes? Why?	
What is your preference for turning on or off your video camera? Why or why not?	
What do you think is the best way to cultivate community with your peers in an online course? In what ways has your TA cultivated community in your discussion sections?	

Table A6. Week Nine Journal Prompts

Prompt	Response
What was your favorite activity that you've done in either this class or another class (via this online platform)? Describe it and why it was helpful/engaging, etc.	
What was your least favorite activity (in this class or another)? How would you adapt it so that it would be better/better serve the intended learning goal?	

Table A7. Week 10 Journal Prompts

Prompt	Response
List and describe 3 pros and 3 cons of taking this course online.	
Is there anything else you'd like to share with/ update us on for this last journal entry?	

APPENDIX B

GRADUATE TEACHING ASSISTANTS' (GTAS) PROTOCOL

This questionnaire was developed by graduate teaching assistants to address three areas they felt most important to developing their relationships with undergraduate students.

I. **Relationships/Community**

a. How well do you know your students? How have you gotten to know them?
b. What is your relationship like with the professor?
c. What do you think the student relationship is like with the professor?
d. What were some really great moments in working with students?
e. What were some not great moments in working with students?
f. What were office hours like?

II. **Teaching/Pedagogy**

a. How were our perceptions of engagement different from students' perceptions?
b. How did we communicate expectations for accountability for group projects? What could we have done to better facilitate that process?
c. What about: Interactive online documents for accountability purposes?
d. What worked well in our sections? What did not work well in our sections?
e. How did we maintain high expectations while also being accommodating to students' personal circumstances during COVID-19? Did we strike the right balance?

III. **Critical reflection on how our own identities permeate our teaching**

a. What do you wish you would have known prior to TAing this quarter?
b. How did your own cultural backgrounds/histories affect our teaching?
c. How did our identities as graduate students influence our teaching?
d. How did we check in with ourselves, our relationship to the material, and how we were facilitating class participation?