Open Scholarship of Teaching and Learning
osotl.org
ISSN 2752-4116
https://doi.org/10.56230/osotl.44

2022, Vol. 2(1) 59-75

Reflections from graduate student instructors on their first-time teaching reveal structural and individual challenges

Jessica E. Sutherland[1], Zahra Vahedi[2] and Lesley Zannella[3]

Abstract

Graduate student instructors occupy a unique 'liminal space' as trainees in and instructors of their discipline. While research has explored challenges graduate students face while teaching, there is a limited exploration of the challenges they face that transcend disciplinary boundaries while preparing for and teaching their first undergraduate class. This qualitative study asked graduate students to reflect on the challenges and surprises they encountered while preparing for and teaching their first undergraduate class. Our findings indicate that consistent with previous literature, most graduate student pedagogical training is not sufficient for preparing graduate student instructors and many of the challenges they encounter are the result of a lack of support and prioritization of pedagogy in graduate training. We anchor these findings in a discussion of structural barriers to effective pedagogical training in graduate school and a brief review of model graduate pedagogical training programs.

Keywords

graduate student instructors, graduate school, reflection, first-time teaching, pedagogical training

[1] Department of Psychology, York University, Toronto, ON, Canada

[2] Department of Psychology, Syracuse University, Syracuse, NY, United States

[3] Department of Law and Behavioral Science, Arizona State University, Phoenix, AZ, United States

Corresponding Author:
Jessica E. Sutherland, 4700 Keele Street, Toronto, ON, M4J4A9
Email: jesuther@yorku.ca

Introduction

At universities and colleges across Canada and the United States, graduate students comprise a significant proportion of the instructors tasked with teaching undergraduate courses. At some institutions, which are predominantly research-intensive and doctoral-granting, as many as 25% of courses are taught by graduate students (Friedman, 2017). Despite the common experience of teaching during graduate training, graduate students are often ill-prepared to teach their first course (e.g., Smollin & Arluke, 2014). This is despite graduate students' self-reported ability to teach (Golde & Dore, 2001) and a strong desire to learn how to teach (Muzaka, 2009). A recent survey of college pedagogy courses across American and Canadian institutions revealed that while graduate programs may offer pedagogy courses, they are often not required, universal, or do not offer course credit (Robinson et al., 2019). Specifically, graduate programs in these countries are typically research-focused, with no formal requirement that students develop their teaching and pedagogical skills even if they are required to teach. Further, high-quality teaching and pedagogy are often deprioritized in American and Canadian academic cultures, with research productivity incentivized to satisfy hiring and promotion requirements (Anderson et al., 2011; Calarco, 2020; Lane et al., 2018). As a result, graduate students are often expected to teach undergraduate courses with limited or no training in how to design a course or engage their students in course content.

Stacy (2000) argues that the practice of placing graduate students in a classroom contains several problematic assumptions; namely, that graduate students know how to teach by virtue of being students, they have the requisite content knowledge, and they are comfortable and capable of being authority figures in a classroom. Notably, junior faculty are also placed in classrooms without formal training in post-secondary teaching. However, graduate students occupy a unique "liminal space" (Smollin & Arluke, 2014, p. 28) compared to new faculty, where graduate students do not yet have formal credentials in their field and may be closer in age to the students they teach. Recent evidence indicates that this liminal space may be picked up on by students, who perceive faculty as more knowledgeable and authoritative, but graduate student instructors (GSIs) as less confident and unsure in the classroom (Kendall & Schussler, 2012). Other challenges that graduate students face include a lack of clarity of their roles and the dual student/instructor role (Cho et al., 2011; Nasser-Abu Alhija & Fresko, 2020), poor teaching preparation and mentorship (Nasser-Abu Alhija & Fresko, 2020), difficulty with maintaining authority in the classroom (Cho et al., 2011), and autonomy over the course design (i.e., having to teach material they did not design; Douglas et al., 2016; Muzaka, 2009).

The challenges related to classroom teaching are a specific concern for GSIs due to their status as inexperienced teachers and trainees in their discipline (Stacy, 2000). In an analysis of education professors' ratings on the popular website www.ratemyprofessor.com, Helterbran (2008) found that the 'ideal' professor had clear mastery of both discipline-specific knowledge, and also effectively translated that knowledge to students in the classroom. Graduate students, however, may not yet be able to reach the 'ideal' professor dynamic. Student respondents have reported feeling that graduate teaching assistants have knowledge that is too narrow and not enough content breadth to teach effectively, despite acknowledging that graduate students can be uniquely positioned to teach the most recent advances in their field (Muzaka, 2009). DeChenne et al. (2012) suggest that GSIs develop two distinct, but correlated, aspects of

teaching self-efficacy, which are *learning self-efficacy* (e.g., encouraging student participation, responding to questions) and *instructional self-efficacy* (e.g., creating teaching materials, developing assessments). Interestingly, more teaching experience positively correlated with learning self-efficacy, but not instructional self-efficacy (DeChenne et al., 2012). Shannon et al. (1998) similarly found that more teaching experience was associated with higher ratings of teaching effectiveness from undergraduate students. Thus, it is possible that some aspects of teaching ability may strengthen with time and experience, while others benefit from formal training and development (Boman, 2013). This may explain why GSIs can be perceived as simultaneously approachable and personable but uncertain and lacking knowledge (Kendall & Schussler, 2012; Muzaka, 2009).

The challenging nature of GSIs being expected to learn how to teach and manage the balance of their research and teaching duties 'on the job' has important implications for their wellbeing and professional success. Navigating the dual roles of instructor and graduate student has been identified as a significant source of distress for first-time GSIs (Meanwell & Kleiner, 2014; Smollin & Arluke, 2014), contributing to overall struggles with mental health and wellbeing during graduate school (Grady et al., 2014). It is also possible that negative experiences while teaching can result in graduate students avoiding future teaching opportunities. Graduate students' teaching experience, however, can also have important long-term benefits for their careers; for example, teaching during doctoral studies predicts both earlier graduation and eventual employment in a college or university setting (Bettinger et al., 2016). Feldon et al. (2011) also found that STEM (science, technology, engineering, and math) graduate students with teaching experience produced stronger methodological designs and hypotheses in their research compared to students without teaching experience. Outside of research and the academy, the ability to teach, mentor, and communicate complex ideas effectively are marketable skills of doctorate holders (University of Michigan, 2021). Thus, formalized pedagogical training and support enhances graduate students' professional development, even outside of academic career paths (Jungels et al., 2014; Stacy, 2000).

In addition to enhancing graduate students' own professional development, ensuring GSIs are prepared to teach also has important implications for the undergraduate learning experience. There is also some evidence demonstrating that some students perceive graduate instructors as more approachable and personable compared to full-time faculty (Kendall & Schussler, 2012; Muzaka, 2009). Despite these findings, there is limited evidence that graduate students are in fact adequately prepared to teach undergraduates (Ahmed & Rozen, 2018; Smollin & Arluke 2014; Stacy 2000). This can have important consequences for undergraduate learning. For example, it is common for GSIs to be primarily assigned to teach introductory-level courses and therefore, they may be one of the first instructors undergraduate students encounter. Early experiences being taught by a GSI can positively (Bettinger et al., 2016) and negatively (Benjamin, 2002) influence undergraduate retention in that major, indicating that GSIs can have a significant impact on undergraduates' learning experiences not only in the classroom (Huffmyer & Lemus, 2019) but also in their respective major (O'Neal et al., 2007). Thus, the challenges GSIs experience when teaching impact not only themselves, but also the learning experiences and possible retention of their students.

The current study

While previous research has focused on GSIs in specific fields, such as sociology (Smollin & Arluke, 2014), history (Weber et al., 2012), and STEM (e.g., life and physical sciences; DeChenne et al., 2012; Kendall & Schussler, 2012), there is limited research exploring non-discipline-specific challenges related to undergraduate teaching. Cross-discipline research on graduate students' teaching experiences has emphasized the graduate teaching assistant experience (e.g., Cho et al., 2011; Reeves et al., 2018) rather than the challenges specific to GSIs with their own course assignment. Further, limited research currently exists exploring the challenges that GSIs face when *preparing* to teach their first course, which may come with a different set of concerns. The current study sought to identify how GSIs felt after their first experience preparing for and teaching an undergraduate course to elucidate whether there are gaps in knowledge and training that are cross-disciplinary in nature.

Methods

Recruitment and procedure

Prior to recruitment beginning, the study underwent ethical review and received approval at Toronto Metropolitan University (formerly Ryerson University, REB#2019-310) and York University (Protocol #2611) Research Ethics Boards. Over the fall of 2019, participants were recruited via advertising on social media (Twitter, post-secondary-specific subreddits on Reddit, and post-secondary Facebook groups) if they had taught at least one university- or college-level class in any country as the primary instructor of record (i.e., not as a teaching assistant) and were currently enrolled in a doctoral program. After providing written consent via an online survey, participants were invited to share their demographics, educational background, and teaching experiences (see "Measures") via a Google Forms survey. We collected no identifying information from participants, and none provided identifying information, making the data entirely anonymous.

Measures

The specific measures and questions were developed from a roundtable discussion on graduate student instructor experiences at a teaching and learning conference in 2019 at Toronto Metropolitan University. Participants were asked to share their year in their doctoral program, gender identity, age, country taught in, type of institution, the discipline and level of courses taught, and any post-secondary teaching training they had completed. Then, three open-ended qualitative prompts asked participants to share: 1) the challenges they experienced *preparing* for their first course as an instructor; 2) the challenges they experienced *teaching* their first course as an instructor; and 3) what surprised them most about teaching their first course as an instructor.

Participants

Though 26 participants began the survey, 24 participants responded to all prompts and formed the basis of the analyses below. Participants were predominantly female (n = 17, 71%) and enrolled in doctoral programs in the United States (n = 20, 83%). All participants taught at four-year universities and represented the social sciences (e.g., psychology, criminology), humanities (e.g., history, literature), sciences (e.g., math, chemistry), and business, though three opted not to specify their discipline. Prior to teaching their first course, 13 participants reported some form of pedagogical training, though one training occurred alongside their first course, one was TA-specific training only, and one was prior

teaching certification at the K-12 level. See Table 1 for a detailed breakdown of participant demographics and teaching history.

Table 1. Participant demographics and teaching background

Demographic	Frequency
Gender	Female = 17 (71%) Male = 7 (29%)
Age	*M* = 28.38 years
Year of doctoral study	*M* = 3.87 years
Country	United States = 20 Canada = 3 Europe = 1[1]
Type of institution (e.g., community college, university)	University = 100%
Discipline	Social sciences = 12 Humanities = 4 STEM = 5 Business = 1 Prefer not to disclose = 2
Did you receive any teaching-specific training before you began teaching your first undergraduate course?	Yes = 10 (42%) No = 9 (38%) Combination/Other = 3 (13%) Prefer not to disclose = 2 (8%)

Analysis

All authors first independently reviewed participants' responses and coded them for emerging themes, in accordance with the thematic analysis approach (Braun & Clarke, 2006). After the first round of individual inductive coding, we discussed the emerging themes we had each identified. The primary themes were then agreed upon, as well as sub-themes, via seeking consensus as to what the most common issues were that emerged under each question prompt. Subsequently, we re-coded all participant responses under the primary and sub-themes previously identified.

Positionality statement

While researcher biases are impossible to completely prevent from influencing analyses, recognition of and accounting for sources of bias and researchers' identities are essential (Holmes, 2020). First, we acknowledge our initial interest in collecting this data was to study in more detail what we had personally experienced as graduate students: poor preparation for our first attempts at teaching an undergraduate course. Second, we are all currently serving in teaching-focused faculty positions with strong interests in supporting graduate students' success as instructors; learning about students' challenges

[1] 'Europe' as a region provided instead of country for anonymity purposes.

and areas for future opportunities may influence our own career trajectories. Our experiences are also limited to psychology; thus, we were not aware of the universality of GSIs' experiences in many domains of undergraduate teaching prior to conducting this study. Despite these personal and professional interests in the data, we are not developing theory nor testing hypotheses in this study. We describe trends in GSIs' challenges navigating their first course, and more specifically, the challenges they encountered preparing for their first course. Our goal was identifying challenges faced by GSIs across disciplines at different stages of the teaching process and making recommendations for future training, particularly training around preparing for teaching and the 'unseen' (i.e., course design, administrative concerns).

Results

Two final themes, each with respective sub-themes were identified: 1) course management; and 2) classroom management (see Table 2). Below, we present each theme along with excerpts that represent the content within each theme. We also wish to note that given the predominance of participants from American universities in our sample, our results reflect teaching experiences in an American context.

We include notations of which participant provided a certain quote (e.g., "R1"). Though only 24 participants provided responses to the prompts, we did not delete the additional two participants from our dataset, leaving 26 total response sets (i.e., rows of data), and R1 through R26 as possible sources of quotes.

Course management

Some GSIs discussed difficulties with managing their course and workload during their first teaching assignment. Within this theme, three sub-themes were identified: course design, administration and logistics of teaching, and workload management.

Course design

Typically, GSIs are not provided with any training on course design before they teach their first course. Because of this, several GSIs described feeling frustrated and overwhelmed by the freedom given to design their course:

> I didn't receive any instruction or guidance as to the expectations of the course or the expected learning outcomes. As the course were [sic] entirely under my purview I could do nearly anything I wanted. While I did enjoy the challenge, it was very daunting to approach lesson planning and creating assignments without knowing what exactly was expected. When I asked for clarification, I was told the department trusted my judgment. (R12)

GSIs expressed being unsure of how to effectively design components of a course, such as assigning a realistic workload for students and identifying the learning outcomes of the course. Selecting readings and texts was repeatedly mentioned as a challenge, as most were not given prescribed texts. One graduate student noted:

> I basically had total freedom, but it was a little too much. I didn't know what textbook/books to assign, what reading assignments/how many reading assignments to assign, really anything at all - I was just given an

> example syllabus and told to make sure they don't ever complain about anything to the chair. (R10)

Further, GSIs noted difficulty with designing assessments that aligned with the learning outcomes of the course. For example, one GSI wrote: “I had a hard time thinking about the course as a whole. That made it hard for me to develop meaningful assessments because I wasn't very sure what my overall goals for my students were” (R16). For those who broadly chose their assessments, other difficulties arose concerning creating those assessments; for example, one graduate student wrote, “No one told me that I would need to write my own exams, so that was tough” (R1). As an added difficulty, GSIs also noted the challenges associated with creating assessments that were manageable to grade without support from teaching assistants: “It was hard to prepare assignment [sic] for 160 students while having no teaching assistant” (R18). This was particularly important as many GSIs discussed feeling pressure related to grading: “We had a lot of pressure to keep grade inflation down with little further direction. I wasn’t certain if I was calibrated with other instructors” (R21).

Course administration and logistics

GSIs stated they were not prepared for “the more mundane aspects - where do I get exams printed? How do accommodations work? These sorts of things were not really explained beforehand” (R6). University policies were also not made easily accessible, such as accommodation requirements. Further, GSIs were responsible for supervising new teaching assistants and making decisions they previously deferred to the instructor of record (“I also struggled with issues that as a TA I would defer to then [*sic*] professor like what to do when a kid missed an exam for an excused vs unexcused absence” (R26). Supervising a teaching assistant also came with a significant administrative burden for one GSI, who had to take over the teaching assistant role and initiate the formal dismissal of the graduate student. Technological challenges were an additional learning curve, including using their school’s learning management system (“No one showed me how to set up our D2L course websites” [R1]) and “learning how to use the classroom tech” [R21]).

Workload

Most GSIs were surprised by the intense workload of their course itself, alongside their doctoral program demands. GSIs noted the “sheer fucking exhaustion of spending 50 hours/week minimum to keep the course going” (R22) and the “time commitment of the daily prep just going over my own notes and materials to make sure I was on top of it for my students” (R26). Others described the teaching process as stressful and that teaching well required preparation, all while being paid lower wages: “I was being paid as much as a teaching assistant but had probably 3x *[sic]* the amount of workload from the course. That was not fun” (R26). Additionally, some GSIs had minimal or no teaching assistant support, which made grading assignments, providing timely feedback, and creating course content a significant struggle (“Grading assignments - took so much more time, especially if the goals was to deliver actionable feedback”, [R18] “Keeping up with grading with minimal TA support while continuing to create lectures, assignments, and exams” [R22]). The demands of teaching bumped up regularly against their other priorities, including research and comprehensive exams, indicating a significant challenge with “time management - being able to keep up with all my phd *[sic]* requirements while preparing for a class. It did not help that graduate student instructors were always the last to know that they would be teaching a course” (R18).

In addition to the physical and time-related workload, GSIs noted that the emotional burden of teaching contributed significantly to their workload. GSIs indicated that students expected a significant amount of emotional and mental labor: “The students were so incredibly needy…the barrage of emails. They cannot handle any sort of uncertainty. They wanted things like word banks and being told exactly what material to study. Assignment questions that didn't have a single definite answer made them crazy” (R22). Some GSIs also discussed the emotional difficulties with balancing the demands of their doctoral work with teaching: “I had absolutely no time for anything else. All my grad work sat untouched, and contributed massively to my constant anxiety. I'm probably screwed for my exams and an upcoming conference” (R23).

Classroom management

GSIs discussed issues related to classroom management. Within this theme, three sub-themes emerged: managing student needs and concerns, insecurity in the classroom and teaching role, and teaching strategies.

Student needs and concerns

A number of GSIs discussed their challenges with the student/instructor dynamic. One GSI felt “my students really didn’t like me at all. I didn’t know how to be personable and my lectures were very dry.” (R2). Another GSI felt they had no experience with classroom management and so they had to “rely on being likeable instead of competent” (R1). Others reported feeling nervous to speak in front of their class and worried that their students were bored. More broadly, several GSIs noted “how uninterested the students were” (R5) and students’ unwillingness to solve their own problems (“If students ran into any sort of difficulty, they wouldn't try to figure it out for themselves before asking” [R22]), nor did students take advantage of the help that was offered to them (“Lack of students seeking out additional help when I offered” [R15]).

On the other hand, many GSIs were pleasantly surprised at their students’ engagement with the course and openness to being taught by a graduate student instructor (“Students were generally very receptive to being taught by someone close to their age” [R13]). GSIs were also surprised by “how much fun it is, and how much respect students have for you when you create a healthy environment” (R25), and that “few students were used to having their professors care about them” (R1). For example, one GSI wrote, “[…] the course depends on the students at the very least seeing you as a person and having a connection with you. I was also shocked by how invested I got in their success” (R2).

Within the student/instructor dynamic, GSIs expressed challenges with maintaining student-instructor boundaries, negotiating conflict, and responding to non-academic issues. Additionally, GSIs felt unsure of how to respond to students’ requests while remaining fair to everyone (“I also really struggle with how to manage students making requests for special treatment” [R16]), without having guidelines to refer to or others to consult with (“I didn’t know how to deal with conflict or students that were struggling and I didn’t have many people I could ask for help or perspective” [R2], “Managing individual student needs and requests without having another professor or guidelines to refer to” [R20]). Using titles in the classroom was an issue for one participant. While it is common, but not required, for instructors with a terminal degree to use ‘Professor’ or ‘Doctor’ in the classroom at American and Canadian universities, GSIs in the ‘liminal space’ do not have a title to draw on. They felt this contributed to students’ requesting special treatment: “I ended up telling them to call me by my first name, which I think contributes

to students trying to press me for special treatment - they start to think of me more as a peer than as their instructor because of the sense of familiarity that comes with first name usage" (R16).

GSIs also noted that their teaching practices changed with experience. For example, one GSI stated that "I was surprised at how upset students get about not getting perfect scores on things. Maybe it was just my students, but I constantly had students asking why they got a 98/100 on a paper, and asking me to re-evaluate their grade. I now use detailed rubrics and have syllabus policies about grade disputes" (R16).

Insecurity

GSIs identified a number of experiences and feelings that appeared rooted in insecurity in their position as first-time instructors, including the surprise that "they placed me in a classroom while having no formal background in pedagogy" (R7) and concern about "teaching material that I wasn't totally comfortable with myself" (R19). Relatedly, another GSI commented that they "struggled with how much I was expected to just know about how a classroom operates. I had to make up so much stuff on the fly" (R2). This was exemplified in how GSIs mentioned not knowing how to navigate difficult situations in the classroom; for instance, one GSI indicated they were "not very good at predicting issues / preventing small issues from spiraling" (R7). Others mentioned difficulty managing challenging students, including one specifically challenging the GSI because they were a new instructor ("I had a student who knew that I was new and took every opportunity to challenge me. I also felt that the department chair wasn't very supportive of us because he said the only rule was keep students from complaining to him" [R10]). GSIs also believed they "had to dress differently because I look young" (R13) and maintain a confident persona. Further, GSIs had difficulty deciding on the appropriate name students should call them:

> [...] Professor LastName isn't really appropriate since I'm a grad student, and obviously, they can't call me Dr. LastName yet. And as a female, I really don't want them calling me Mrs./Ms./Miss LastName, as it feels very kindergarten teacher. [...] It's a really difficult position for female grad student instructors. (R16)

However, teaching helped some GSIs feel more confident in themselves as instructors, finding that students respected them when they learned "that you don't have to be afraid to not know something. Being able to tell students that I don't know something but will go and look it up really made the teacher-learner relationship more rewarding" (R18). Some GSIs also found that they actually were "ok *[sic]* with speaking in front of people" and that the experience was "surprisingly smooth" (R13).

Teaching Strategies

In the classroom, many GSIs reported struggles delivering material and effectively engaging students. Challenges in delivering material included effective lesson planning ("I didn't know how to structure a lecture with activities; Lecture organization (i.e. the flow of the lecture)" [R2]), effective presentation skills ("I didn't realize how much I needed to practice the lecture so I made a lot of mistakes and wasn't very clear" [R17]), difficulties with choosing appropriate technology to deliver content ("Choosing the best way to convey content [when to use online class response software, videos, chalkboard, PowerPoint, discussion groups, etc.]" (R20)) and timing ("I greatly under-estimated the

amount of material I could cover in a 3-hour session" [R6]). GSIs also discussed difficulties with engaging students, such as knowing when to "check in with students" (R2) and effectively facilitating discussion ("I had a hard time leading effective discussions in class - I was never taught how to do this, so I'm trying to figure it out as I go" [R16]). More broadly, GSIs also noted that students' engagement level varied widely across not only individual students, but sections of a course as well ("Each of the three classes had very different engagement levels, which made it difficult to teach each in a similar manner, as needed for less overall prep time each week" [R14]), and that student engagement levels were not always dependent on the instructor's efforts:

> I think discovering that not all students are the type of student that I was came as a big shock. [...] When I had my very first course and none of my students were consistently coming to class prepared and nothing I did would change that, it was shocking. No matter what I did to try and encourage their preparation, nothing worked, they didn't seem to care and it was baffling and frustrating. [...] I was concerned that it would reflect poorly on me as an instructor. (R12)

Discussion

In this study, we asked graduate students to reflect on their experiences as first-time instructors with specific attention to the challenges they face and areas for which they need support. In particular, we sought to identify areas beyond the physical classroom space, which pedagogical training often emphasizes, of which doctoral students require mentorship. Understanding their experiences has important implications for strengthening existing pedagogical training, improving the experiences of first-time GSIs, and enhancing undergraduate teaching excellence. Our study contributes to the body of evidence that a lack of pedagogical training is not specific to any one discipline, but is symptomatic of doctoral training that often does not reflect the needs of graduate students nor the needs of their future employers (Austin, 2002). Typically, graduate students are not provided with pedagogical training or support to assist them with their first teaching assignment, and our results support that even when GSIs are provided with training, they note similar difficulties to those without training. Further, many of the concerns GSIs reported are not commonly covered in pedagogical training, such as managing emotional labor, effectively using classroom technology, and administrative tasks (e.g., exam printing). As a result, the majority of graduate students in our study indicated facing numerous challenges preparing and teaching their first course. Based on these challenges, we identified two main themes: difficulties with course management and classroom management, contributing to previous research that finds a lack of preparation and support as major concerns for graduate student instructors. Below, we discuss our findings within the context of previous research, as well as highlight some existing programs within academic institutions that provide effective pedagogical training for GSIs.

A lack of preparation, support, and the hidden curriculum of graduate school

When preparing for and teaching their first course, it was clear that GSIs often lacked access to basic information about teaching beyond what was needed when directly in front of students. For example, GSIs indicated a need for having access to support from a

faculty or staff member (e.g., for help with how to respond to 'difficult' students) and help accessing resources related to course administration and logistics (e.g., how to get exams printed, how to use the learning management software). As this kind of necessary information was often not provided in advance to GSIs, it reflects an assumption the most important aspects of teaching that GSIs need to be aware of are those which occur in the classroom in front of students, and not the background or 'unseen' parts of teaching (e.g., supervising teaching assistants, designing exam questions).

This assumption, which likely contributes significantly to the overall lack of support and assistance when teaching, reveals that GSIs are expected to pick up on the norms, standards, and methods of teaching via the hidden curriculum of graduate school and academia. Calarco (2020) describes the hidden curriculum of graduate school as being knowledge, know-how, and skills that graduate students are supposed to have, but they are not explicitly trained in nor shown. Evidence from medical training indicates that the hidden curriculum also extends to a discipline's culture and values, outside of the formal syllabi and technical skills students learn. For example, Haidet and Stein (2006, p. 17) described the cultural value of "medicine takes priority over everything else" as being transmitted to medical students via expectations to never leave the hospital, view medicine as a higher calling, and to be "married" (p. 17) to medicine. This cultural value is not explicitly taught to medical students, but transmitted indirectly. Currently, limited research has explored the impact of the hidden curriculum of graduate school training, particularly its impact on pedagogical and teaching skill development.

The culture and values of academia, however, de-prioritize the significance and skill of teaching while prioritizing research productivity. These values are arguably transmitted both directly and indirectly to graduate students. First, teaching ability is explicitly not a strong consideration in many hiring, tenure, and promotion decisions, resulting in faculty deprioritizing teaching and teaching ability in their own and their mentees' careers (Anderson et al., 2011). Two decades ago, Austin (2002) argued that doctoral training models do not adequately prepare graduate students for the true expectations of academic careers, which may include effective teaching methods. As a recent example, a recent review of social work doctoral programs in the United States found that while 90% of programs explicitly noted teaching as an important goal of their program, only approximately half actually required coursework related to teaching (Maynard et al., 2017). Further, Austin and McDaniels (2006) highlight the important socialization processes that occur throughout doctoral training, particularly the formal (i.e., faculty members conduct research and teach) and informal (i.e., departmental norms around teaching and pedagogical values). Our evidence supports that graduate students may still be receiving limited pedagogical training and a professional socialization process that neglects pedagogy. Further, graduate students in our study also highlighted the lack of mentorship in the administrative, logistical, and time management-related challenges of teaching, research, and service.

The implicit cultural values of academia that de-prioritize pedagogical mentorship and training, despite the likelihood of graduate students teaching at some point in their doctoral program, highlights the "blaming the victim" phenomenon common in graduate school experiences (Margolis & Romero, 1998, p. 13). Blaming the victim is a process whereby graduate students come to see themselves as the problem to manage in graduate school when they experience challenges, and not institutional structures and culture around them as the problem. In the context of teaching, GSIs may interpret their

challenges with course and classroom management as being a result of their own limitations or inabilities, and not as a result of the cultural values and practices that shaped their formal and informal socialization into academia. Further, graduate students interested in teaching may struggle to find mentors and support for their teaching, further complicating how they manage and adapt teaching-related challenges (Lane et al., 2018). This process echoes evidence that novice GSIs and teaching assistants are often concerned with their own performance, and less so that of their students, in class. Douglas et al. (2016) found many graduate teaching assistants often had a teacher-focused teaching style, such that they emphasized themselves as deliverers of content, instead of a learner-focused teaching style, which centers students as playing the key role in the learning process. This is in contrast with current movements in post-secondary teaching, which emphasize student-centered learning and student learning outcomes as key metrics of effective pedagogy (e.g., Troop et al., 2015; Wright, 2011).

Relatedly, Smith (2019) distinguished between GSIs who reflected on their teaching abilities via inward (e.g., their classroom performance, whether students liked them) versus outward (e.g., how well students were learning, student skill development) foci. In particular, GSIs with less experience tended to measure their classroom success based on their inward-looking competencies, resulting in lower teaching self-efficacy, in contrast with more experienced GSIs who emphasized outward-looking competencies and reported more teaching self-efficacy. Similar to findings by DeChenne et al. (2012), who found that more experienced graduate teaching assistants had more teaching-related self-efficacy, GSIs may interpret their early teaching struggles not as reflecting their lack of support and training, but as a personal failure or incompetency (i.e., blaming the victim; Margolis & Romero, 1998). Indeed, several of the GSIs in our study felt students did not like them, nothing they did 'worked' in the classroom, and they had to rely on their likeability instead of their competence to get through their first course. Notably, few GSIs in our study discussed challenges related to measuring student learning or assessing student-centered outcomes. The absence of this kind of concern provides support to Smith's (2019) and Douglas et al.'s (2016) assertions that novice instructors tend to emphasize instructor-oriented, rather than student-oriented, concerns when teaching, in contrast to student- or learner-centered teaching (Austin, 2002; Troop et al., 2015; Wright 2011).

The importance of mentorship, training, and supervision of GSIs

The inward-looking focus of the GSIs in our study may have contributed to the emotional burdens they experienced while preparing for and teaching their course. Managing student needs and requests, setting boundaries, and work-life balance were common challenges experienced by GSIs. This suggests that pedagogical training and mentorship of effective teaching must also include navigating the emotional and personal burdens associated with teaching. Akin to professional programs (e.g., clinical psychology, social work) that incorporate clinical supervision into graduate training, pedagogical training programs that emphasize feedback, opportunities to practice, and models of effective teaching typically result in graduate students reporting higher teaching self-efficacy (e.g., Boman, 2013; Troop et al., 2015) and relying on more and different methods of teaching (Wan et al., 2021). Indeed, a learner-focused model of teaching resulted in graduate students reducing teacher-focused models of teaching (i.e., primarily content delivery and lecturing) and reporting more teaching self-efficacy (Troop et al., 2015). A pre-instructional teaching seminar that included guest lecturing in front of undergraduate

students also reduced teaching-related anxiety, with graduate students reporting more understanding of what planning a lecture involves and reducing public speaking fears (Pelton, 2014). It is possible that pedagogical training emphasizing best practices with support from more experienced teachers may reduce inward- and self-focused concerns, reducing some of the emotional burdens of teaching and improving overall teaching-related self-efficacy.

Example models of graduate student teaching programs

While many institutions offer some type of teaching training for graduate students, they are rarely mandatory, uniform, or standardized (Robinson et al., 2019). Though approximately half of our participants had completed some type of training before teaching their course, this did not appear to sufficiently prepare them. However, there are some institutions and specific departments offering effective models of GSI training and mentorship, and overall, participating in pedagogical training during doctoral programs predicts higher teaching self-efficacy for early career scholars (Connolly et al., 2018). For example, Jungels et al. (2014) describe a graduate teaching training model specifically designed to improve sociology GSIs' teaching and the quality of instruction provided to undergraduates. Prior to teaching their own course, graduate students must successfully complete a course related to pedagogy and the logistics of teaching, including designing and developing an introductory course and all related materials. Next, they teach their previously developed introductory course while simultaneously receiving teaching evaluations and attending weekly discussion sections with a faculty member, graduate Teaching Associate, and other first-time GSIs. The Teaching Associate is a revered position and given to graduate students who have successfully completed the pedagogy and logistics course and taught their own classes. This support structure provides both formal and informal opportunities for training and mentorship, with one goal being that classmates and the Teaching Associate become sources of support and advice.

Another training program places sociology graduate students in the role of a "Teaching Fellowship," whereby graduate students who have not yet taught a course, work collaboratively with other teaching fellows and a faculty member to co-create and co-teach undergraduate courses (Innocente & Baker, 2018). The fellowship involves extensive one-on-one meetings with a faculty member, teaching evaluations, and teamwork with other fellows. Similar to the Teaching Associate program described by Jungels et al. (2014), the Teaching Fellowship provides a community of support for new GSIs as they begin teaching, with faculty and peers to consult with as concerns or challenges arise.

Outside of the more intensive training programs as described by Jungels et al. (2014) and Innocente and Baker (2018), shorter course-based teaching programs that emphasize student-centered learning are also effective in preparing GSIs. Graduate students in earth and space science improved their teaching self-efficacy after a short course that emphasized active learning and reflective teaching practice (Holland, 2018). In addition to course content related to effective pedagogical practices, students had the opportunity to deliver a micro-teaching lecture (i.e., approximately 10 minutes) and receive feedback before reflecting on and adjusting their teaching practices. Similarly, Shum et al. (2020) found that adopting a student-centered orientation to teaching was a precursor to improved teaching self-efficacy amongst graduate students taking a short course on graduate student teaching skills. Importantly, Shum et al. (2020) found that student-oriented attitudes and beliefs changed over the course, with improved teaching

performance and teaching self-efficacy emerging as student-centered teaching practices emerged.

What each of the above-mentioned example programs have in common are opportunities to practice teaching skills, either through short lectures or full course delivery; extensive feedback, from students, peers, and more experienced instructors; course content that emphasizes effective pedagogical practices (i.e., student-centered, not teacher-centered); and a community of formal and informal supports as GSIs learn to teach. Importantly, the more intensive teaching programs also model how to design and develop a course, including material creation, and provide sources of immediate support as new questions and concerns arise during the teaching process.

Limitations and conclusions

The current study faces some limitations. Our recruited sample was not random, and thus our findings are not generalizable to all GSIs and institution types. The GSIs included in this study taught at large four-year and/or doctoral-granting institutions, and the preparation and teaching process at liberal arts colleges and community colleges may present unique and different challenges. Future research should attempt to extend these findings and replicate them across different institution types. Further, our sample size was relatively small, and future research would benefit from exploring how demographic factors, like race and gender identity, affect first-time teaching experiences.

Nevertheless, the current study both reiterates and supports previous findings on GSIs' experiences, while extending them to include the challenges doctoral students face while preparing to teach. It has been clear for some time now that the professional socialization and training of doctoral students requires a significant overhaul (Austin, 2002). The consequences of poor pedagogical training and mentorship have significant consequences for undergraduate student learning, but also significantly increase the professional and emotional challenges of doctoral students. It also does not reflect what is actually expected of full-time faculty, which is teaching undergraduates (Golde & Dore, 2001). The example teaching programs described provide strong frameworks for departments to adopt that provide training, mentorship, and support to new GSIs, reducing the logistical and emotional burdens of teaching a course for the first time. However, intensive teaching training programs require investment in, and commitment to, pedagogical training and high-quality undergraduate teaching. Doctoral programs must provide graduate students with professional development opportunities specific to their teaching practice, including an emphasis on course design and classroom management, ultimately enhancing undergraduate teaching excellence, improving their teaching self-efficacy, and preparing them for the job market.

References

Ahmed, S., & Rozen, L. (2018, September 17). Graduate students: Present instructors and future faculty. *Faculty Focus*. https://www.facultyfocus.com/articles/teaching-and-learning/graduate-students-present-instructors-and-future-faculty/

Anderson, W. A., Banerjee, U., Drennan, C. L., Elgin, S. C. R., Epstein, I. R., Handelsman, J., Hatfull, G. F., Losick, R., O'Dowd, D. K., Olivera, B. M., Strobel, S. A., Walker, G. C., & Warner, I. M. (2011). Changing the culture of science education at research universities. *Science, 331*(6014), 152–153. https://doi.org/10.1126/science.1198280

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education, 73*(1), 94-122. https://doi.org/10.1080/00221546.2002.11777132

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In J.C. Smart (Ed.), *Higher education: Handbook of Theory and Research, 21*, 397-456. https://doi.org/10.1007/1-4020-4512-3_8

Ayres, T. B., & Winterberg, C. A. (2020). Practicing what "we are learning": Insights and perspectives from graduate student instructors. *Industrial and Organizational Psychology, 13*(4), 577–580. https://doi.org/10.1017/iop.2020.100

Benjamin, E. (2002). How over-reliance on contingent appointments diminishes faculty involvement in student learning. *Peer Review: Emerging Trends and Key Debates in Undergraduate Education, 5*(1), 4–14. https://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.423.5948

Bettinger, E. P., Long, B. T., & Taylor, E.S. (2016). When inputs are outputs: The case of graduate student instructors. *Economics of Education Review, 52*, 63–76. https://doi.org/10.1016/j.econedurev.2016.01.005

Boman, J.S. (2013). Graduate student teaching development: Evaluating the effectiveness of training in relation to graduate student characteristics. *Canadian Journal of Higher Education, 43*(1), 100–114. https://doi.org/10.47678/cjhe.v43i1.2072

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

Calarco, J. M. (2020). *A field guide to grad school: Uncovering the hidden curriculum*. Princeton University Press.

Cho, Y., Kim, M., Svinicki, M. D., & Decker, M. L. (2011). Exploring teaching concerns and characteristics of graduate teaching assistants. *Teaching in Higher Education, 16*(3), 267–279. https://doi.org/10.1080/13562517.2010.524920

Connolly, M., Lee, Y.-G., & Savoy, J. N. (2018). The effects of doctoral teaching development on early-career STEM scholars' college teaching self-efficacy. *CBE Life Sciences Education, 17*(1), 1-5. https://doi.org/10.1187/cbe.17-02-0039

DeChenne, S.E., Enochs, L.G., & Needham, M.. (2012). Science, technology, engineering, and mathematics graduate teaching assistants teaching self-efficacy. *The Journal of Scholarship of Teaching and Learning, 12*(4), 102-123.

Douglas, J., Powell, D. N., & Rouamba, N. H. (2016). Assessing graduate teaching assistants' beliefs and practices. *Journal on Excellence in College Teaching, 27*(3), 35-61.

Feldon, D. F., Peugh, J., Timmerman, B. E., Maher, M. A., Hurst, M., Strickland, D., Gilmore, J. A. & Stiegetmeyer, C. (2011). Graduate students' teaching experiences improve their methodological research skills. *Science, 333*(6045), 1037–1039. https://doi.org/10.1126/science.1204109

Friedman, J. (2017, February 21). 10 Universities where TAs teach the most classes. *U.S. News and World Reports*. https://www.usnews.com/education/best-colleges/the-short-list-college/articles/2017-02-21/10-universities-where-tas-teach-the-most-classes

Golde, C. M., & Dore, T. M. (2001). At cross purposes: What the experiences of today's doctoral students reveal about doctoral education. *Pew Charitable Trusts.* https://files.eric.ed.gov/fulltext/ED450628.pdf

Grady, R. K., La Touche, R., Oslawski-Lopez, J., Powers, A., & Simacek, K. (2014). Betwixt and between: The social position and stress experiences of graduate students. *Teaching Sociology, 42*(1), 5–16. https://doi.org/10.1177/0092055X13502182

Haidet, P., & Stein, H.F. (2006). The role of the student-teacher relationship in the formation of physicians: The hidden curriculum as process. *Journal of General Internal Medicine, 21*(S1), 16–20. https://doi.org/10.1111/j.1525-1497.2006.00304.x

Helterbran, V. R. (2008). The ideal professor: Student perceptions of effective instructor practices, attitudes, and skills. *Education, 129*(1), 125–138.

Holland, T. (2018). Impact of a departmental instructional skills course on graduate students' beliefs about science teaching and learning. *Journal of College Science Teaching, 47*(6), 57–65.

Holmes, A. G. D. (2020). Researcher positionality: A consideration of its influence and place in qualitative research – A new researcher guide. *International Journal of Education, 8*(4), 1-10. https://doi.org/10.34293/education.v8i4.3232

Huffmyer, A. S., & Lemus, J. D. (2019). Graduate TA teaching behaviors impact student achievement in a research-based undergraduate science course. *Journal of College Science Teaching, 48*(3), 56–65. https://doi.org/10.2505/4/jcst19_048_03_56

Innocente, N., & Baker, J. (2018). The sociology teaching fellowship: A mentorship model for graduate student teacher training. *Teaching Sociology, 46*(4), 335–345. https://doi.org/10.1177/0092055X18791686

Jungels, A. M., Brown, M.A., Stombler, M., & Yasumoto, S. (2014). Teaching associates: Bridging informal and formal mechanisms of support for graduate student instructors. *Teaching Sociology, 42*(3), 220–230. https://doi.org/10.1177/0092055X14527423

Kendall, K. D., & Schussler, E. E. (2012). Does instructor type matter? Undergraduate student perception of graduate teaching assistants and professors. *CBE Life Sciences Education, 11*(2), 187–199. https://doi.org/10.1187/cbe.11-10-0091

Lane, A. K., Hardison, C., Simon, A., & Andrews, T. C. (2018). A model of the factors influencing teaching identity among life sciences doctoral students. *Journal of Research in Science Teaching, 56*(2), 141-162. https://doi.org/10.1002/tea.21473

Margolis, E., & Romero, M. (1998). "The department is very male, very white, very old, and very conservative": The functioning of the hidden curriculum in graduate sociology departments. *Harvard Educational Review, 68*(1), 1–32. https://doi.org/10.17763/haer.68.1.1q3828348783j851

Maynard, B.R., Labuzienski, E.M., Lind, K.S., Berglund, A.H., & Bright, D.L. (2017). Social work doctoral education: Are doctoral students being prepared to teach? *Journal of Social Work, 17*(1), 91-114. https://doi.org/10.1177%2F1468017316637226

Meanwell, E., & Kleiner, S. (2014). The emotional experience of first-time teaching: Reflections from graduate instructors, 1997-2006. *Teaching Sociology, 42*(1), 17–27. https://doi.org/10.1177/0092055X13508377

Muzaka, V. (2009). The niche of graduate teaching assistants (GTAs): Perceptions and reflection. *Teaching in Higher Education, 14*(1), 1-12. https://doi.org/10.1080/13562510802602400

Nasser-Abu Alhija, F., & Fresko, B. (2020). Graduate teaching assistants: Motives, difficulties and professional interactions and their relationship to perceived benefits. *Higher Education Research and Development, 39*(3), 546–560. https://doi.org/10.1080/07294360.2019.1681374

O'Neal, C., Wright, M., Cook, C., Perorazio, T., & Purkiss, J. (2007). The impact of teaching assistants on student retention in the sciences: Lessons for TA training. *Journal of College Science Teaching, 36*(5), 24–29. https://www.jstor.org/stable/42992683

Pelton, J. A. (2014). Assessing graduate teacher training programs: Can a teaching seminar reduce anxiety and increase confidence? *Teaching Sociology, 42*(1): 40–49. https://doi.org/10.1177/0092055X13500029

Reeves, T. D., Hake, L. E., Chen, X., Frederick, J., Rudenga, K., Ludlow, L. H., & 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

Robinson, J. M., O'Loughlin, V. D., Kearns, K. D., & Sherwood-Laughlin, C. (2019). The graduate course in pedagogy: Survey of instructors of college pedagogy in the United States and Canada. *College Teaching, 67*(2), 109–119. https://doi.org/10.1080/87567555.2018.1558171

Shannon, D. M., Twale, D. J., & Moore, M. S. (1998). TA teaching effectiveness: The impact of training and teaching experience. *The Journal of Higher Education, 69*(4), 440–466. https://doi.org/10.1080/00221546.1998.11775144

Shum, A., Lau, P., & Fryer, L. (2020). From learner to teacher: (Re)training graduate teaching assistants' teaching approaches and developing self-efficacy for and interest in teaching. *Higher Education Research and Development, 40*(7), 1546-1563. https://doi.org/10.1080/07294360.2020.1818063

Smollin, L. M., & Arluke, A. (2014). Rites of pedagogical passage: How graduate student instructors negotiate the challenges of first-time teaching. *Teaching Sociology*, *42*(1), 28–39. https://doi.org/10.1177/0092055X13502181

Smith, C. R. (2019). *Exploring sources of and changes in graduate teaching assistant teacher efficacy throughout a semester: A mixed methods study*. PhD dissertation, North Carolina State University.

Stacy, A. (2000). The graduate student in the dual role of student and teacher: Graduate education in the chemical sciences: issues for the 21st century. *National Research Council.* https://www.ncbi.nlm.nih.gov/books/NBK44900/pdf/Bookshelf_NBK44900.pdf

Troop, M., Wallar, L., & Aspenlieder, E. (2015). Developing graduate students' self-efficacy with learner-centred lecturing. *Canadian Journal of Higher Education, 45*(3), 15–33. https://doi.org/10.47678/cjhe.v45i3.187548

Wan, T., Doty, C. M., Geraets, A. A., Nix, C. A., Saitta, E. K. H., & Chini, J. J. (2021). Evaluating the impact of a classroom simulator training on graduate teaching assistants' instructional practices and undergraduate student learning. *Physical Review: Physics Education Research, 17*(1), 1-17. https://doi.org/10.1103/PhysRevPhysEducRes.17.010146

Weber, R., Gabbert, A., Kropp, J., & Pynes, P. (2012). Creating the teaching professor: Guiding graduate students to become effective teachers. *The Journal of Scholarship of Teaching and Learning, 1*(1), 45–63. https://scholarworks.iu.edu/journals/index.php/josotl/article/view/1678/1676

Wright, G.B. (2011). Student-centered learning in higher education. *International Journal of Teaching and Learning in Higher Education, 23*(3), 92-97. https://files.eric.ed.gov/fulltext/EJ938583.pdf

University of Michigan. (2021). PhD transferable skills. *Student Life, University Career Center.* https://careercenter.umich.edu/article/phd-transferable-skills