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Supporting Academic Career Pathways for Graduate Student Instructors through Targeted Educational Development

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Abstract. This study investigated the role of Graduate Student Instructors (GSIs) in higher education and focused on their self-efficacy, pedagogical training, and performance. Given the expanding employment of GSIs and the influence of their teaching efficacy on undergraduate education, this research examined the effectiveness of a structured professional development program designed to enhance GSIs' teaching capabilities. Quantitative and qualitative methods were employed to assess GSIs' self-efficacy through surveys, exit slips, and student evaluations to gauge the educational impact. The findings indicated a notable and significant increase in GSIs' self-efficacy post-intervention, with positive feedback on teaching practices from undergraduate students. The findings underscore the importance of professional development programs in preparing GSIs for effective teaching roles, thereby improving the quality of higher education instruction and supporting the academic success of undergraduate students.

Utilizing graduate assistants as instructors is not a new concept in higher education. The practice dates to post-World War II when graduate assistants became necessary due to increased undergraduate enrollment and a lack of professors to teach (Bettinger et al., 2015; Nowlis, 1968). Coinciding with the rise in undergraduate degrees was the demand for graduate degrees. The subsequent need established the collegial relationship between the graduate student and the professor, allowing universities to serve more students without overwhelming a professor's course load. Graduate student instructors (GSIs) are graduate students hired by the university to fulfill various roles, including assisting professors with research projects, grading coursework, and teaching a course. Their positions provide a university with a cost-effective alternative to hiring full-time faculty, allowing tenured faculty more time to focus on research in their discipline. Beyond addressing faculty shortages due to increased research or service demands, GSIs also represent the next generation of educators, making their preparation essential for the future of higher education (Fong et al., 2019). Research concerning GSIs is needed, as their teaching effectiveness directly impacts undergraduate student outcomes, including engagement, achievement, and persistence.

Additionally, structured pedagogical training can provide GSIs with the essential skills to ensure their transition into confident, capable educators who promote inclusive and evidence-based teaching practices. The current study investigated the role of GSIs in higher education and focused on their self-efficacy, pedagogical training, and performance. GSIs in this research participated in a professional development program focused on enhancing teaching capabilities.

Current Status of Graduate Student Instructors

The number of graduate assistants (GAs) continues to rise (Ahmed & Rosen, 2018) with over 145,000 teaching assistants employed at postsecondary institutions (US Bureau of Labor Statistics, 2023). The increase translates to a greater number of undergraduates being taught by graduate assistant instructors. With the potential for constant

growth, pedagogical training will be necessary to develop and prepare graduate student instructors for classroom instruction (Broeckelman-Post & Ruiz-Mesa, 2018).

Literature Review

Graduate Assistants as Student Instructors

"GTAs [GSIs] are the future of the discipline" (Broeckelman-Post & Ruiz-Mesa, 2018, p. 93). GSIs are graduate students employed by universities who assist with a wide range of responsibilities including teaching and instructional responsibilities. While some universities utilized non-teaching GSIs who only provide course support through grading and student inquiries, teaching GSIs serve as the primary instructor of a course (Bettinger et al., 2015). Teaching GSIs are needed in higher education to fill instructional gaps, particularly in foundational courses that set the stage for student success (Ahmed & Rosen, 2018; Haynie & Spong, 2022). Graduate instructors should not be viewed as only a functional purpose but instead an opportunity to be an ambassador for the discipline (Flaherty, 2016). They can potentially impact how undergraduates proceed beyond foundational courses; therefore, a graduate instructor's pedagogical development should be considered as part their training (Ahmed & Rosen, 2018; Bettinger et al., 2015).

Graduate Student Instructors Preparedness for Teaching

When assigned teaching roles, GSIs are often given important entry-level courses that set the foundation in the field of study (Ahmed & Rosen, 2018; Haynie & Spong, 2022). While GSIs may have the content knowledge, most have little professional development or formal training in teaching methods and instructional strategies. Their lack of training reflects the deficiency of instructor training that permeates most universities. Higher education has often failed to provide professors and instructors with professional development or pedagogical training (Cassuto, 2023; Smollin & Arluke, 2014; Zimmerman, 2020). The focus has primarily centered on mastery of their subject and research; however, quality instruction should also be a facet of their teaching experience.

Post 1990, equipping graduate students to teach in the classroom has gained momentum as universities realize the value of providing GSIs professional development (Chiu & Corrigan, 2019; Duke: The Graduate School, 2024). Recognizing the need for GSIs to have comprehensive training before entering the classroom, Melissa Broeckelman-Post and Kristina Ruiz-Mesa (2018), communication professors, developed ten research-based best practices for training communication GSIs. The best practices include role-playing difficult classroom situations, providing GSIs mentors, and establishing clear procedures and policies. In addition to training programs, some institutions offer resources and dedicated websites to support graduate student instructors in their teaching roles. The Poorvu Center for Teaching and Learning (2024) at Yale University offers graduate student instructors tailored resources on everything from the first day of class to leading classroom discussions. Chiu and Corrigan (2019) emphasized the importance of early pedagogical training in reducing stress and improving teaching confidence in GSIs.

The Self-Efficacy of Graduate Students in the Instructor Role

Albert Bandura theorized that if a person believes in their ability to execute certain behaviors, they will be successful (Bandura, 1997). Increasing self-efficacy can play an integral role in the success of GSIs. The challenges of a graduate-level course load, lack of expert knowledge in their discipline, and competing responsibilities have left many GSIs with a low level of self-efficacy upon entering the classroom (Chiu & Corrigan, 2019). To compound the situation, they receive little to no pedagogical training, resulting in them defaulting to what they experienced in their college classrooms, lecturing. The absence of experience and training has left GSIs feeling "lost and unprepared to be instructors" (Ahmed & Rosen, 2018). An avenue to increase a GSI's self-efficacy and create a positive educational experience for their students is to equip them with comprehensive pedagogical training and faculty support before and during their first teaching endeavor (Broeckelman-Post & Ruiz-Mesa, 2018).

While targeted pedagogical training and faculty support contribute to a GSI's self-efficacy, a sponsoring faculty member can circumvent professional development when it comes to increased self-efficacy. A recent study on GSIs and self-efficacy found that faculty feedback can potentially negatively impact a graduate assistant's self-efficacy even when professional development is present (Ghalichi et al., 2023). The impact of verbal persuasion was noted by Bandura as a factor affecting one's belief in their capacity when they are experiencing difficulties (Bandura, 1997).

Understanding the dynamics that affect GSI's self-efficacy are vital to their success in a professional development program.

Graduate Student Instructors and Their Students

Graduate student instructors in higher education settings are an important resource to the academic success of many undergraduate students from diverse educational and professional disciplines (Bourne et al., 2021). According to Prieto and Meyers (1999), a noteworthy research study, graduate teaching assistants often served as the primary instructors in various undergraduate courses, making their pedagogical understanding, skills, and content knowledge essential for improving undergraduate student learning outcomes. This is a continued practice in higher education (Moreu & Brauer, 2022; Nurrenbern et al., 1999).

By adopting inclusive teaching practices, GSIs positively impact the reduction of achievement gaps in higher education. Moreu and Brauer (2022) emphasized the importance of such practices in promoting the success of students from marginalized groups. Their work outlined twenty strategies instructors may implement, ranging from using low-stakes testing to fostering a growth mindset (Dweck, 2016) and ensuring unbiased exam questions. These practices support marginalized students and enhance the establishment of the learning environment. Providing GSIs professional development in research-based teaching practices has merit and needs further empirical exploration. Professional development has proven to be an important tool to model and provide support to teachers striving to implement evidence-based teaching practices in their courses (Loughran, 2014). GSIs who are new to teaching or have never been introduced to pedagogical thinking may need professional development to understand the basic steps of teaching and engagement of students in learning.

Method

The Graduate Student Instructors

This exploratory study was conducted at a regional university with approximately 15,000 students. The university serves both undergraduate and graduate students but primarily undergraduate students. Of the undergraduate population, 90% are considered first-generation college students. The university has previously employed GSIs, primarily in biology and agricultural science laboratory instruction. However, with the university's transition to a higher Carnegie research classification, R2-High research activity (Thompson, 2023), there is now a demand for GSIs across all teaching areas (American Council on Education, 2024). At the time of the study, the university employed 15 GSIs. To meet the increasing needs, department heads and deans selected five new GSIs with little to no teaching experience. These selected GSIs were new to the university. The five GSIs agreed to serve as participants. These respective GSIs completed effective teaching and learning in the higher education curriculum during the six sessions. The Pathways to Academic Careers Lecturers in Higher Education Program is often called the Lecturers' Program or GSIs' Teaching and Learning Program. Graduate student instructors have agreed to complete the program and implement innovative teaching techniques learned while practicing research-based pedagogical techniques in the program curriculum. No one under 18 was included as a participant in the study. Three GSIs worked as instructors in the College of Agricultural Science within the Animal Science Department, and one GSI taught in the College of Education within the Psychology Department. The remaining GSI taught in the Software Engineering Department at the College of Engineering. Graduate student instructors taught 13 courses. GSIs One, Three, Four, and Five were assigned two courses each, while GSI Two had the most instructional responsibilities with five courses. All of the GSIs were White females, except for the GSI from the College of Engineering, who was a White male.

Overview of the GSIs' Instructional Intervention Sessions

The GSI program at the University is structured to introduce new GSIs to the institution's educational framework. It consists of six distinct sessions, each targeting critical aspects of effective teaching and academic responsibilities. These sessions, designed for use in higher education, were created to provide GSIs with a thorough understanding of the University's expectations and equip them with essential tools for successful teaching and fostering conducive learning environments. Each session, lasting approximately three and a half hours, was strategically scheduled throughout the 16-week courses as follows:

1. The first session occurred before the Graduate Student Instructors (GSIs) began teaching.
2. The second session was held during the first week of classes.

3. The third session took place after the third week.
4. The fourth session was scheduled after the sixth week.
5. The fifth session was conducted during the eighth week.
6. The final session was scheduled sometime after the twelfth week of the course.

This structured approach ensures the GSIs receive timely support and guidance, enabling them to effectively integrate into the University's teaching community. By spacing out the sessions, the program allowed for continuous learning and reflection, helping GSIs to progressively develop their teaching skills and adapt to their roles. Also, between sessions, GSIs had access to the university's instructional consultants and instructional designers to discuss what they were learning in the respective sessions. These discussions ranged from applying instructional strategies to building an effective and positive classroom environment within their respective courses. Ultimately, the GSI program intervention was designed to enhance the quality of educational practices used by GSIs and promote a culture of excellence within the University. The GSI teaching intervention program was conducted in person across six structured sessions. These face-to-face sessions provided opportunities for interactive discussions, hands-on activities, and personalized feedback to support GSIs as they implemented evidence-based teaching practices. Additional support was available after each session through Zoom meetings, a dedicated course site in the Learning Management System (Canvas), email correspondence, and phone calls with instructional consultants from the University's teaching and learning support center. This ongoing support allowed GSIs to seek guidance on teaching strategies, troubleshoot challenges, and reflect on the application of what they learned in their classrooms.

Table 1

Overview of the Six Learning Sessions for Effective Teaching and Learning in Higher Education

Session	Description	Key Question	Learning Outcome
1. Overview of the GSI Program	Introductory platform where new GSIs were acquainted with the University's GSI program, outlining the expectations and roles	What can I expect from this GSI program?	GSIs will be able to **identify** the key components of the University's GSI program and **describe** the expectations and roles within it.
2. Syllabus Development and Course Objectives	Emphasized aligning course objectives with the curriculum, ensuring that course content was relevant and appropriately timed for student engagement	What do I need to teach? Why?	GSIs will be able to **align** course objectives with the curriculum and **justify** the relevance and timing of course content for student engagement.
3. Setting Up a Successful Classroom Environment	Focused on creating a conducive learning environment through relationship building, establishing class procedures, and fostering organized discussions and debates	How do I get the class to become a class of engaged learners?	GSIs will be able to **create** a conducive learning environment by building relationships, establishing class procedures, and fostering organized discussions and debates.
4. Effective Communication, Feedback, and Grading Strategies	Discussed the impact of communication methods and feedback on student learning, including using rubrics and checklists to set clear standards and expectations	What are your expectations for learning?	GSIs will be able to **apply** effective communication methods and feedback strategies, including the use of rubrics and checklists, to set clear standards and expectations for student learning.
5. Formative Assessment and Instructional Adjustment	Highlighted the need for regular check-ins with students to monitor learning progress and adjust teaching methods accordingly for optimal student engagement and understanding	What changes do I need to make to help my students learn this content?	GSIs will be able to **evaluate** student learning progress through formative assessments and **modify** their teaching methods to enhance student engagement and understanding.
6. Reflecting on Summative Assessments and Course Outcomes	Involved a reflective analysis of the course, focusing on assessing the effectiveness of different learning experiences in achieving course objectives and goals	Overall, did this course help my students meet course objectives and goals?	GSIs will be able to **analyze** the effectiveness of different learning experiences in achieving course objectives and goals, and **reflect** on their teaching practices.

Note. This table provides an overview of the structured learning sessions designed to enhance teaching effectiveness and learning engagement in higher education. Action verbs were bolded under the learning outcomes column.

The GSI program at the University utilized a comprehensive initiative to prepare new GSIs for a successful teaching experience. By addressing various aspects of teaching, from syllabus design to formative and summative assessments, the program ensured that GSIs were well-equipped to meet the educational needs of their students while adhering to the University's standards and expectations. It is important to note the GSIs received one-on-one assistance from instructional consultants and information technology support personnel when needed, as did any other faculty member at the University. The GSIs had access to any of the resources provided to all faculty and instructors at the University.

This study collected quantitative and qualitative data through surveys, exit slips, and student evaluations. These tools evaluate the impact of the effective teaching practices for the GSIs' curriculum found within the six intervention learning sessions concerning evidence-based teaching and learning strategies in higher education (see Table 1).

Instruments

The instruments used in this study, including the before and after experience surveys and exit slips, underwent a rigorous content validity process. This process was overseen by three evaluators with at least 10 years of teaching experience in higher education and seven years of leading professional development expertise. They assessed the instruments to ensure they accurately measured graduate students' perceptions of the GSI program and their self-efficacy in teaching. As defined by Salkind and Rasmussen (2011), content validity refers to the extent to which an instrument represents the domain it aims to measure. The Salkind and Rasmussen (2011) validation instrument simply asked reviewers one question: "In your expert opinion, do the surveys and exit slip accurately measure graduate student instructors' perceptions of the intervention and self-efficacy ratings for teaching and learning? YES___ NO___." After this decision, expert reviewers are asked to elaborate, "If your answer is 'no,' please provide written feedback so that researchers may make appropriate changes and have the Instruments reevaluated." One evaluator selected YES, and the remaining two provided limited feedback for any necessary modifications to enhance the surveys' and exit slips' effectiveness in capturing relevant data on teaching self-efficacy and experiences in the GSI program. The changes recommended concerned minor grammar and word changes. Through debriefing sessions with the instruments' evaluators, researchers modified or changed the surveys and sessions' exit slips to meet recommendations and suggested changes. After changes were completed, the surveys and exit slips were reevaluated by all three evaluators. After the three evaluators provided clearance for the instruments as adequate valid measures, researchers prepared them for the study. Researchers identified that tailoring instructional strategies to the specific needs of GSIs was crucial for effective teaching and learning outcomes. Consequently, researchers decided to utilize the feedback collected from GSIs through pre-surveys and respective session exit slips. As a result, the professional development experience for participating GSIs was subsequently adapted and modified. This follows evidence-based practices of high-quality professional development for teachers (Loughran, 2014). The teaching evaluations were available after the conclusion of the 16-week courses. These evaluations, completed by students, were developed in collaboration with SmartEvals (SmartEvals LLC., 2023), a company that assists universities with student evaluations. While research has noted measurement and equity bias (Chávez & Mitchell, 2020; Kreitzer & Sweet-Cushman, 2022), student evaluation instruments are widely used for institutional measures of teaching effectiveness.

Surveys

The surveys designed for the GSI program at the University were integral tools for assessing the impact of professional development on graduate student instructors. The "Before" survey was designed to gather baseline data on the instructors' self-perceived teaching abilities and prior experiences, setting the stage for evaluating growth and change. The "After" survey, administered post-program, focused on capturing the perceived improvements in teaching skills and applying new strategies, providing crucial insights into the program's effectiveness. Together, these surveys offer a comprehensive view of the graduate student instructors' instructional development experiences and perceptions related to teaching in higher education settings. In both the pre-intervention and after-intervention surveys, graduate student instructors evaluated their self-efficacy on a 0 to 100 interval scale, with 0 equating to no self-efficacy and 100 to abundant self-efficacy regarding teaching ability. The initial before-intervention survey focused on participants' teaching background, confidence in teaching, and expectations from the program. It included questions about their area of teaching, teaching experience, prior training, and self-efficacy. The post-program after-intervention survey

assessed the participants' reflections on the program, perceived changes in teaching practices, and the impact of these changes on their pedagogical approach. In both the Before and After surveys, two critical qualitative questions were asked:

Before Intervention Survey Questions:

1. Please explain your [self-efficacy rating]?
2. What do you hope to gain from your experience in the GSI program and as an instructor at the university?

After Intervention Survey Questions:

1. Please explain your [self-efficacy rating]?
2. Tell us about your experience in the GSI program and as an instructor at the university.

Exit Slips

The exit slips, to be completed after each session, contained a prompt for quick feedback. They included a reminder about voluntary participation, contact information for the principal investigator, and an expression of gratitude for participation. According to the GSIs' perceptions, the exit slips provided immediate, session-specific feedback critical for ongoing evaluation of each session's value. In each exit slip, participants were asked to rate their session experience using a scale from 0 to 100, where 0 indicated no ideas or strategies for teaching gained, and 100 indicated an abundance of ideas or strategies gained. This rating scale specifically focused on the quantity and quality of teaching ideas or strategies participants perceived they acquired from that day's session. Following the numerical rating, participants were prompted to explain their chosen rating, allowing them to elaborate on their learning experiences and insights gained during the session. This qualitative feedback complements the quantitative rating, offering a more comprehensive understanding of the session's perceived impact on GSIs' learning and the value ascribed to each intervention session.

GSIs' Student Evaluations

The teaching evaluations completed by the GSIs' students were created in conjunction with SmartEvals (SmartEvals LLC., 2023), a company assisting universities with student evaluations. The teaching evaluations from students were conducted using SmartEvals LLC. (2023) online teaching and learning surveys. These online surveys encompassed a range of questions designed to assess the educational experience and instructor effectiveness. Using an interval scale from zero (0), or not answered, to five, the highest rating, students were asked to rate their learning in the course using the following statements.

a.) How much was learned in course.
b.) Instructor explained difficult material.
c.) Instructor guides students to be self-directed.
d.) Assignments contribute to understanding the subject.
e.) Online materials were clear/ logical.
f.) Instructor provided timely feedback.
g.) Instructor met class regularly.
h.) Instructor organized/ used time effectively.
i.) Class expectations were clear in the syllabus.
j.) Instructor was genuinely interested in teaching
k.) Would recommend instructor.

SmartEvals LLC. (2023) reports enable instructors to compare their overall scores against course, college, and university averages. Aligning closely with a score of five on the overall course average metric indicates strong instructional performance.

Students also have the option to answer open-ended questions to provide specific feedback on course aspects that aided learning, the classroom atmosphere, suggestions for improvement, and other relevant issues. Finally, students are asked to predict the grade they expect to receive in the course. This comprehensive evaluation approach gathers student feedback on various dimensions of the teaching and learning experience. GSIs provided researchers with student evaluations using the University's protected learning management system (LMS) for review. This upload

into the LMS, Canvas, was voluntary and could be refused by participants. All GSIs provided their students' evaluations for their respective courses.

Data Analysis

Fundamental descriptive statistical analysis of the GSIs' responses to the Before and After intervention surveys, exit slips, and GSIs' student evaluations were conducted and reported. Using a sliding interval scale, GSIs responded to five meeting exit slips and a pre- and post-survey. Each exit slip required 0 to 100 scale for rating their learning experiences per session, with 0 representing no new ideas and strategies and 100 representing the extreme usefulness of ideas and strategies implementations.

In the pre- and post-intervention surveys, GSIs rated their teaching self-efficacy using a scale from 0 to 100, where 0 indicated no teaching self-efficacy, and 100 represented a high level of teaching self-efficacy. From the numeric interval responses, according to GSIs' mean ratings, researchers could determine the perceptions of GSIs concerning their experiences with the curriculum used during the GSI program sessions and their self-efficacy before and after the GSI program curricula exposure. Although the sample size is small with five GSIs, "the *t*-test can be applied, as long as the effect size is expected to be large" (de Winter, 2013, p. 8). Therefore, a paired *t*-test was conducted to evaluate the statistical significance of the self-efficacy differences recorded from the surveys between pre- and post-intervention experiences of GSIs. The Shapiro-Wilk test was employed to assess the normality of the data distribution (Shapiro & Wilk, 1965). The effect size of the observed differences was calculated using Cohen's *d* (Cohen, 1988).

From the SmartEvals LLC. (2023) student evaluations, each GSI's overall course score from zero to five were analyzed in relation to the average scores at three levels: course, college, and university. This analysis revealed whether GSIs performed above or below the established averages, providing a clear evaluation metric for instructional effectiveness. Through this comparison, it was possible to identify areas of strength and opportunities for improvement. Means and descriptive comparisons were performed and reported from GSIs' quantitative data rating scores.

Following qualitative data analysis procedures using GSIs' perspectives, researchers determined the perceptions and perspectives of the GSIs representing three respective colleges and disciplines. The thematic analysis procedures using multiple data sources (Braun & Clarke, 2008; Braun & Clarke, 2022; Creswell & Creswell, 2023; Creswell & Guetterman, 2019; Creswell & Poth, 2018) were used to review and code the narrative responses from the five GSIs.

To further triangulate the research team's collaborative approach (Nowell et al., 2017), researchers applied thematic analysis procedures to the GSIs' student course evaluation comments. Using the SmartEvals student evaluation response system (SmartEvals LLC., 2023), students were asked to contribute feedback on multiple aspects of their learning experience, including the effectiveness of course elements, the classroom atmosphere, and suggestions for improvement. This allowed the GSIs' students to respond to open-ended questions for more personalized style feedback and to predict the grade they expected to receive. Four open-ended questions were provided to gain detailed feedback from the students of the GSIs concerning the teaching strategies, course content, and overall learning experience (SmartEvals LLC., 2023). The four open-ended SmartEvals respective questions and explanations are listed below:

1. Aspects Contributing to Learning
    a. QUESTION: "What aspects of the course contributed most to your learning? Please be as specific as possible."
    b. EXPLANATION: This question aimed to identify the specific course elements that most effectively facilitated student learning, such as assignments, teaching methods, or resources.
2. Classroom Atmosphere
    a. QUESTION: "Was the class atmosphere conducive to learning? Explain."
    b. EXPLANATION: Students were asked to assess their impact on learning by evaluating the learning environment, focusing on dynamics, inclusivity, and interaction.
3. Suggestions for Improvement
    a. QUESTION: "Suggest how the instructor might improve this course or teaching procedure."
    b. EXPLANATION: This solicited constructive feedback on enhancing the course content, structure, and teaching methodologies.
4. Additional Feedback

a. QUESTION: "Use the additional space to clarify any of your responses or to discuss issues not covered by the rating system."
b. EXPLANATION: This open-ended prompt allowed students to elaborate on their feedback or address other relevant experiences that structured questions could not capture.

Concepts, categories, and themes from GSIs' narrative survey responses, exit slips, and student evaluations (Braun & Clarke, 2022; Creswell & Creswell, 2018; Creswell & Creswell, 2023; Creswell & Poth, 2018; Nowell et al., 2017) were obtained through thematic analysis procedures. After numerous peer-debriefing sessions, researchers collapsed categories and formed themes from the narrative responses (Braun & Clarke, 2022; Creswell & Creswell, 2018; Spall, 1998). Once researchers completed solo thematic analysis procedures, categories collapsed as researchers compared findings and debated the meaning of the narrative response data. Numerous comparisons led researchers to determine sets of themes from the thematic analysis processes. All themes without unanimous support were omitted. Only quotes and comments representing identified themes were reported. All thematic analysis procedures were conducted by three researchers who independently reviewed and coded the data. To ensure consistency and reliability, disagreements or differences in coding were resolved through peer debriefing sessions and consensus-building discussions. Although no outside researcher was involved in this process, the research team's collaborative approach helped ensure a thorough and unbiased interpretation of the data.

Findings

Surveys

Before Teaching Intervention & After Intervention Experience Quantitative Data: Self-Efficacy Teaching Ratings

All GSIs improved their self-efficacy ratings for teaching ratings except GSI Three, who had no change. An average self-efficacy rating difference of 10.4 between the before-teaching intervention experience (M = 72.4) and the after-teaching intervention experience (M = 82.8) was determined using descriptive statistics. A range of 20 to 0 existed between the GSIs' ratings from the before-teaching intervention experience and the after-teaching intervention experience (see Table 2).

Table 2

Comparison of GSIs' Self-Efficacy Ratings Before and After Teaching Intervention

Lecturer	Before Teaching Intervention Rating	After Teaching Intervention Rating	Change
Lecturer 1*	50	70	Increase of 20
Lecturer 2*	64	75	Increase of 11
Lecturer 3*	80	80	No Change
Lecturer 4*	83	90	Increase of 7
Lecturer 5*	85	99	Increase of 14
Average	72	83	Increase of 10.4

Note. Due to the small sample size, the five GSIs' disciplines are not named to maintain research anonymity protocols. The GSIs with increased self-efficacy rating scores are identified with an asterisk (*).

Since four out of the five GSIs increased in self-efficacy related to teaching after the teaching intervention experience, with no change in one GSI, researchers determined that this descriptive statistical analysis portrayed a positive review of the professional development regarding the teaching intervention experience provided to the GSIs by teaching and learning specialists.

Researchers found the parametric paired t-test analysis supported the descriptive statistical analysis review. The paired-samples t-test was used to determine whether there was a statistically significant mean difference in self-efficacy ratings among graduate student instructors before and after the teaching professional development intervention. The normality assumption was not violated, as assessed by Shapiro-Wilk's test (p = 0.997). Participants reported higher self-efficacy ratings after the teaching intervention (M = 82.8, SD = 11.692) compared to before the intervention (M = 72.4, SD = 15.010), with a statistically significant mean increase of 10.4, 95% CI [0.078, 2.626], $t(4)$ =

3.099, $p = 0.036$, $d = 1.386$. The large effect size ($d = 1.386$) underscores the meaningful difference in self-efficacy ratings before and after the teaching and learning experiential intervention (Cohen, 1988; de Winter, 2013). Both descriptive and inferential statistical analyses demonstrated the effectiveness of this intervention in enhancing GSIs' teaching self-efficacy.

Before Teaching Intervention & Post Intervention Experience Qualitative Data: Self-Efficacy Reflective Comments

Qualitative: Before Teaching Intervention Themes

Ten quotes were derived from the surveys before any intervention (BIS) sessions began. The following are the four BIS themes and their descriptions agreed upon by the researchers.

1. **Teaching methods (BIST1):** This theme refers to participants acquiring teaching methods and techniques.
2. **Confidence in teaching (BIST2):** This theme includes participants' confidence in teaching and applying content knowledge.
3. **Use of technology (BIST3):** This theme includes the participant's desire to apply technology to their teaching.
4. **Student engagement (BIST4):** This theme focuses on participants creating a learning environment that increases student engagement.

The most prominent theme noted by the researchers was student engagement, which was supported by three quotes. The participants' responses equally represented the remaining themes. All four themes reflect the participant's desire to advance their pedagogical practices. BIS Theme 2 focused on the participants' lack of confidence in teaching and their hope to be more confident in their teaching ability. BIS Theme 3 was closely aligned with BIS Theme 2 as participants hoped to learn proper teaching techniques. Participants' responses on the use of technology formed BIS Theme 4. Even for a participant who feels prepared, integrating technology was a desired outcome of the intervention (see Table 3).

Table 3

Qualitative Feedback from GSIs Before Teaching Intervention

Themes	Before-Intervention Sessions Comments
Student Engagement	1. (Quote 2): "Even when I prompt them to discuss and engage I got nothing back." 2. (Quote 3): "I do feel like the material can be dull sometimes, so I struggle just a bit with keeping the students engaged." 3. (Quote 8): "What are things that they can do other than sitting and listening to me talk?"
Confidence in Teaching	1. (Quote 2): "I am about 50% confident in my teaching abilities when considering my preparation, I say this as I did not have a lot of opportunity to teach as a Grad Student and a GA I was mostly just a paper grader and was never able to run my own class really." 2. (Quote 6): "I hope to gain confidence in my ability to translate information to a variety of knowledge levels in both an educational and industrial setting."
Teaching Methods	1. (Quote 6): "I hope to gain education in being a better instructor and proper methods of teaching and instruction..." 2. (Quote 8): "I hope to learn more teaching techniques."
Use of Technology	1. (Quote 5): "I feel like I am very prepared to teach in my discipline, however, I could be more prepared, especially with the technological side of the classroom." 2. (Quote 7): "...I hope to gain more well rounded [sic] knowledge on technology and the incorporation of such in to my classroom to enhance my student experiences."

Note. Due to the small sample size, the disciplines of the five GSIs are not disclosed to adhere to research anonymity protocols.

Qualitative: Post-Teaching Intervention Themes

Ten quotes were collected from the surveys after the intervention concluded. The four post-intervention survey themes discovered and their descriptions are detailed below.

1. **Support (PIST1):** This theme consists of the support participants received throughout the program's duration.
2. **Beneficial to overall career and future (PIST2):** This theme indicates that the program was beneficial to their teaching career beyond the program.
3. **Excited/Encouraged (PIST3):** This theme focuses on the excitement participants now have for their teaching careers.
4. **Continued growth (PIST4):** This theme includes the idea that participants still have room to grow in their careers.

The four themes that emerged from the post-teaching intervention surveys (PIS) provided a glimpse into the perceptions of the GSIs regarding their respective experiences as graduate student instructors who were tasked to provide research-based pedagogy experiences for their respective students. Each theme provided a different aspect of their perceptions. For example, Theme 1 reflected the support participants experienced through the intervention. This included support from their peer GSIs in the program, respective departments, and a general acknowledgment of support. PIS Theme 2 included three quotes that supported participants perceiving the program as beneficial to their teaching careers. Participants reflected on the need to focus on student learning and learning from others in the course. Three quotes formed PIS Theme 3. Theme 3 revealed the teaching intervention program's experiences resulted in participants being excited and encouraged about their futures as teachers and what they have learned through the program's guide experiences. PIS Theme 4 revealed the participants' need for continued growth. The two quotes from this theme note the participants' growth and struggles as they continue to teach (see Table 4). All four themes reflect the participants' desire to continue learning pedagogical strategies for teaching, and they expressed an appreciation for the GSI program's support and experiences designed from research-based teaching pedagogy strategies.

Table 4

GSIs' Reflection on Post-Teaching Intervention Experience

Themes	Sample Quotes
Supported	1. (Quote 4): "I have enjoyed the program and meeting with the other GSIs to discuss strategies." 2. (Quote 5): "I feel I have the department's support in improving my teaching and continuing my career in being a mentor to the students." 3. (Quote 6): "I have felt overwhelmed but very supported."
Beneficial to Overall Career and Future	1. (Quote 1): "This course has helped me to focus on student learning and not get bogged down." 2. (Quote 7): "I think that this program is very beneficial to individuals planning to continue a career in education and teaching." 3. (Quote 3): "Very often I came to the CE class and heard something and thought to myself 'wow, I wish I would have said that.'"
Excited/Encouraged	1. (Quote 4): "I enjoy that we can be very discouraged coming in the door and leave excited to try a new strategy." 2. (Quote 6): "I am excited to move into next semester with some experience under my belt." 3. (Quote 7C): "Mostly, I have learned that this is all I want to do for the rest of my life."
Continued Growth	1. (Quote 3): "I feel as though I am capable of teaching my students in the subject matter, but I feel as though sometimes I struggle to get my point across and often struggle to communicate." 2. (Quote 8): "As the semester has gone on, I've grown more confident, but I also realize that there are more things I can do to grow and become a better instructor."

Note. This table summarizes qualitative feedback from GSIs after a teaching intervention program, organized into themes reflecting their experiences and perceptions.

Exit Slips

Quantitative: Learning Experience Ratings

Qualitative and quantitative results emerged from the five respective meetings' exit slips. First, the ratings from 0 to 100 concerning their experiences, with 0 meaning no ideas or strategies for teaching, and then to 100, which signified extreme or abundant ideas and strategies for teaching. The first session provided a mean score of 66.8 from participants. From the second to the fifth session, the mean rating scores were 96.75, 88.67, 88, and 94.4, respectively. This provided an overall average rating score of 86.92. These averages suggest the GSIs perceived the sessions positively, especially compared to the first introductory session. The second session had a 29.95 score increase. These ES's quantitative self-efficacy ratings ranged from 66.8 to 96.75.

Qualitative: Learning Experiences Themes

Seventeen quotes were collected from participants concerning the various teaching and learning sessions provided. The following are the four themes identified from the exit slip feedback with descriptions agreed upon by researchers. The theme descriptions identified from the exit slip feedback were:

1. **Positive Reception and Learning (EST1):** This theme includes feedback reflecting a positive and enriching experience with the content.
2. **Application and Relevance (EST2):** This theme relates to the practical applicability and relevance of the presented ideas or strategies.
3. **Engagement and Interaction (EST3):** This theme focuses on participant graduate student engagement and interactive learning.
4. **Inspirational and Motivational (EST4):** This theme encompasses feedback where participants felt inspired or motivated by the sessions.

The EST1 theme included eight quotes that expressed satisfaction with the content. This included participants finding the content helpful, informative, and able to enhance their teaching strategies or ideas. This theme highlighted the sessions' effectiveness in providing valuable insights and learnings to the participants. The EST2 theme related to the practical applicability and relevance of the ideas or strategies presented in the sessions was supported by three quotes. It included graduate student feedback where they either found the content directly applicable to their teaching disciplines or expressed concerns about the relevance or applicability of the information to their current teaching situation. EST2 captured the degree to which the participants visualized themselves implementing the learned strategies. The EST3 theme focused on participant interactive graduate student engagement with the learning and was supported by two quotes. It included comments where participants appreciated the engagement and interaction methods of teaching or the interactive nature of the sessions provided. Therefore, this theme underscored the importance of engagement and interaction of graduate student instructors in the learning process and how the participants perceived these aspects. The EST4 theme included feedback where participants expressed being inspired or motivated by various sessions was supported by two quotes. EST4 encompassed quotes that express a sense of inspiration, motivation, or being positively influenced by the content or the expert presenters. This theme highlights the session's role in sparking new ideas, enthusiasm, or a renewed sense of purpose in teaching and learning. Table 5 illustrates the exit slip themes with sample quotes.

Table 5

Themes and Sample Quotes from Exit Slip Feedback

Themes	Sample Quotes
Positive Reception and Learning	1. (Quote 3) "I really loved the online game! And I will definitely be implementing a syllabus quiz." 2. (Quote 4) "Today's experience was great, it really opened my eyes to understanding that what I am doing is right and helpful." 3. (Quote 5) "I have gained more insight on strategies to include SLO. And Blooket :)" 4. (Quote 7) "I loved learning about all the things Canvas can do! I have so many ideas for next semester."

Table 5 Cont.

Themes	Samples Quotes
Application and Relevance	1. (Quote 1) "Most tools are being used in class, it has been nice to learn that others are using it as well." 2. (Quote 2) "Most of the ideas didn't seem to apply to my discipline, or I just didn't understand how they applied." 3. (Quote 14) "Lots of our info from today was discussion-based, and while I cannot currently implement these techniques into the way my class is currently structured, I hope I can utilize them in the future."
Engagement and Interaction	1. (Quote 6) "I enjoyed learning about different Canvas techniques, and how to engage students more." 2. (Quote 11) "I truly feel like discussing how we are all getting along outside of the classroom in a more relaxed setting is really beneficial."
Inspirational and Motivational	1. (Quote 13) "I enjoyed meeting Dr. [name omitted] investigating different ways to reach students." 2. (Quote 17) "The session with Dr. [name omitted] was very inspiring, probably the best session so far."

Note. This table includes a selection of quotes from exit slips, each labeled with its corresponding number, reflecting four identified themes. Of 17 quotes, 15 supported these themes, while two did not align with any specific theme.

GSIs' Student SmartEvals Student Evaluations: Quantitative and Qualitative Findings

SmartEvals Score Quantitative Ratings

Because of the nature of the student evaluation data, both qualitative and quantitative, the courses and disciplines will not be named directly with the data to ensure anonymity. All data were analyzed holistically. The overall score ranges from 0 to 5 and is considered an important indicator of student satisfaction and perceived educational quality delivered by graduate student instructors. Each of the five GSIs' performances, as indicated by the overall score, was systematically compared to the averages at the course, college, and university levels. GSIs' overall score-course averages ranged from 3.71 to 4.85. The mean overall course score was 4.3 ($SD = 0.28$), above the university-wide average of 4.19, indicating a generally high level of satisfaction among most students. Course averages by respective departments ranged from 4.25 to 4.35, and respective college averages ranged from 4.10 to 4.32. Four graduate student instructors scored above their respective department's course average, college average, and university average in at least one or more courses. The graduate student instructor, GSI Two, instructed two courses (see Table 6: C and F on p. 13) which produced the lowest overall course scores of 4.10 and 3.71, respectively, which were below the department course average, college average, and university average; however, it is important to note that GSI Two was responsible for five courses. GSI Two scored above average in two of the five courses (see Table 6: D and G on p. 13) when compared by department course average, college average, and university average. Also, GSI Two had one course (see Table 6: E on p. 13) with a score of 4.23, slightly below the department's course and college averages of 4.35 and 4.32, respectively, but was above the 4.19 university score average. GSI Four is the only graduate student instructor who scored below the department's course, college, and university averages in both courses, with average scores of 3.99 and 4.13, respectively. Two of the five graduate student instructors produced overall score ratings above their respective department course averages, college averages, and university averages in all courses (see Table 6 on p. 13).

Table 6 compares SmartEval course score averages across various measure level averages, including the university, department, and college. It highlights that 69.2% (nine out of 13) of the courses led by student graduate instructors surpassed the university's average score of 4.19. Additionally, 53.8% (seven out of 13) of these instructors exceeded the departmental average scores, and 61.5% (eight out of 13) achieved scores above their respective college averages. Most impressively, over half (seven out of 13) of the courses exceeded their departmental and college averages and outperformed the overall university course averages, showcasing exceptional performance across all compared metrics.

Table 6

GSI Course SmartEvals Quantitative Evaluation Summary

GSI	Course	Number of Respondents	Overall Score Avg. (Course)	Avg (By GSI)	Avg (D-Course)	Avg. (College)
1	A	23	*4.85		4.25⇧	4.1⇧
1	B	42	*4.45	4.65	4.25⇧	4.1⇧
2	C	48	4.10		4.35⇊	4.32⇊
2	D	42	*4.53		4.35⇧	4.32⇧
2	E	50	*4.23		4.35⇊	4.32⇊
2	F	47	3.71		4.35⇊	4.32⇊
2	G	52	*4.36	4.19	4.35⇧	4.32⇧
3	H	96	*4.47		4.24⇧	4.21⇧
3	I	91	*4.44	4.46	4.24⇧	4.21⇧
4	J	91	3.99		4.24⇊	4.21⇊
4	K	89	4.13	4.06	4.24⇊	4.21⇊
5	L	105	*4.44		4.30⇧	4.21⇧
5	M	55	*4.21	4.33	4.24⇊	4.21⇧
Total Averages	63.90	4.30	4.33	4.33	4.28	4.23

Note. Avg.=average or mean. D-Course=Departmental course level. This table provides a detailed summary of the GSIs' student course SmartEvals evaluations. The evaluations cover 13 classes, with metrics including the number of respondents, overall score averages for each course, and comparisons at both the college and university levels. The total average reflects aggregated data across all evaluated courses, indicating a positive reception of the courses overall. Most of the overall course average scores surpass the university's average of 4.19 and are denoted with an asterisk (*). The"⇧" symbol indicates that the course scores exceeded departmental or college-level average scores. Conversely, the "⇊" symbol signifies that the course scores were below the departmental or college-level averages.

SmartEvals Qualitative Findings

The GSIs' students responded to four open-ended questions from the university's online student evaluation system (SmartEvals, 2023). The open-ended questions gathered the students' perceptions of each course and educational experience. The GSIs' students responded to these questions with 561 comments comprising 9,006 words. Researchers were able to utilize 486 (86.63%) of the comments for thematic analysis procedures, while 77 (13.37%) of the comments were not meaningful (e.g., "n/a, nope, or none"). At the beginning of this process, researchers discussed using the four SmartEvals (SEv) questions as themes. However, after researchers reviewed the 486 viable comments data, the concepts and initial qualitative coding revealed perceptions that transcended the SEv questioning structure. Therefore, six themes emerged from the responses to the four SEv open-ended questions: Theme 1(SEvT1)-Instructor Characteristics represented 18 (3.70%) comments, Theme 2(SEvT2)-Course Content and Structure represented 13 (2.67%) comments, Theme 3(SEvT3)-Learning Environment represented 248 (51.03%) of the comments, Theme 4(SEvT4)-Assessment and Feedback represented 14 (2.88%) comments, Theme 5(SEvT5)-Support and Accessibility represented 140 (28.81%) comments, and Theme 6(SEvT6)-Improvement Suggestions represented 53 (10.91%) comments (see Table 7 on p. 14).

SEvT3 represented over half of the viable 486 comments (51.03%) concerning the importance of the learning environment. The next largest comment concentration was found with SEvT5, Support and Accessibility, which provided 140 (28.81%) of the student comments. The large number of comments representing experiences within the learning environment and connections to support and accessibility reflected the GSIs' undergraduate students' focus regarding a course atmosphere that is conducive to learning and a desire for a course curriculum fostering accessibility to course material and support for learning from the graduate student instructor.

Table 7

Summary of SmartEvals Student Feedback of Educational Experience with Graduate Student Instructors

Theme	Description	Examples
Instructor Characteristics	Feedback on the demeanor, approachability, and overall presentation style of the instructor.	"[Instructor's name omitted] was a great teacher because he seemed more understanding of a Freshman's situation..."
Course Content and Structure	Observations on the organization, clarity, and sequence of the course material.	"Having everything organized in the modules on canvas and able to look back on my assignments..."
Learning Environment	Students' perceptions of the class atmosphere and its conduciveness to learning.	"The class atmosphere was great, the instructor really tried to keep everyone interested..."
Assessment and Feedback	Insights on the grading, feedback, and types of assessments used to evaluate students.	"The kahoot/blooket [sic] reviews for the test really helped me understand what I needed to work on & what I understood well..."
Support and Accessibility	Comments on the accessibility of course materials and the support provided by the instructor.	"Yes, we always had what we needed to successfully have class..."
Improvement Suggestions	Students' suggestions on areas for improvement within the course or teaching methods.	"By clearly explaining on how to do the assignments correctly and showing it step by step."

Note. The table presents a thematic summary of the student feedback collected to assess the educational experience. Each theme is accompanied by a brief description and an illustrative example from the graduate student instructors' students' responses. SmartEvals (SmartEvals LLC., 2023) is an online higher education course evaluation system designed to gather students' perceptions of learning experiences.

Discussion and Implications

Pedagogical experience with research-based techniques is optional by most universities and colleges today (Moreu & Brauer, 2022). The lack of formal pedagogical training for graduate student instructors and the resulting impact on their teaching self-efficacy are major challenges, suggesting that graduate student instructors often feel unprepared and overwhelmed by their teaching responsibilities (Smollin & Arluke, 2014; Wise, 2011). The GSIs' program described in this study comprised six targeted intervention sessions to bridge the teaching preparation gap by enhancing instructors' pedagogical strategies and boosting their confidence in their respective teaching roles.

The significant positive results between pre- and post-self-efficacy ratings reported by the graduate student instructors, alongside qualitative feedback from the participants and their students' evaluations, illustrated the program's potential to improve the teaching self-efficacy of graduate student instructors. This benefits the graduate student instructors and promises to elevate the quality of the educational experiences and opportunities graduate student instructors provide to their respective students across various disciplines represented across a university. The findings suggested strong pedagogical professional development initiatives can potentially have a transformative impact on teaching and learning experiences for all students in higher education. The analysis of student evaluations highlighted two themes of high interest for preparing graduate student instructors: the learning environment and support/accessibility. GSIs' students expressed appreciation or the need for positive and engaging classroom atmospheres. Also, the students of GSIs produced numerous comments concerning the appreciation or need for greater access to course materials and instructor support. The importance of supporting graduate student instructors' development to ensure high-quality educational outcomes for undergraduate students is a proactive practice to support evidence-based, quality teaching and learning experiences. Our findings align with previous studies showing

By equipping GSIs with practical strategies and ongoing support, institutions can improve undergraduate student outcomes while fostering the professional growth of future educators.

the importance of pedagogical training for novice instructors (Chiu & Corrigan, 2019; Prieto & Meyers, 1999). The increase in self-efficacy observed among GSIs mirrors trends found in similar studies that emphasize mentorship and structured training programs (Broeckelman-Post & Ruiz-Mesa, 2018). However, our study also adds to the literature by demonstrating how ongoing post-session support further reinforces learning and application. This study highlighted the value of targeted professional development programs in enhancing the self-efficacy and teaching performance of GSIs. By equipping GSIs with practical strategies and ongoing support, institutions can improve undergraduate student outcomes while fostering the professional growth of future educators. This research has broader implications for universities, particularly R2 higher education institutions, as they work to address faculty needs and improve instructional quality in foundational courses.

Limitations

This pilot exploratory study of a targeted professional development program for graduate student instructors (GSIs) provided valuable insights into the effectiveness of a professional development program for GSIs and how to structure professional development; however, the study has several limitations that must be acknowledged. The sample size is relatively small, consisting of only five GSIs, four being white females, which limits the generalizability of the findings to a broader population. While the *t*-test was justified due to the potentially large effect size, researchers acknowledge that a formal power analysis could be helpful. Future research should address this by including a power analysis to determine appropriate sample sizes and replicating the study with larger and more diverse participant groups to include different institutional contexts (e.g., gender and racial diversity). While the small sample size limits the generalizability of our findings, they provide valuable preliminary insights into the potential benefits of such interventions. Some findings may not be generalizable across broader contexts but still offer evidence to guide future research and program development.

Additionally, the study was conducted at a single institution, which may have unique characteristics that are not representative of other higher education settings. Continued research with other GSIs would be beneficial. GSIs were not randomly selected; their respective department heads and deans selected them for participation in the GSIs' program intervention. These selection decisions were based on GSIs' availability to participate in the program while completing their assigned instructional duties. It is important to note that students may have biases toward their GSI and/or the course taught, and the accuracy of their responses could not be verified.

Future Research

Future research exploring the long-term effects of professional development programs on Graduate Student Instructors (GSIs) teaching efficacy would add much to this emerging body of research. Longitudinal studies that follow GSIs over multiple semesters or years would provide valuable insights into the sustained impact of such programs on their teaching practices and self-efficacy. Investigating the specific components of professional development that impact the quality of teaching in GSIs could help refine like programs for greater effectiveness. Comparative studies involving different instructional models and pedagogical training approaches could also offer a deeper understanding of best practices. Incorporating the perspectives of undergraduate students on the effectiveness of GSIs who have undergone professional development would provide a more comprehensive evaluation of educational professional development programs' impact on teaching and learning outcomes in higher education. Future research replicating this study with a larger and more diverse sample to strengthen the generalizability of the findings will help ensure sufficient statistical power. Additionally, exploring similar professional development programs across multiple institutional contexts would provide valuable insights into such interventions' broader applicability and impact. Future research should explore how such interventions impact GSIs' long-term teaching performance and how program outcomes vary across institutional contexts and student populations.

Conclusions and Recommendations

Higher education institutions have historically utilized graduate students to fulfill teaching or research assistant roles due to the cost-savings gained and the mutual experiential benefits of their dual roles as teachers, researchers, and learners. The study's findings revealed a gap in pedagogical experiences, which impacted the GSIs' self-efficacy as educators. For example, the self-efficacy ratings metric illustrated statistically significant gains in self-

efficacy from the before to after intervention experiences, as evidenced by a large effect size (d = 1.386). Therefore, the quantitative and qualitative findings, holistically, revealed that the GSIs' program was an effective intervention to eliminate the pedagogical experience gaps by offering a structured professional development learning community tailored to graduate student instructors' unique needs. GSIs' students' responses to the SmartEvals open-ended questions revealed two main areas for development among GSIs: learning environment and support/accessibility. Since this was a focus of many of GSIs' student comments, researchers recommend professional development initiatives emphasizing crafting positive classroom atmospheres, communicating clear expectations, and offering multifaceted support. Seeking assistance in teaching is a part of the learning process for GSIs seeking careers in higher education. Mentorship from experienced faculty, workshops through university teaching centers, peer observation, and credible online resources can enhance teaching skills. These experiences fostered a constructive and reflective learning environment with a greater appreciation for pedagogy among GSIs. Ultimately, these experiences elevated GSIs' self-efficacy and use of evidence-based teaching practices.

The GSIs' program at this regional university improved GSIs' teaching self-efficacy and equipped them with practical, proven teaching strategies. The positive shift in self-efficacy ratings and the thematic insights from qualitative data supported the program's role in fostering a supportive, engaging, and enriching learning environment for beginning college instructors. Researchers recommend continuing and enhancing such programs to support GSIs' pedagogical development. Researchers recommend that GSI preparation programs focus on pedagogical skills and instructional design and model a culture of reflective practice, innovation, and peer support. The GSIs' program effectively becomes a learning community for graduate student faculty beginning their careers in higher education. The professional growth of GSIs in this study contributed to the importance of and call for the professionalization of teaching in higher education. Since teaching is the most important function of higher education, preparing and supporting GSIs beginning their careers is an essential response to faculty professional development needs in higher education institutions. To better prepare GSIs for teaching, institutions should invest in scalable, evidence-based training programs that incorporate mentorship, reflective practices, and post-training support.

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Dr. Aimee Shouse is an experienced academic administrator currently serving as Associate Provost, Associate Vice President for Curriculum and Assessment, and Dean of Faculty at Tarleton State University. With over three decades in higher education, her career includes roles as a faculty member in political science and department chair of Women's Studies at Western Illinois University, as well as Dean of the College of Arts, Letters, and Sciences at Southwest Minnesota State University. She is highly skilled in strategic partnerships, curriculum development, and faculty leadership, with a deep commitment to advancing student success and access to higher education.