

Graduate Student Instructors, Their Courses, and the Support They Need

Allison BrckaLorenz
Rong Wang
Thomas F Nelson Laird

Center for Postsecondary Research
Indiana University, Bloomington

Authors' Note

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Abstract

While some existing literature exposes graduate students instructor's (GSIs) various approaches to teaching, and the importance of professional development, there is little research on the ways in which GSI characteristics may impact their needs and preferences for professional development (Boman, 2013). Led by these gaps in the literature, this study explores the diverse characteristics of GSIs employed at eight research universities in the U.S. and investigates the ways in which these characteristics impact GSI needs for professional development and support in teaching. The results of this study offer implications for practice and recommendations for future research that enhance GSIs teaching and learning, as well as their overall graduate education and preparation.

Keywords: graduate student instructors, professional development, teaching support

Graduate Student Instructors, Their Courses, and the Support They Need

Introduction

Research on graduate student instructor (GSI) experiences with teaching and learning suggests that GSI teaching styles, values, and approaches differ by instructor characteristics, such as gender and discipline (Luo, Bellows, & Grady, 2000; Luo, Grady, & Bellows, 2001; Shannon, Twale, & Moore, 1998). Research has also shed light on the critical role that teacher training and professional development play in the educational experiences and teaching effectiveness of GSIs (Austin & Wulff, 2004). While some existing literature exposes GSIs' various approaches to teaching, and the importance of professional development for this teaching, there is little research on the ways in which GSI characteristics may impact their needs and preferences for professional development (Boman, 2013). Led by these gaps in the literature, this study explores the diverse characteristics of GSIs employed at eight research universities in the U.S. and also investigates the ways in which those characteristics impact GSIs' needs for professional development and teaching support.

This paper begins with reviewing scholarly literature regarding the characteristics of GSIs and the courses they teach. After pointing out the gaps in the literature, research questions for this study are presented followed by our research methods and our findings. We end by highlighting key recommendations and implications for enhancing GSIs teaching professional development, and overall graduate education and preparation.

Background

With a substantial growth in responsibilities, graduate student instructors (GSIs) have played an increasingly significant role in influencing undergraduate courses (Austin, 2002). Prior research indicates that teaching styles, instructional approaches, and attitudes and values vary

greatly for GSIs by gender, nationality, prior teaching experiences and other characteristics (Luo, Bellows, & Grady, 2000; Luo, Grady, & Bellows, 2001; Shannon, Twale, & Moore, 1998). For instance, scholars found that instructors that taught in different disciplines took varying approaches to teaching in the classroom (Kuh & Whitt, 1988; Shannon, Twale, & Hancock, 1996). Luo, Grady, and Bellows (2001) discovered that gender, nationality, and discipline influence the instructional methods, communication strategies, teaching styles, and challenges in teaching for GSIs. Several other characteristics, such as prior teaching experience, teacher training, and the level of responsibility that a GSI holds have also been found to impact the experiences of and approaches to teaching for GSIs (Prieto & Altmaier, 1994; Prieto, Yamokoski, & Meyers, 2007). For example, Weidert, Wendorf, Gurung, and Filz (2012) found that GSIs who worked as a teaching assistant in their undergraduate experiences were more likely to use humor and engaging teaching styles in class, compared to their peers who did not have teaching experiences as they were undergraduates. Additionally, Cho, Kim, Svinicki, and Decker (2011) found that GSIs' teacher efficacy, professional development, and the value they placed on teaching have positive relationships with their concerns about the impact of their teaching. Specifically, the more GSIs participated in the Scholarship of Teaching and Learning (SoTL) related workshops or conferences, the more concern they had about the impact of teaching on student learning (Cho et al., 2011). A similarly positive relationship existed between the extent to which GSIs valued teaching practices and their concerns about student outcomes (Cho et al., 2011).

Since GSI characteristics, such as discipline of study and gender, impact the ways in which those instructors approach their teaching, it is likely that these characteristics may also impact the manner of support that GSIs need in the development of their teaching. In the

Integrated Developmental Model of Supervision for Graduate Teaching Assistants (IDM-GTA), Prieto (2001) indicated that GSIs had different levels of motivation, points of concentration between students and self, and desire for autonomy as they move from beginning GSIs, to advanced GSIs, and to junior faculty members. Thus, faculty advisors should acknowledge the changes in GSIs' skills, variation in their skill levels, and their needs in professional development (Meyers, 2011). Many studies have described or assessed the professional development for GSIs in various formats, such as teacher training programs (Savage & Sharpe, 1998; Sales, 2007), courses (Harris, Froman, & Surles, 2009), faculty supervision (Nyquist & Wulff, 1996), and professor-GSI mentorship (Meyers, 2011). Only a few scholars have looked into the desired design of training sessions and activities from GSIs' perspectives (Hardré & Burris, 2012). Hardré and Burris (2012) explored GSIs' perceptions of the nature, content, and design characteristics of their training in teaching. They claimed that GSIs perceived training as an effective method in enhancing their learning, development, and teaching. Hardré and Burris (2012) also found that GSIs believed that expertise of speakers, structural design of events, and quality of support materials were well designed features that greatly contributed to their development. Unfortunately, among those studies, little has focused on the ways in which GSI characteristics impact their needs for support and professional development in teaching (Boman, 2013; Shannon, Twale, & Moore, 1998).

That lack of research is concerning as an increasing number of GSIs are entering the classroom to teach undergraduate students (Austin, 2002), but report that they often feel underprepared to fulfill their teaching duties (Boyer, 1991; Darling & Dewey, 1990), have limited teaching experiences, or sufficient knowledge on instructional techniques (Civikly & Hidalgo 1992; Feezel & Myers 1997; Hardré & Burris, 2012), and lack professional

development opportunities (Austin, 2002; Prieto, 1999). Therefore, it is important for graduate schools and faculty advisors to understand the relationship between GSIs' characteristics and their need for professional development. Furthermore, there is a lack of a comprehensive conceptual framework on GSI behaviors, interests, and needs to guide quantitative studies in the field. Our understanding on those issues with GSIs were guided by the limited work done on GSIs (Plough, Briggs, & Van Bonn, 2010; Park, 2004) and by some work on faculty that emphasize looking at personal and course characteristics (Nelson Laird, Garver, & Niskodé-Dossett, 2011; Nelson Laird, Schwarz, Shoup, & Kuh, 2005). To address that gap in research on professional development and GSIs, this study explores the diverse characteristics of GSIs employed at eight research universities in the U.S. and investigates the ways in which GSI characteristics impact instructors' needs for professional development and support in teaching and learning. The findings of this study offer implications for practice and recommendations for future research that can improve our understanding of what is effective for GSI teaching and learning, as well as their overall graduate education and preparation.

Our study is guided by the following three research questions:

1. What characterizes GSIs and the undergraduate courses they teach?
2. What types of support do GSIs report needing?
3. What characteristics impact the types of support GSIs find important?

Methods

Data Source

The data for this study come from the 2014 administration of the Faculty Survey of Student Engagement for Graduate Student Instructors (FSSE-G). As a companion survey to the Faculty Survey of Student Engagement (FSSE), FSSE-G was designed to complement the

National Survey of Student Engagement by capturing the experiences of graduate students who teach undergraduates. FSSE-G measures GSIs' perceptions and expectations of undergraduate engagement in educationally purposeful activities, the extent to which GSIs promote learning and development in the courses they teach, the extent of GSI interaction with undergraduates, and how GSIs allocate their time. FSSE-G 2014 was administered to GSIs at eight research universities. The sample for this study consists of responses from 2,560 GSIs who taught or assisted with an undergraduate course during the 2013-2014 school year. The average response rate was 32.6%.

Measures

A variety of items were examined from the FSSE-G survey involving GSI characteristics (Table 1), the characteristics of the courses they teach (Tables 2 and 3), the importance of receiving assistance from their institution on aspects of teaching (Table 4), and participation in select teaching professional development activities (Table 4). Two scales were created using a principal components factor analysis with oblimin rotation from a subset of these items. Six items, the importance of receiving assistance with incorporating active learning strategies, developing students' critical thinking or problem solving skills, improving interactions with students, facilitating experiences with diversity, creating a supportive learning environment, and using technology to improve student learning were averaged together to create the Teaching Support (TS) scale ($\alpha = .836$). Four items, the importance of receiving assistance with assessing student learning, specifying learning outcomes, designing assignments or exams, and leading discussions were averaged together to create the Assessment Support (AS) scale ($\alpha = .825$). Descriptives of these scale items can be found in Table 4.

Analyses

To answer the first research question about what characterizes GSIs and the undergraduate courses they teach, descriptives were examined for a variety of different demographic and course characteristics. The course characteristics examined include the following: course inclusion of various high-impact practices (service-learning, learning community, research, and internships), course division, course size, fulfillment of a general education requirement, course format (classroom-based, distance, etc.), whether or not the course includes writing assignments, and the proportion of time spent on various course activities.

To answer the second research question about what types of support graduate students report needing, descriptives were examined and ranked to determine what types of institutional assistance are the most and least important. Additionally the frequency of participation in a variety of teaching professional development activities were ranked and examined to determine what types of opportunities GSIs are using the most and least.

To answer the third research question about what characteristics impact the types of support graduate students find important, two OLS regression models were used to determine what types of GSIs value institutional assistance more or less. GSI characteristics examined included age, gender identity, U.S. citizenship, racial/ethnic identification, degree currently pursued (Doctoral degree or Master's degree), and whether or not the GSIs occupational goal was a college or university professor or instructor. Dichotomous variables were added to represent each institution to control for institution-level variance.

Results

1. What characterizes GSIs and the undergraduate courses they teach?

The average age of the GSIs in this study is 29 years old. Slightly over half (54%) of the students in the sample identify as women and four in five (78%) identify as heterosexual. Four

in five (81%) are U.S. citizens, and nearly three-quarters (70%) are White. The majority of GSIs (78%) were currently pursuing a doctoral degree with three in five (60%) having already earned a Master's degree. On average, these GSIs had spent 3 years in their current degree program, and had a little over 2.5 years of teaching experience prior to the current school year. Two-thirds (67%) had an occupational goal of college or university professor or instructor. For more details about the characteristics of GSIs, see Table 1.

<<INSERT TABLE 1>>

Few of the undergraduate courses taught by GSIs contained high-impact practices. Most GSIs reported that none of the courses they taught included service-learning projects (83%); living learning communities (76%); or internships, co-ops, clinical placements, or field experiences (82%). More frequently courses taught by GSIs contained a research component (data collection, analysis, etc.) About a quarter (28%) of GSIs reported that some of their courses included a research component while the remaining third of GSIs (35%) reported that most or all of the courses they teach include research experiences for undergraduates.

Courses taught by GSIs were split between lower- (52%) and upper-division (43%) and tended to be smaller with over half (55%) teaching classes with 30 or fewer students. Three in five (60%) GSIs taught a course that fulfills a general education requirement, and nearly all (96%) taught in an on-campus classroom format. Nearly three-quarters (73%) of GSIs taught courses that included writing assignments (papers, reports, or other writing tasks). The largest concentrations of GSIs were teaching in Arts & Humanities (27%); Physical Sciences, Mathematics, and Computer Science (18%); and Social Sciences (16%). Smaller concentrations of GSIs were teaching in Biological Sciences, Agriculture, and Natural Resources (10%); Education (7%); Engineering (6%); Communications, Media, and Public Relations (5%); Health

Professions (4%); Business (2%); and Social Service Professions (1%). For more details about these characteristics of courses taught by GSIs, see Table 2.

<<INSERT TABLE 2>>

GSIs mostly spent their class time lecturing, in discussion, or in small group activities. About a third of GSIs (28%) spent at least half of their class time lecturing, with half of GSIs (51%) spending 30% or more of their class time lecturing. About a third of GSIs (30%) spend at least 30% of their class time on discussion. Very few GSIs spend no time on lecturing (4%) or discussion (9%). Although one in five (21%) GSIs spend no time in their class on small-group activities, a quarter (25%) of GSIs spend at least 30% of their class time on collaborative activities. Even though one in five GSIs (22%) spend no time in class on assessing student learning, around half (48%) spend less than 10% of their class time on such evaluation. Close to half of GSIs spent none of their class time on student presentations or performances (46%); independent students work (48%); movies, videos, music, or other performances not involving or produced by students (54%); and experiential activities (58%). For more details about the percent of class time spent on these activities, see Table 3.

<<INSERT TABLE 3>>

2. What types of support do GSIs report needing?

GSIs thought it was most important that their institution assist them in developing students' critical thinking or problem-solving skills, creating a supportive learning environment, and assessing student learning. The average importance that GSIs' placed on these areas were greater than 3 where on the original response scale 3 is "Important" and 4 is "Very important." GSIs thought it was least important, although at least "Somewhat important" (a rating of 2), that their institution assists them in designing assignments or exams, leading discussions, and using

technology to improve student learning. Specifying learning outcomes, improving interactions with students, incorporating active learning strategies, and facilitating experiences with diversity were ranked in the middle (average scores between 2.88 and 3.00).

GSI did not frequently participate in the teaching professional development activities examined in this study. On average, GSIs discussed teaching issues with other GSIs most frequently, between “Often” (3) and “Sometimes” (2). GSIs sometimes consulted books, articles, or online resources to enhance their teaching, but GSIs participated between “Sometimes” (2) and “Never” (1) for the remaining practices: having a faculty or staff member observe their teaching and provide feedback, working one-on-one with a faculty or staff member to help improve your teaching, attending a workshop or training session to enhance their teaching, and visiting an office or center that supports GSIs. For more details about the importance of assistance or frequency of participation in teaching professional development activities, see Table 4.

<<INSERT TABLE 4>>

3. What characteristics impact the types of support GSIs find important?

Several characteristics of GSIs predict importance of receiving assistance with teaching activities and with assessment activities. Older students ($\beta = .079, p = .001$), GSIs pursuing a Master’s degree (coefficient for GSIs pursuing a doctoral degree: $\beta = -.095, p < .001$), and GSIs with an occupational goal of college or university teacher or instructor ($\beta = .074, p = .003$, compared to all other occupational goals) all thought it was slightly more important that their institution assist them with incorporating active learning strategies, developing students’ critical thinking or problem solving skills, improving interactions with students, facilitating experiences with diversity, creating a supportive learning environment, and using technology to improve

student learning. Compared to their White counterparts, Asian, Native Hawaiian, or other Pacific Islander ($\beta = .086, p = .006$); Hispanic or Latino ($\beta = .064, p = .007$); American Indian, Alaska Native, other, and multiracial ($\beta = .061, p = .010$) students all thought it was more important that their institution assist them with these aspects of teaching support. The largest differences, however, were for GSIs who identify as women (coefficient for men: $\beta = -1.65, p < .001$) and Black or African American GSIs ($\beta = .104, p < .001$, compared to White) indicating that these students felt it was noticeably more important that their institution assist them in these ways.

International GSIs (coefficient for U.S. citizens: $\beta = -.066, p = .040$); Asian, Native Hawaiian, other Pacific Islander students ($\beta = .078, p = .016$, compared to White), and GSIs pursuing a Master's degree (coefficient for GSIs pursuing a doctoral degree: $\beta = -.084, p = .001$) all thought it was more important that their institution assist them with assessing student learning, specifying learning outcomes, designing assignments or exams, and leading discussions. The largest differences, again, were for GSIs who identify as women (coefficient for men: $\beta = -1.34, p < .001$) and Black or African American GSIs ($\beta = .097, p < .001$, compared to White) indicating that these students found it noticeably more important that their institution assist them with these assessment support activities. Although it was not part of our research questions, it is worth noting that very few statistically significant differences were found on the institution-level variables included as controls. For more details about these models, see Table 5.

<<INSERT TABLE 5>>

Significance and Limitations

This study is important and relevant to the field because an increasing number of GSIs are entering college classrooms to teach undergraduate students (Austin, 2002). Unfortunately,

these graduate students continue to feel underprepared to teach their courses (Austin, 2002; Boyer, 1991). While GSIs hesitation with teaching has been noted in the literature, there exists a lack of research that explores the nuances and needs of GSIs' teaching development. Our study adds to the necessary conversation on GSIs needs and desires when it comes to teaching development. Finally, this study is important because it guides future research on this growing population in higher education. For instance, these findings suggest that Black women GSIs may have unique needs and experiences with teaching that must be further explored. Therefore, findings from this study guide higher education researchers toward more targeted inquiries into the experiences of GSIs employed at institutions across the U.S.

Despite those promising findings, this study has two primary limitations. First, rather than FSSE-G randomly selecting GSIs nationwide to participate in the survey, institutions decide to register and administer FSSE-G on their campus and further select which groups of GSIs were invited to respond to the survey. Second, FSSE-G uses self-reported data from GSIs about their perceptions and behaviors. While perceptions are difficult to tap into without self-reporting, the connection between self-reporting and behaviors has been questioned. Though we are confident GSIs can adequately report their teaching behaviors, some caution is warranted in using and interpreting our findings (Carrell & Willmington, 1996; Pike, 1995, 1996).

Recommendations and Implementations

This study is meaningful for graduate schools, faculty advisors, and teaching support and resources centers/offices to understand the characteristics of GSIs and the courses they teach. Our work also helps those groups become more aware of GSI needs for professional development and teaching so sufficient resources can be directed toward GSI support in those areas. Based on the findings presented above, this study suggests universities should enhance

GSI support in the following ways.

First, universities and faculty advisors should consider how to assist GSIs in incorporating high-impact practice activities in their courses through course design. This study found that few of the undergraduate courses taught by GSIs contained high-impact practices, such as learning community, undergraduate research, and internships. However, high-impact practices (HIPs), such as internships, undergraduate research with faculty, learning communities, culminating senior experiences, service-learning as part of a course requirement, and study abroad, have been widely tested and recognized in promoting desirable student learning outcomes (Kuh, 2008). Participating in HIPs contributes to a higher level of student-faculty interaction, enhanced persistence, higher GPA, cognitive development, and greater appreciation of diversity (Brownell & Swaner, 2010; Finley & McNair, 2013; Kuh, 2008). Therefore, involving HIPs in the courses taught by GSIs will effectively enhance undergraduate student learning and achievement.

Second, universities should support GSIs in diversifying their course activities through enriching instructional techniques used by GSIs. This study found the least important form of support from their institution perceived by GSIs was designing assignments or exams, leading discussions, and using technology to improve student learning. However, a substantial amount of GSIs spent 30% of their class time, even more than half, on lecturing. Additionally, nearly half of GSIs did not include other formats of activities in class, such as student presentations; independent students work; movies, music, or experiential learning activities; etc. Universities should be more aware of their GSIs' use of in-class activities and GSIs' values for increased assistance.

Third, facing the low participation in the teaching professional development activities

among GSIs examined in this study, universities should investigate the reasons for low participation rates and find out how to make those teaching professional development activities become more attractive among GSIs. Hardré and Burris's (2012) study found positive things related to training sessions and activities for GSIs. Utilizing the findings in this study, universities should start with understanding GSIs' perceptions of their needs and desired formats for training, and then, make connections between what GSIs expect and what universities can and should provide to GSIs in supporting their teaching and development.

Conclusion

This study sheds light on the characteristics of over 2,500 GSIs at higher education institutions across the U.S. This large sample provides a more detailed description of who these instructors are and what types of strategies they employ in teaching undergraduate courses. This research expands on prior studies and focuses on GSI characteristics that may predict their needs and wants for teaching support. For instance, findings exposed how career aspirations, the type of degree GSIs pursue, race, and gender impact the professional development needs of GSIs. Furthermore, findings relay how GSIs desire to be engaged with improving their teaching on campus. For instance, fellow GSIs were often utilized as support systems, while formal institutional programs were not as well utilized. These discoveries, amongst others, should guide institutions with GSIs in enhancing their professional development as teachers.

Table 1. Select Characteristics of Graduate Student Instructors

		Count	Percent (%)
Age	24 or younger	391	21.9
	25-26	346	19.4
	27-28	306	17.1
	29-32	410	22.9
	33 or older	335	18.7
Gender Identity	Man	761	42.1
	Woman	972	53.8
	Another gender identity	14	0.8
	I prefer not to respond	59	3.3
US Citizen	No	338	18.9
	Yes	1450	81.1
Racial/Ethnic Identification	Asian, Native Hawaiian, or Other Pacific Islander	235	13.0
	Black or African American	51	2.8
	Hispanic or Latino	50	2.8
	White	1255	69.5
	American Indian, Alaska Native, Other, Multiracial	103	5.7
	I prefer not to respond	113	6.3
Sexual Orientation	Heterosexual	1410	78.1
	Gay	78	4.3
	Lesbian	37	2.0
	Bisexual	73	4.0
	Another sexual orientation, please specify:	23	1.3
	Questioning or unsure	13	0.7
	I prefer not to respond	172	9.5
Degree Currently Pursued	Doctoral degree (Ph.D., Ed.D., etc.)	1413	78.4
	Professional degree (J.D., M.D., D.D.S., D.V.M., etc.)	7	0.4
	Master's degree (M.A., M.S., M.F.A., M.B.A., M.S.W., etc.)	379	21.0
	Other	3	0.2
Highest Degree Earned	Doctoral degree (Ph.D., Ed.D., etc.)	40	2.2
	Professional degree (J.D., M.D., D.D.S., D.V.M., etc.)	16	0.9
	Master's degree (M.A., M.S., M.F.A., M.B.A., M.S.W., etc.)	1092	60.4
	Bachelor's degree	660	36.5
Occupational Goal	College or university professor or instructor	1204	66.6
	Clinical research in private sector	62	3.4
	Research in nonprofit/government sector	151	8.4
	University researcher	115	6.4
	College administrator	17	0.9
	Precollege teaching position	23	1.3
	Other	235	13.0
		Mean	Std. Dev.
Years in Current Degree Program		2.73	1.48
Previous Years of Teaching Experience		2.58	2.23

Table 2. Select Characteristics of Courses Taught by Graduate Students

About how many of the undergraduate courses taught by GSIs include:		Percent (%)
A community-based project (service-learning)	None	82.7
	Some	10.7
	Most	3.5
	All	3.1
A living and learning component	None	76.1
	Some	13.5
	Most	6.4
	All	4.0
Research (data collection, analysis, etc.)	None	37.5
	Some	27.5
	Most	16.1
	All	18.8
An internship, co-op, clinical placement, or field experience	None	82.4
	Some	10.5
	Most	3.6
	All	3.5
Class level of students in selected course section	Lower division (mostly first-year students or sophomores)	51.9
	Upper division (mostly juniors or seniors)	42.6
	Other	5.5
Total number of students in selected course section	20 or fewer	25.4
	21-30	29.9
	31-40	10.5
	41-50	9.2
	51-100	15.6
	More than 100	9.5
Fulfills a general education requirement	No	23.7
	Yes	59.5
	I don't know	16.8
Format of selected course section	Classroom instruction on-campus	96.0
	Classroom instruction at an auxiliary location (satellite campus, rented facility, etc.)	.3
	Distance education (online, live or pre-recorded video or audio, correspondence, etc.)	1.3
	Combination of classroom instruction and distance education	2.4
Selected course section included writing assignments		72.4
Academic discipline of selected course section	Arts & Humanities	26.5
	Biological Sciences, Agriculture, & Natural Resources	9.5
	Physical Sciences, Mathematics, & Computer Science	18.0
	Social Sciences	16.4
	Business	2.2
	Communications, Media, & Public Relations	4.9
	Education	7.0
	Engineering	6.2
	Health Professions	4.4
	Social Service Professions	1.3
	Other disciplines	3.7

Table 3. Percent of Class Time Spent on Select Activities

Portion of Class Time	Lecture (%)	Discussion (%)	Small-group activities (%)	Student presentations or performances (%)
0%	4.1	8.7	21.3	45.6
1-9%	15.4	20.7	19.3	28.8
10-19%	16.9	22.3	19.7	14.2
20-29%	12.9	18.1	15.0	4.8
30-39%	10.2	12.7	9.5	2.8
40-49%	12.3	9.1	6.0	1.6
50-74%	18.7	5.7	5.3	1.3
75% or more	9.6	2.8	3.8	.9
	Independent student work (%)	Movies, videos, music, or other performances (%)	Assessing student learning (%)	Experiential activities (%)
0%	47.8	54.0	21.7	57.5
1-9%	24.6	30.2	48.2	11.3
10-19%	12.1	9.9	19.7	5.5
20-29%	6.4	3.0	5.6	5.0
30-39%	2.8	1.0	2.0	4.6
40-49%	1.9	.9	1.1	3.6
50-74%	2.8	.3	.8	5.9
75% or more	1.6	.7	.9	6.6

Table 4. Select Perceptions and Frequency of Participation in Teaching Professional Development Activities

How important is it to you that your institution assists you in the following areas?		
<i>1=Not important, 2=Somewhat important, 3=Important, 4=Very important</i>		
	Mean	Std. Dev.
Developing students' critical thinking or problem-solving skills*	3.35	.81
Creating a supportive learning environment*	3.34	.80
Assessing student learning ⁺	3.08	.85
Specifying learning outcomes ⁺	3.00	.90
Improving your interactions with students*	2.98	.91
Incorporating active learning strategies*	2.97	.90
Facilitating experiences with diversity*	2.88	.98
Using technology to improve student learning*	2.80	.94
Leading discussions ⁺	2.77	.99
Designing assignments or exams ⁺	2.77	.99
During the current school year, about how often have you done the following?		
<i>1=Never, 2=Sometimes, 3=Often, 4=Very often</i>		
	Mean	Std. Dev.
Discussed teaching issues with other graduate student instructors	2.81	.92
Consulted books, articles, or online resources to enhance your teaching	2.10	.93
Had a faculty or staff member observe your teaching and provide feedback	1.69	.72
Worked one-on-one with a faculty or staff member to help improve your teaching	1.65	.80
Attended a workshop or training session to enhance your teaching	1.58	.71
Visited an office or center that supports graduate student instructors	1.25	.55

Key: *Items are in the Teaching Support (TS) scale. ⁺Items are in the Assessment Support (AS) scale.

Table 5. Regression Coefficients and Significance for Select GSI Characteristics

	Teaching Support		Assessment Support		
	Std. β	Sig.	Std. β	Sig.	
(Constant)		.000		.000	
Age (continuous)	.079	.001	.035	.155	
Gender Identity					
(Woman as reference)	Men	-.165	.000	-.134	.000
	Another gender identity or prefers not to respond	.002	.943	-.030	.256
US citizen					
	Asian, Native Hawaiian, or Other Pacific Islander	-.009	.778	-.066	.040
	Black or African America	.086	.006	.078	.016
Racial/Ethnic Identification (White as reference)	Hispanic or Latino	.104	.000	.097	.000
	American Indian, Alaska Native, Other, and Multiracial	.064	.007	.040	.104
	I prefer not to respond	.061	.010	.037	.124
GSI pursuing doctoral degree (compared to pursuing Master's degree)		-.037	.160	-.006	.837
GSI with occupational goal of college or university teacher or instructor (compared to all other goals)		-.095	.000	-.084	.001
		.074	.003	-.010	.677
Institution #1		-.072	.005	-.042	.105
Institution #2		-.045	.073	-.006	.807
Institution #3		-.048	.080	-.026	.353
Institution #4		-.014	.551	-.014	.560
Institution #5		-.031	.253	.032	.240
Institution #6		.026	.293	.016	.526
Institution #7		-.096	.000	-.087	.002

References

- 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.
- Austin, A. E. & Wulff, D. H. (2004). Austin, A. E., & Wulff, D. H. (2004). The challenge to prepare the next generation of faculty. In D. H. Wulff & A. E. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 3–16). San Francisco, CA: Jossey-Bass Publishers.
- Boman, J.S. (2013). Graduate students teaching development: Evaluating the effectiveness of training in relation to graduate student characteristics. *Canadian Journal of Higher Education*, 43(1), 100-114.
- Boyer, E. L. (1996). The Scholarship of Engagement. *Journal of Public Service and Outreach*, 1(1), 11–20.
- Brownell, J. E., & Swaner, L. E. (2010). *Five high-impact practices: Research on learning outcomes, completion and quality*. Association of American Colleges and Universities.
- Carrell, L. J., & Willmington, S. C. (1996). A comparison of self-report and performance data in assessing speaking and listening competence. *Communication Reports*, 9(2), 185-191.
- 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.
- Civikly, J. M., & Hidalgo, R. (1992). TA training as professional mentoring. *Preparing teaching assistants for instructional roles: Supervising TAs in communication*, 209-213.
- Darling, A. L., & Dewey, M. L. (1990). Teaching assistant socialization: Communication with peer leaders about teaching and learning. *Teaching and Teacher Education*, 6(4), 315-326.

- Feezel, J. D., & Myers, S. A. (1997). Assessing graduate assistant teacher communication concerns. *Communication Quarterly*, 45(3), 110-124.
- Finley, A. P., & McNair, T. (2013). *Assessing Underserved Students' Engagement in High-Impact Practices*.
- Hardré, P. L., & Burris, A. O. (2012). What Contributes to Teaching Assistant Development: Differential Responses to Key Design Features. *Instructional Science: An International Journal Of The Learning Sciences*, 40(1), 93-118.
- Harris, G., Froman, J., & Surles, J. (2009). The professional development of graduate mathematics teaching assistants. *International Journal Of Mathematical Education In Science & Technology*, 40(1), 157-172. doi:10.1080/00207390802514493
- Kuh, G. D. (2008). *Excerpt from High-Impact Educational Practices: What They Are, Who Has Access to Them, and Why They Matter*. Association of American Colleges and Universities.
- Kuh, G. D., & Whitt, E. J. (1988). *The invisible tapestry: Culture in American colleges and universities*. ASHE-ERIC Higher Education Report No. 1. Washington, DC: Association for the Study of Higher Education.
- Luo, J., Bellows, L.H., & Grady, M.L. (2000). Classroom management issues for teaching assistants. *Research in Higher Education*, 41, 353–383.
- Luo, J., Grady, M.L., & Bellows, L. H. (2001). Instructional issues for teaching assistants. *Innovative Higher Education*, 25(3), 209-230.
- Meyers, S. A. (2011). Creating effective working relationships between faculty and graduate teaching assistants. In W. Buskist, & V. A. Benassi (Ed.) *Effective college and university teaching: Strategies and tactics for the new professoriate* (pp.9-16).SAGE Publications.

- Nelson Laird, T. F., Garver, A. K., & Niskodé-Dossett, A. S. (2011). Gender gaps in collegiate teaching style: Variations by course characteristics. *Research in Higher Education*, 52(3), 261-277.
- Nelson Laird, T. F., Schwarz, M. J., Shoup, R., & Kuh, G. D. (2005, May). Disciplinary Differences in Faculty Members' Emphasis on Deep Approaches to Learning. In Paper presented at the Annual Meeting of the Association for Institutional Research.
- Nyquist, J. D., & Wulff, D. H. (1996). *Working Effectively with Graduate Assistants*. Sage Publications, Inc., 2455 Teller Rd., Thousand Oaks, CA 91320.
- Park, C. (2004). The graduate teaching assistant (GTA): Lessons from North American experience. *Teaching in Higher Education*, 9(3), 349-361.
- Pike, G. R. (1995). The relationship between self reports of college experiences and achievement test scores. *Research in higher education*, 36(1), 1-21.
- Pike, G. R. (1996). Limitations of using students' self-reports of academic development as proxies for traditional achievement measures. *Research in higher education*, 37(1), 89-114.
- Plough, I. C., Briggs, S. L., & Van Bonn, S. (2010). A multi-method analysis of evaluation criteria used to assess the speaking proficiency of graduate student instructors. *Language Testing*.
- Prieto, L. R. (2001). The supervision of graduate teaching assistants: Theory, evidence, and practice. *The teaching assistant training handbook: How to prepare TAs for their responsibilities*, 103-129.
- Prieto, L. R., & Altmaier, E. M. (1994). The relationship of prior training and previous teaching

- experience to self-efficacy among graduate teaching assistants. *Research in Higher Education*, 35, 481–497.
- Prieto, L. R. (1999). Teaching Assistants' Preferences for Supervisory Style: Testing a Developmental Model of GTA Supervision. *Journal of Graduate Teaching Assistant Development*, 6(3), 111-18.
- Prieto, L.R., Yamokoski, C.A., & Meyers, S. A. (2007). Teaching assistant training and supervision: An examination of optimal delivery modes and skill emphasis. *Journal of Faculty Development*, 21(1), 33 - 43.
- Savage, M. P., & Sharpe, T. (1998). Demonstrating the Need for Formal Graduate Student Training In Effective Teaching Practices. *Physical Educator*, 55(3), 130.
- Sales, J., Comeau, D., Liddle, K., & Perrone, L. (2007). Preparing future faculty. *Journal of College Science Teaching*, 36(4), 24.
- Shannon, D. M., Twale, D. J., & Hancock, G. R. (1996). Use of instructional feedback and modification methods among university faculty. *Assessment and Evaluation in Higher Education*, 21(1), 41-53.
- Shannon, D., Twale, D., & Moore, G. (1998). TA teaching effectiveness: The impact of training and teaching experience. *The Journal of Higher Education*, 69(4), 440-466.
- Weidert, J. M., Wendorf, A. R., Gurung, R. A., & Filz, T. (2012). A survey of graduate and undergraduate teaching assistants. *College Teaching*, 60(3), 95-103.