Effectiveness of Undergraduate Teaching Assistants in First-Year Design Course

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Abstract

This complete research paper focuses on the effectiveness of Undergraduate Teaching Assistants (UGTAs) in a first-year college level design course. Engaging undergraduate students as undergraduate teaching assistants is a common practice in higher education. In a freshman level design course where creativity and open-ended problems are posed to students, we notice that our UGTAs are appreciated by students (from an end of semester survey) and have positive interactions. This study builds on previous work by investigating how and in what ways UGTAs are effective in the classroom. Through our study, we measured the perceived effectiveness of undergraduate teaching assistants (UGTAs) in the classroom using a survey and investigated what key strategies undergraduate teaching assistants use to impact the student experience using focus group data. The study followed a sequential explanatory mixed method format in which UGTAs teaching quality survey results were analyzed to find whether the UGTAs were valuable co-teachers in class. Qualitative data were collected in the form of in-depth focus group interviews to identify what made the students appreciate and value UGTAs in class and what it looks like to be effective in class. Quantitative data suggest that UGTAs are highly effective although student perception of the same UGTA varies across students and across sections. Qualitative data suggest four themes of highly effective UGTAs: they are easy to interact with, they are qualified, they immerse themselves in the work of their peers and they are overtly collegial with the instructor of the course.

Keywords

Undergraduate Teaching Assistant, First Year Student Learning Experience, Active Learning, Design Thinking

Introduction

Research suggests that undergraduate teaching assistants are considered valuable to the instructors and students. Deploying UGTAs in undergraduate classrooms motivates students and has been shown to increase student grades [1]. According to Filz and Gurung [2], UGTAs assist with many in-class activities such as taking attendance and tutoring students, answering student questions, mentoring students through successful completion of in-class assignments and act as a liaison between the instructor and the students. As established in Filz and Gurung [2], employing UGTAs in a course aids in improving overall perception of a course by students. UGTAs help to provide inclusion and maintain student engagement [3]. A study by Forbes, Malan, Pon-Barry, Reges and Sahami [3] also revealed that UGTAs meet the needs of faculty and benefit both students (by peer mentoring beginner students, providing 2 hours a week as on-duty helpers) and the UGTAs themselves (enhancing leadership qualities). To this point, McKeegan [4] shared that among students participating in a research methods course, a majority of the students (61%) utilized UGTAs and of this group, 81% rated the UGTA as either good or excellent. Training undergraduates can serve several pedagogical functions that benefit faculty (by supporting in classrooms), students (in their educational development), and the assistants themselves (by providing professional growth opportunities by enhancing confidence in their skills, consideration of teaching related career) [5]. UGTA classroom experience boosts personal maturity of UGTAs [6] while also improving essential communicating skills [7].

A variety of studies have investigated what UGTA characteristics or factors are important in explaining their effectiveness in the classroom. Filz and Gurung [2] conducted a survey of 142 students enrolled in a class (Introduction to Human Development / Introduction to Psychology class) that employed a UGTA. The intent of the study was to identify the top characteristics that make the UGTA stand out. The study identified the top three UGTA characteristics as helpful, accessible and qualified.

A study by Robinson and Collofello [8] talked about the UGTA program in Arizona State University and its success in freshman classrooms. The paper also reported that faculty teaching 200 to 400 level classrooms collaborate with UGTAs inside and outside classroom as the knowledge and personal experience of the UGTAs, the bring in the perspective of a peer-level undergraduate student.

Crowe, Ceresola and Silva [1] conducted a research study in four sections of a ‘quantitative research methods course’, where two sections had the benefit of having UGTAs and two sections did not. The study results indicated that, students in sections with UGTAs had better grades (C and higher) and performed better on half of the student learning outcomes, i.e.; students with UGTAs performed better in four of the eight student learning outcomes compared to the students of the other two sections without UGTAs

The above reviewed literature explored the importance of UGTAs in the classroom, while also identifying the key characteristics of UGTAs through student surveys. Our study aimed to understand, in practice, what it means to be effective in class through the eyes of students (e.g. what does it mean to be a helpful UGTA in-class? What does it mean to be a highly qualified

UGTA?) The study begins with a quantitative survey on UGTA efficacy to confirm that the research context includes effective UGTAs (if the UGTAs are not effective in the course from students' perspective, there is minimal value in conducting the study). Once the student survey on UGTAs revealed high or very high UGTA efficacy, the research team transitioned to unpacking the quantitative results through focus groups. The researchers wondered how and in what ways did the UGTAs engage with students so that they were considered, "helpful", "accessible" and "qualified". The research approach was driven by two motivations: first, UGTAs have a cost associated with searching, selecting, hiring, professionally developing and maintaining, and second, the research team wanted to optimize return on investment. The team hopes to use these findings to select the best fit UGTAs in the hiring process and to effectively provide professional development for them. Further, the team seeks to evaluate current UGTAs on the appropriate metrics - the kinds of measures that actually make a difference to students. Previous literature indicated effective UGTAs are "helpful, accessible and qualified" (for example), and the research team now seeks to understand what this actually means to students in the classroom.

Research Context

The Design Thinking course used as a context for inquiry is a required core college course taught at the undergraduate level at a large Midwestern University in the United States. There were 15 to 18 sections of the course and each section has 40 students. The objective of the course is to expose students to design thinking concepts and enable them to solve various design challenges. The pedagogical framework of the course is focused on collaborative learning in a project-based, active learning environment. Student teams participate in various activities in class designed to promote creative and innovative thinking. The major learning outcomes focus on 1) writing a narrowly focused problem statement addressing open-ended or ill-defined global challenges; 2) applying ethnographic methods to understand technological problems; 3) developing a search strategy, access technical data bases and evaluate results and source quality; 4) creating a technical report documenting results of the design process; 5) managing design projects, develop project timelines and negotiate individual responsibilities and accountability in the team environment; 6) applying strategies of ideation to develop novel and innovative solutions; and 7) prototyping solutions for purposes of design, testing and communication. Grouping strategies differ based on the project during the semester. There are three projects, two mini and one main project (capstone) in the course during the course of the semester. The mini project aims to help students explore their college major more deeply, so, students are teamed with peers that share the same or similar majors. The capstone project is situated within an Engineering Grand Challenge (NAE) [9], and while students are allowed to choose their own team members, they are grouped based on their similar project interests.

The instructors in the design thinking course follow a blended and flipped instructional approach, where all the class materials are shared with students before the start of the class through an online platform 'Blackboard' and students are expected to read the materials and come prepared for the class [10]. In class, the instructor and UGTA guide students through activities and discussions built upon the before class instructional material.

All UGTAs have successfully completed the design thinking course and are active in responding to student questions [11]. The instructors make sure that the UGTAs are familiar with course materials and expectations prior to each class meeting. The joint effort of the UGTA and instructor helps the students to understand and solve the complex design problems in class.

UGTA Selection Process

The employment process of the Undergraduate Teaching Assistants (UGTAs) for the 'Design Thinking' class follows a systematic approach that includes identifying a need for UGTAs, recruiting/identifying eligible candidates, interviewing, selection, training, and evaluation. Selection criteria for hiring a UGTA not only include their technical skillset and overall technological literacy, but they are also expected to have overall enthusiasm for learning, mentorship, and leadership. The hiring process includes a 30-minute interview with a course coordinator. After hiring, a coordinator reflects with the UGTAs regarding their efficacy and how they might improve on a weekly basis.

Research Methods and Data Collection

The study followed a sequential explanatory mixed method design with emphasis on the qualitative phase as showed in Fig 1. This approach was followed as it was necessary to understand in depth different perspectives of the topic under study [12]. The purpose of using an explanatory mixed methods design is to allow one dataset to build on the results from other data set. Here, students' perceptions about whether the UGTAs are valuable were collected through quantitative surveys. The survey research method was used as helps identify the perceptions of a large group of participants. The results of the quantitative study were helpful to conduct the qualitative phase, which was in-depth focus group interviews. Focus group interviews were preferred as this method helps students exchange viewpoints and bring to light a more in-depth understanding of the subject under study. The two main driving questions of the research study were:

Research Question 1: To what extent do students perceive that the UGTAs are effective at teaching?
Research Question 2: How and in what ways are UGTAs effective in the classroom?

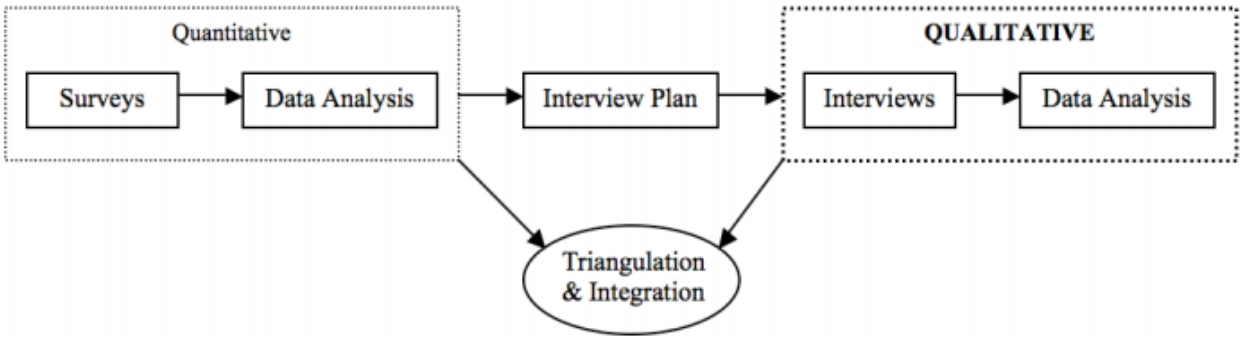

Fig 1: Sequential Explanatory Mixed Methods Design (Emphasis on Qualitative Phase)[13]

Quantitative Phase

In the quantitative phase of the study, an online survey was used to gain access to students' perceptions of Undergraduate Teaching Assistants. An online survey was administered to all students enrolled in the Design Thinking course at the end of conclusion of the Fall 2019 semester as part of the last course meeting. The survey consisted of 21 questions (See Appendix A: survey questions), of which, 17 questions were adapted without any modifications from Filz and Gurung [2]. Four questions were modified to fit the class setting, for example; question 12 was initially 'My undergraduate Teaching Assistant provides feedback on classwork' was modified to 'My undergraduate teaching assistant provides useful guidance in class (e.g., answers students' questions, and gives advice on completing exercises) to accurately reflect our specific learning environment. A conventional five-point Likert scale was used for student responses where possible responses were: Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree and Strongly Agree. Four hundred and seventy-two students responded to the survey questions out of 711 total students and data were analyzed to investigate the effectiveness of the UGTAs.

Qualitative Phase

The qualitative study followed a phenomenological approach and the phenomenon under study was to understand in what ways the UGTAs were valuable to the students in class. In the qualitative phase of the study, we used in-depth semi-structured focus group interviews to help understand why certain characteristics of UGTAs were predominant and how these UGTA approaches helped improve students' overall experience in the classroom. Focus group interviews were selected as this method allowed researchers to gain an understanding of how students think about a certain subject and to obtain insights into their personal life situation [14]. For the focus group interviews, we invited all students currently enrolled in the course to sign up for one of five focus group interviews that were held near the conclusion of the semester. We restricted the number of participants per focus group to a maximum of 10; to gain a variety of perspectives and at the same time, not to become disorderly or fragmented [15]. Each focus group was conducted for an hour by the researchers and it was in the form of semi-structured interviews with the help of guiding questions. The semi-structured format aided in soliciting open-ended responses and then conducting the interview based on the insights shared by responses to get a better understanding of the subject being discussed. Focus group interviews were audio recorded with student's permission and voices were de-identified with audio distortion before analyzing the data.

The interview protocol was grounded in the quantitative results from the first phase [12]. The purpose of the interview was to understand in what ways were the students finding the UGTAs valuable and effective in class. The interview protocol had three open-ended guiding questions and the process was pilot tested with a small group prior to implementation. The three guiding questions were created based on the results of the survey conducted in the quantitative phase.

Guiding questions:

1. Your data suggest that UGTAs are effective co-teachers in the classroom. What makes them effective? Why?

2. Some students felt the UGTAs were more effective than other students and we were interested in the difference. Why do you think it is?
3. What should UGTAs do to be more effective? Why?

The de-identified focus group interview data were shared with the researchers and then imported into NVIVO 12 software for coding and analysis. Initially the researchers reviewed and coded the files separately and independently. Then the four researchers discussed the different codes collaboratively and negotiated to consensus.

This process of coding and discussion was repeated multiple times until the researchers unanimously agreed and converged on a set of themes that represented the overall voice of the students. A code book was created with the list of emergent themes and its description. As an additional step of coding, the 5 files were coded again with the emergent themes (shared through the code book) by two researchers separately. This analysis was then reviewed by the other two researchers to ensure the emergent themes were credible.

As mentioned by Creswell and Poth [16], the accuracy and believability of a qualitative work are described in terms of the trustworthiness and this was ensured in this study by;

1. Classroom Familiarity- Three out of four researchers were also part of the 'Design Thinking' course instructional team. This helped the researchers to bring the connection between interview responses and in-class observations. During an interview when students talked about different approaches that UGTA followed, it was easy to reflect on the in-class observation and understand exactly what the students interpreted. Though two of the three researchers were instructors, however, due to the large number of sections offered, only a few students in each focus group were actually students of the researcher.

2. Triangulation- Throughout the coding process, the researchers met regularly and iteratively discussed the findings and themes that emerged and also ensured that nothing was missed. Having the fourth researcher not a part of the course instructional team, also added value of having a different perspective to each stage of the study, thereby making sure nothing was misinterpreted during the study.

The classroom familiarity and triangulation helped maintain trustworthiness of this study. Also, this is in accordance with Creswell and Poth [16] standard, that at least two out of the eight strategies need to be followed to maintain trustworthiness.

Results and Discussion

Quantitative Results

Descriptive statistics were used to answer our first research question: Are the UGTAs in a freshman design course effective at teaching? The descriptive statistics revealed (Table 1) that the mean rating for the characteristics ranged between 'Agree (4)' to 'Strongly Agree (5) on a 1-5 scale (where 1 was strongly disagree and 5 was strongly agree)with the exception of 'Accessible Outside the Class'. The results from the survey demonstrated that students perceived

the efficacy of the UGTAs as effective or highly effective. The 'accessible outside the class' had a mean lower than other characteristics, which is due to the fact that UGTAs are not expected to provide assistance to students outside of the classroom. We also found that the standard deviation for all the characteristics ranged between 0.71 to 0.99. It is important to note that the quantitative results were used as a measure to answer the main research question RQ2 and to validate that we have a healthy environment to conduct the investigation.

Table 1: Descriptive statistics representing the characteristics of the UGTA

Characteristics	**Mean (1-5)**	**Standard Deviation**
Approachable	4.60	0.71
Confident	4.52	0.76
Enthusiastic	4.53	0.78
Effective Communicator	4.48	0.81
Encouraging and Caring	4.45	0.78
Accessible Outside the class	3.96	0.99
Good Listener	4.48	0.80
Positive Attitude	4.57	0.73
Humble	4.47	0.78
Knowledgeable	4.49	0.76
Professional	4.54	0.76
Provides Useful Guidance	4.50	0.78
Good Rapport	4.35	0.84

Respectful	4.60	0.73
Technologically Literate	4.49	0.79
Personable	4.48	0.75
Responsive	4.45	0.79
Prepared	4.53	0.76
Helpful	4.52	0.78
Accessible in class	4.40	0.83
Qualified	4.55	0.77

Qualitative Results

From the quantitative results, we concluded that the first-year students enrolled in the 'Design Thinking' course in Fall 2019 considered the UGTAs as valuable and effective co-teachers in the class, which helped us in identifying that we are conducting the study in an appropriate healthy environment. These data lead us to investigate our second research question- how and in what ways UGTAs were effective. How and why did the students feel they were so effective at teaching. In analyzing the qualitative focus group data, four emergent themes were:

1. Ease of Interaction
2. Qualified
3. Immersed
4. Collegial

Theme 1: Ease of Interaction

The UGTAs of the 'Design Thinking' course were highly effective because the students felt that they could talk with the UGTAs freely. This was one of the most commonly mentioned benefits of having a UGTA. The interaction was not always professional or course related, the social talk (about a basketball game or trending news on campus) before the start of a class was also considered an ice breaker between the UGTA and students and has a positive effect on the classroom environment. Some of the students' commented on how the ease of interaction motivated them and was mentioned as: "When we had a quick question or easy question it was easier to ask the UGTA as we had a personal connection with him and it was easy and comfortable to ask him." The freedom of being able to call the UGTA anytime during the class

and ask any simple or "silly questions" made the students feel they could approach the UGTA. As one student described it, "Our TA was very approachable. You can just go and call [ask] the UGTA anytime and even the students who didn't feel like being in the class, started enjoying the course when the TA started relating with them and that cheered them up". Another student mentioned, "We ran over to the TA at random times (while we were trying to do the wiring for our project and did not know where to find the equipment) and even though it was not actually the time of TA-ing [outside of class time], he did not get annoyed and on the other hand really helped us." The ease of interaction also made the students comfortable to approach the UGTA anytime during the semester to get clarity on any aspect of the course especially if the students were unsure of how to move forward on a project and shy about disclosing their insecurity to the instructor who was also evaluating their work.

Theme 2: Qualified

Students felt that the UGTAs need to be knowledgeable and confident about the course which gives students the confidence to approach and ask questions of them. One of the students commented:

> The UGTA knew what she was talking about all the time and sometimes when our professor was explaining something (where it was our group, professor and the UGTA), the professor would explain something in a certain way and the UGTA would know if we didn't fully understand something. So, the UGTA would explain it again from a different perspective and it really helped.

Another student commented that, "She [the UGTA] knew what was graded and looked for (in the assignments) and this helped us in approaching them in case of any questions". Students were really happy to get two different perspectives and they felt that it would help reduce confusion compared to classes where only instructor was there. A student articulated:

> It was nice seeing it that the UGTA said [explained] from a different perspective. But when you don't have a TA, you can't ask someone from class (other than in your group) as it is a 50-minute class and everyone is busy, also each time we don't have access to the professor to get his opinion [in class] as much as we want to- so it is nice to have two people to talk to and get different perspectives.

One of the main expectations in the process of selecting UGTA for the course was to ensure they were familiar with the course. All the UGTAs were former students who took the 'Design Thinking' course and were familiar with the materials and process of the class. Students were able to see that the UGTAs had knowledge about assignments and provided a rationale when giving feedback.

Theme 3: Immersed

Our highly effective UGTAs are viewed as always on. They are constantly moving from group to group and never sitting in the background on their phones or otherwise idle. Students perceive them as constantly engaged with the class. Highly effective UGTAs actively went to each group and asked if they had any questions or concerns. If they didn't have any questions, the UGTA would join the group and work with them to ensure they have understood the concepts of the in-class work for the day. In most cases, the UGTA knew what the groups were working on and this was recognized by students:

> It is really important for the TA to do what the professor tells like, but also to go out [the TA should and be able to connect with groups and have an idea on what each group's project are and in which stage of the process they are in without asking the groups] and get your own perspective about where the groups are in the project.

Students appreciated the extra effort and engagement the UGTAs were taking to help the groups during a roadblock in the project and this was articulated by one student as, "Our TA was always there to help or like push us forward when we were stuck on something". Another student comment was "If my group were stuck on something or if we are struggling developing ideas, our TA led us in the right direction and she said it was OK to be stuck". It seemed that students got motivated when UGTA knew about their projects and where or how they were struggling.

Theme 4: Collegial

Students were noticing the interactions between their instructor and UGTA primarily before class and occasionally during class. They felt that seeing the positive interactions between the instructor and UGTA in the beginning of the class made them comfortable, confident and able to trust the UGTA. This was articulated by one of the students as, "At the beginning of our class, I usually saw the TA and instructor talk and I felt that it was to get on the same page". and one other student mentioned, "The instructor and UGTA was talking and laughing before class and this created a good positive environment". It could be understood from the interviews that the direct interaction between the instructor and UGTA in front of the students made a difference for students and they did not care whether the interaction was course related or not. Some students also felt that the interaction was a sign of instructor allocating responsibility to the UGTA and this made them feel more able to trust feedback provided by the UGTA. This was articulated by students as, "After interaction, both [the instructor and the UGTA] provided the same information [or] My professor and TA was pretty intentional in switching [between teams] to interact with everyone". Through the interaction between the UGTA and instructor, the students were able to see the discussions happening between UGTA and instructor and that they are on the same page. A positive classroom environment could be created by letting students see that the course instructor and UGTA were more like colleagues, where they shared the information and both of them were co-instructors.

Conclusions

The main focus of the study was to understand the effectiveness of UGTAs in practice. The four themes that emerged while analyzing the effectiveness of UGTAs were 1) Ease of interaction 2) Qualified 3) Immersed and 4) Collegial. These four emerged themes tie well with the existing literature on UGTAs. For example, the theme 'collegiality' fits well with the study by Robin and Collofello [8] where faculty collaborate with UGTAs inside and outside class to connect well with the students in their class. The theme 'qualified' can be linked directly with the literature [2], where the literature talks about qualified as one of the most important characteristics of the UGTA as perceived by students. Also, there are instances in the UGTA literature that talks about UGTAs providing support in the classroom which is being qualified to provide support to faculty and students by offering qualified and knowledgeable response to the students [5]. The quantitative data tells us that the UGTAs are effective co-teachers in class as supported by

literature [4] and that there are differences between students in how they perceive the effectiveness (between effective and highly effective) of UGTAs which is consistent with previous literature. The qualitative data helped to understand in practice what having an effective/highly effective UGTA looks like in class and why there may be differences across respondents about the extent to which the UGTAs are effective. The results also helped in understanding why there were differences in how students felt about UGTA effectiveness, i.e.; why some students felt UGTA to be highly effective than others who felt UGTAs as effective. The other insight from the qualitative study was that there were also differences in the way students perceived the same UGTA teaching in different sections. For example, one UGTA paired with two different instructors, teaching the same course in the same semester was perceived by the students differently. This could also be seen in the themes that emerged during the study such as, 'ease of interaction' theme where the majority of students were feeling comfortable in talking with the UGTAs, but there were other students who didn't talk much with the UGTA's even though the UGTA initiated an interaction. Students who did not choose to interact with the UGTA may have helped explain the standard deviation in the quantitative data. Related to the 'qualified' theme, when students had questions beyond the expertise and knowledge of the UGTA (for example, if a student from aviation major had a question like "Where are the possible observation location in the airport for the assignment" to a non-aviation major UGTA), the UGTAs would always consult with the instructor before providing answers to the students. These students may have felt that the UGTA was not qualified enough and ranked them less effective as compared to other students. In considering the theme 'immersion', at times the UGTA and instructor would divide the room and each took a smaller group for separate instruction. It may have been these kinds of pedagogical approaches that reduced some students' interactions with the UGTA which might account for differences in perspectives across students. The fourth theme, 'collegiality' was used to describe the positive interaction between UGTA and instructor. If some students arrived late or never paid attention to how the UGTA interacted with the instructor, they may not have noticed the subtle interactions between the two as they prepared for the class session.

The student survey was conducted during the end of semester without any incentives and the focus group interviews were conducted during the dead week (the week before university final examinations) with free pizza and extra credit for participation. There were 66% students who responded to surveys and 50 students who came for the focus group interviews which is a very good sample for both quantitative and qualitative studies. Still the research team consider this as a limitation that the voice of 33% students were not included as they did not respond to the survey and also if the focus group interviews were conducted before the dead week would have increased the number of participants for the study.

Recommendations

Taking these discoveries into consideration, during the UGTA selection and training process that happens every semester, we would encourage the UGTAs to go and talk with students and interact with them even if the students are not initiating any interaction. The UGTAs should also be asked to engage with each team of students and immerse themselves to understand what they are working on which may provide a context later as to how they can help students better understand and relate to the process. UGTAs should be given opportunities in class to discuss

their ‘Design Thinking’ course experience and relate with students about their projects and assignments what they struggled as former students in the course. Developing this practice may help students to be motivated and value the course more by developing a good relationship with the UGTA. Based on our findings, we suggest UGTAs not engage in evaluating student work so that students are comfortable sharing their struggles without fear of biasing evaluation. UGTAs should be given opportunities in class to share their course experience and stories where they struggled in the class. This would help students see that the UGTAs are knowledgeable and also comfortable in asking questions. UGTAs should be reminded that they should go and sit with students/groups even in situations where there are no questions asked to get involved with the project and provide constructive feedback. Even though much of the collegiality happens before the actual class, it is important for the students to see the interaction between instructor and UGTA. UGTAs and instructors should interact in the beginning and in between classes to give students the feel that both of them are on the same page.

Future Research

Results of the study indicate that the Undergraduate Teaching Assistants are valuable co-teachers in courses such as design thinking where active learning in-class activities and discussions are key components. Through our study, we recommend other universities to use undergraduate students who are qualified and prepare them based on the themes discussed to enhance students' classroom experience.

As future work, we plan to use the results and discoveries from the study to better recruit UGTAs and strengthen the UGTA involvement in the classroom and thereby potentially improving students course experience. After recognizing how students felt about UGTAs being accessible outside class, a future study could investigate the effectiveness of UGTAs outside class availability through office hours on students. In order to mitigate the limitation of our focus group sample potentially not being representative of the entire population, a future study could be conducted where the focus group would be held in-class during class time without the instructor or UGTA present.

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Appendix A: Survey Questions

The next 21 questions identify qualities possessed by successful undergraduate teaching assistants, and the behaviors that define them. Please choose the answer that best reflects your level of agreement with each statement.

Answers / Scale

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Questions

1. My Tech 120 undergraduate teaching assistant is approachable (e.g., smiles, invites questions, and responds respectfully to student comments).
2. My Tech 120 undergraduate teaching assistant is confident (e.g., speaks clearly, makes eye contact, and answers questions correctly).
3. My Tech 120 undergraduate teaching assistant is enthusiastic about the course (e.g., smiles during class, makes class activities interesting, uses gestures and expressions of emotion to emphasize important points, and arrives on time for class).
4. My Tech 120 undergraduate teaching assistant is an effective communicator (e.g., speaks clearly, speaks at an appropriate volume, uses precise language, and provides clear/compelling examples).
5. My Tech 120 undergraduate teaching assistant encourages and cares for students (e.g., provides praise for good work, helps students who need it, and knows student names).
6. My Tech 120 undergraduate teaching assistant is accessible outside the classroom (e.g., provides assistance outside of the classroom, and responds to email in a timely fashion).
7. My Tech 120 undergraduate teaching assistant is a good listener (e.g., doesn't interrupt students while they are talking, maintains eye contact, and asks questions about points that students are making).
8. My Tech 120 undergraduate teaching assistant has a positive attitude (e.g., makes the course enjoyable, laughs with students, and helps prevent students from giving up when frustrated).
9. My Tech 120 undergraduate teaching assistant is humble (e.g., admits mistakes, does not brag, and does not take credit for others' successes).
10. My Tech 120 undergraduate teaching assistant is knowledgeable about the course material (e.g., easily answers students' questions, does not read straight from the book or notes, and uses clear and understandable examples).
11. My Tech 120 undergraduate teaching assistant is professional (e.g., conducts themselves appropriately, attire is neat and clean, proper language is employed, and profanity is never used).

12. My Tech 120 undergraduate teaching assistant provides useful guidance in class (e.g., answers students' questions, and gives advice on completing exercises).
13. My Tech 120 undergraduate teaching assistant has a good rapport with students (e.g., makes students laugh through jokes and funny stories, initiates and maintains class discussions, knows student names, and interacts with students before and after class).
14. My Tech 120 undergraduate teaching assistant is respectful (e.g., is polite to students, does not interrupt students while they are talking, does not humiliate or embarrass students in class, and does not talk down to students).
15. My Tech 120 undergraduate teaching assistant is technologically literate (e.g., proficient in the software used in the course, and can assist students with submission issues).
16. My Tech 120 undergraduate teaching assistant is personable (e.g., talks to students before/after class, smiles).
17. My Tech 120 undergraduate teaching assistant is responsive (e.g., makes sure students understand material before moving to new material, repeats information when necessary, and asks questions to check student understanding).
18. My Tech 120 undergraduate teaching assistant is prepared (e.g., brings necessary materials to class, is never late for class, and understands the day's agenda).
19. My Tech 120 undergraduate teaching assistant is helpful.
20. My Tech 120 undergraduate teaching assistant is accessible.
21. My Tech 120 undergraduate teaching assistant is qualified.