Preparing Future Faculty to More Inclusively Teach Autistic College Students: Examining an Inclusive Teaching Professional Development Course

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As higher education institutions see increased rates of autistic college students, faculty members are prompted to work more intentionally in enhancing their teaching practices' inclusivity. Future faculty (e.g., graduate students and postdocs who have teaching aspirations) are well positioned to engage in professional development that best prepares them for teaching a wide variety of diverse student populations. This mixed methods evaluation study examines how an inclusive teaching course, designed for future faculty and utilizing principles of Universal Design (UD), influenced their knowledge of and readiness to teach autistic college students. Through completing a unit on autism, future faculty illustrated their enhanced comfort and preparation in teaching autistic college students, as well as their familiarity with autism. Participants also demonstrated particular examples of how to use UD principles to adapt their teaching practices, across a wide array of classroom contexts, which will not only better serve autistic students, but also students broadly.

Higher education institutions are experiencing increased enrollments of autistic college students (Snyder et al., 2016). Shattuck et al. (2012) reported that roughly one in three autistic high school graduates enroll in any two-year or four-year postsecondary education institution. White et al. (2011) estimated that up to approximately two percent of college students may meet the criteria for autism. Rates may be higher, given that these statistics are outdated, and recent reports found one in 59 children are now diagnosed with autism (Baio et al., 2018). Autistic students' rising college enrollment represents an opportunity for faculty to bolster students' interests and strengths, though many instructors are ill prepared to teach them (Austin & Peña, 2017).

Additionally, much of the research on autistic college students centers on students' accommodations or struggles (e.g., Dymond et al., 2017), which is concerning due to deficit-based perspectives that such articles inadvertently reinforce. As autistic individuals are continually "othered" across society, including on college websites (Nachman & Brown, 2020), imbalanced power dynamics between the research and researched are perpetuated. Newman et al. (2011) reported that autistic college students experience among the lowest postsecondary completion rates among students with disabilities (17.5%); the only disabilities with completion rates lower than autism are emotional disturbance (15.2%) and mental retardation (6.5%). Faculty must be equipped with appropriate training to meet autistic students' needs and enhance their chances of reaching their college objectives.

Future faculty, including graduate students and postdocs with aspirations of becoming college faculty, can be well positioned to teach diverse student populations through engaging in professional development. Scholarship on future faculty professional development exists in limited supply (e.g., O'Meara & Jaeger, 2007; Witman & Richlin, 2007) and commonly laments the lack of professional development available to graduate students via their assistantships (Austin, 2002). An evaluation of Indiana University's future faculty program showed that participants demonstrated higher levels of competence; however, the program did not address teaching diverse student groups (Wurgler et al., 2014). Thus, a gap exists, as no peer-reviewed work has centered on professional development programming catered to prepare *future faculty* in teaching autistic college students.

The purpose of this mixed methods evaluation research study is to determine how future faculty members across disciplines, upon completing an inclusive teaching professional development course unit on autism, understand how to best teach autistic college students. Through providing future faculty with programming on autism in higher education and applying Universal Design (UD) principles, the objective of this autism unit was to enhance their comfort and preparation in teaching autistic students, as well as boost their knowledge on autism in higher education.

Literature Review

I drew on two lines of literature – autistic college students and faculty perceptions of autism – to inform the development of both the course unit I developed and the study I conducted. Through grounding my curriculum and research in this literature, I reflected on, and enabled students to reflect on, their conceptualizations of autism in higher education.

Autistic College Students

Much literature has emerged on autistic college students' classroom experiences, particularly useful in illuminating the issues students face when researchers directly involve them as participants (e.g., Cox et al., 2017; Hotez et al., 2018; Miller et al., 2020). Engaging autistic students in the research process is important

since scholarship often examines perceptions of common autistic student *traits*, such as having challenges with social skills and communication, and being introverted (Wood & Freeth, 2016). Though studies tend to address the challenges that autistic students face in classrooms, including reconciling group work dynamics (Knott & Taylor, 2014; Van Hees et al., 2015), some research prioritizes autistic students' talents and class participation (e.g., Gobbo & Shmulsky, 2014). Faculty must account for how autistic college students uniquely learn and process information, and work to support their strengths and interests.

Faculty Perceptions of Autism

While existent studies have covered how faculty members teach college students with disabilities more generally (e.g., Sniatecki et al., 2015), or perceive autistic students alongside students with intellectual disabilities (e.g., Gibbons et al., 2015), minimal scholarship has solely addressed faculty members' interpretations of and reactions to having autistic college students in their courses (Austin & Peña, 2017; Gobbo & Shmulsky, 2014). A systematic search of peer-reviewed journal articles on this specific topic yielded only the articles cited in this study, though more scholarship has been published since I began conducting this study (e.g., Shmulsky et al., 2019; Zeedyk et al., 2019). These studies described how faculty treatment of autistic college students is closely tethered to faculty familiarity with autism, as well as awareness of autistic students in their classes. Austin and Peña (2017) recognized that faculty who possessed personal connections to individuals with disabilities, prioritized social justice issues, and saw the full capacity of autistic students in meeting their high expectations were considered exceptional in teaching this student population. Gobbo and Shmulsky (2014) noted how faculty who teach autistic students aim to offer structure and consistency that support their interests, as well as pay close attention to students' emotions to reduce anxiety and stress.

Conceptual Framework

Universal Design, initially conceptualized by Mace (1985) and expanded on by scholars at the University of North Carolina (Center for Universal Design, 1997), played a pivotal role in both designing the autism unit under study and guiding the overall study design. UD encompasses seven principles: (a) equitable use; (b) flexibility in use; (c) simple and intuitive; (d) perceptible information; (e) tolerance for error; (f) low physical effort; and (g) size and space for approach and use (Center for Universal Design, 1997). Universal Design for Instruction (UDI) adds two more core principles:

community of learners and instructional climate (Scott et al., 2001). Each principle is detailed in Table 1 to illustrate how they guided the study.

While some scholarship has examined how instituting UD principles can positively support autistic college students, they have yet to be based on empirical evidence (e.g., Burgstahler & Russo-Gleicher, 2015; Taylor & Colvin, 2013) and do not involve faculty perspectives (Gillespie-Lynch et al., 2017). We cannot examine the efficacy of UD practices if limited or no data exist. However, scholars are beginning to recommend using Universal Design for Learning (UDL) – another subset of UD – in the professional development of teaching autistic college students (e.g., LeGary, 2017).

Method

In this mixed methods evaluation study, my research questions aimed to understand how a course unit influenced particular variables (detailed below) in training future faculty to teach autistic college students. In particular, my research questions were fourfold:

RQ1) How do future faculty describe characteristics of autistic college students?

RQ2) How do future faculty describe their teaching techniques and incorporate Universal Design principles in planning to teach autistic college students?

RQ3) How do future faculty self-report their levels of comfort, knowledge, and preparation in teaching autistic college students?

RQ4) How do future faculty perceive the contributions of course unit activities in promoting their understandings of autistic college students?

Study Setting

This study is situated within an online, synchronous nine-week inclusive teaching course that I co-taught in Fall 2017. The course, belonging to a professional development network for faculty-aspiring individuals that draws on Scholarship of Teaching and Learning (SoTL) principles, relied on Blackboard Collaborate for class meetings and discussions. Utilizing a live video feed, chat boxes, and a virtual whiteboard, Blackboard Collaborate offers students multiple means of engagement, a UDL hallmark (Rose et al., 2006). I designed the autism unit, encompassing one week of the course (two hours in class and roughly two hours out of class) to emphasize equity, inclusivity, and community. These standards are also aligned with UD principles (Scott et al., 2001).

Several course unit activities worked to inform participants' understandings of autism. First, before the unit took place, I shared with participants a PowerPoint featuring audio and a transcript – demonstrating UD principles – to accomplish the following: explain autistic

Table 1

Use of Universal Design for Instruction Principles in Course Unit

Principle	Example	Activity/Course Component
Equitable use	Developing class rules at beginning of the course to ensure equitable and inclusive practices	Class Rules
Flexible use	Allowing students to watch video and presentation, and read the journal article, at their own pace	Presentation, Video, Journal Article
Simple and intuitive	Featuring exact steps of how to complete the vignette activity, with directions listed on the screen	Vignettes
Perceptible information	Offering a transcript for the PowerPoint	Presentation
Tolerance for error	Assuring students that there is no *one* way or *correct* way to resolve a challenging situation	Vignettes
Low physical effort	Completing activities on the computer	All
Size and space	Familiarizing students with how to use BlackBoard Collaborate at the beginning of the class	All
Community of learners	Utilizing breakout groups/rooms to inspire community	Vignettes
Instructional climate	Featuring and discussing a class diversity statement attending to students' various identities, experiences, and ways of learning	Syllabus

characteristics; show how autistic students navigate college; and orient them with UD principles that align with teaching autistic college students. I also shared a university-produced video featuring faculty, staff, and autistic college students talking about best supporting autistic students' needs and strengths. Finally, I offered an autism Q&A session. After the lecture, I shared with participants the Austin and Peña (2017) article due to its insights on teaching strategies that exemplar faculty members practice with autistic college students. I structured the unit to provide students with opportunities to both showcase how UD principles can be used in teaching college courses and directly engage them in programming reflecting each core standard.

Participants

Participants included future faculty, such as graduate students, postdocs, and instructional staff, who enrolled as course students. I also refer to future faculty as *students* and *participants*. Given the nature of the study, participants embodied a convenience sample (Teddlie & Tashakkori, 2009), though it was not mandatory for students to participate in the study for course credit. Additionally, this represented a purposive sample, in that I wanted to examine the perspectives of individuals with faculty aspirations and prioritize professional development (Teddlie & Tashakkori, 2009). Participants' range of identities demonstrated demographic diversity (see Table 2). Among the 22 students enrolled in the course, 14 consented to study participation and completed the initial pre-unit survey. Most students who participated in interviews selected their own pseudonyms.

Given the nature of the instructor-student relationship between me and the participants, students were not required to participate in the study, as they possessed a choice in having their answers to pre-unit survey questions be used for study purposes. Survey data was captured via Qualtrics. In my dual role as a course instructor and researcher, I was not familiar with who participated in the study until after grades were assigned to students. Likewise, I did not know who consented to study participation and agreed to participate in interviews until my Principal Investigator (PI) provided these details following assignments of grades. The PI translated the surveys to the University of Wisconsin's securely-protected Box storage platform. IRB approval for this study was obtained by the University of Wisconsin in Fall 2017.

Table 2
Participant Demographics

| Name	Gender	Race/Ethnicity	Educational Status	Field of Study	Interviewed?
Amy	Female	Hispanic/Latino	Post PhD Professional	Engineering	Yes
Ashley	Female	White	Doctoral Student	Social sciences	Yes
Dante	Male	White	Staff w/ PhD	Education	Yes
Drew	Male	White	Postdoc	Biological sciences	No
Eden	Female	Hispanic/Latino	Doctoral Student	Biological sciences	No
Faith	Female	White	Doctoral Student	Social sciences	No
Greg	Male	White	Doctoral Student	Physical sciences	Yes
Johnson	Male	Asian	Visiting Faculty	Education	Yes
Justin	Male	Did not answer	Doctoral Student	Social sciences	No
Key	Female	Black/African American	Doctoral Student	Biological sciences	Yes
Marie	Female	White	Doctoral Student	Social sciences	Yes
Ryan	Male	White	Recent Graduate	Physical sciences	No
Sam	Female	White	Postdoc	Social sciences	Yes
Tara	Female	White	Doctoral Student	Social sciences	No

Mixed Methods Research Design

I determined that utilizing a mixed methods evaluation approach would be apropos in addressing the complexities of this study that both determines the autism unit's efficacy and its impact in helping future faculty understand how to teach autistic college students (Plano Clark & Ivankova, 2016). Among the 30 between-strategies mixed methods data collection combinations illustrated in Teddlie and Tashakkori (2009), this study is most closely aligned with utilizing two forms of data collection strategies: questionnaires (surveys) and interviews. The specific timeline of activities and elements of data collection are illustrated in Figure 1. I also engaged in within-strategy mixed methods data collection by obtaining qualitative and quantitative information from the same surveys (Bickman & Rog, 2008). Since I sought participants to indicate their attitudes about a particular topic via both Likert-scale questions and open-ended questions, I gathered and analyzed rich information across qualitative and quantitative strands (Bickman & Rog, 2008).

Quantitative Phase

Data Collection. I distributed a Qualtrics-based mixed methods survey to course students via email at three points to measure the evolution of how future faculty described autistic college students (Teddlie & Tashakkori, 2009). These include the week leading up to the autism unit (pre-unit survey), the week following

Figure 1
Procedural Diagram
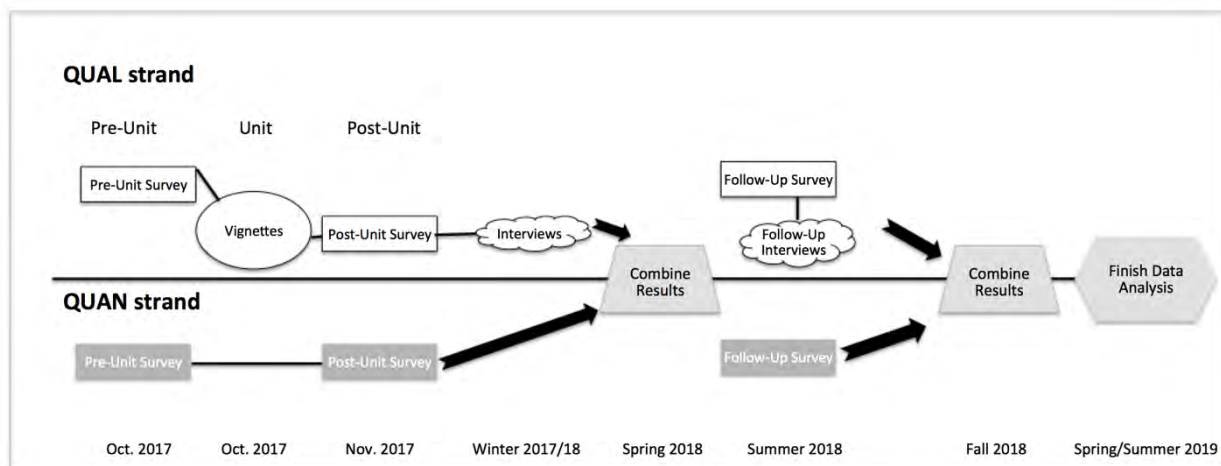
Table 3

Participants' Self-Reported Comfort, Preparation, and Knowledge

Participant	Pre-Unit Survey			Post-Unit Survey			Follow-Up Survey		
	Comfort	Preparation	Knowledge	Comfort	Preparation	Knowledge	Comfort	Preparation	Knowledge
Amy	3	1	2	—	—	—	—	—	—
Ashley	1	6	4	—	—	—	6	6	4
Dante	3	3	2	6	6	3	6	6	3
Drew	7	6	3	—	—	—	—	—	—
Eden	4	2	2	6	5	2	—	—	—
Faith	6	5	3	—	—	—	—	—	—
Greg	4	4	2	6	5	3	6	6	3
Johnson	3	2	2	—	—	—	—	—	—
Justin	5	2	3	—	—	—	—	—	—
Key	5	3	2	—	—	—	—	—	—
Marie	6	2	3	6	6	3	7	6	4
Ryan	4	3	1	6	5	3	—	—	—
Sam	3	3	3	6	5	4	6	6	3
Tara	4	2	1	—	—	—	—	—	—
Mean	4.14	3.14	2.36	6.00	5.33	3.00	6.20	6.00	3.40

Note. For *comfort* and *preparation*, items existed on a 7-point Likert scale, with "1" representing "Extremely un(comfortable/prepared)" and "7" representing "Extremely (comfortable/prepared)." For *knowledge*, the item existed on a 5-point Likert scale, with "1" meaning "Not knowledgeable at all" and "5" meaning "Extremely knowledgeable." The symbol "—" means the participant did not take the survey.

Table 4

Participants' Self-Reported Learning Regarding Course Unit Activities (Post-Unit Survey)

Participant	Watching the video	Listening to the lecture	Participating in the vignettes	Reading the journal article
Amy	—	—	—	—
Ashley	—	—	—	—
Dante	5	4	4	5
Drew	—	—	—	—
Eden	4	5	4	4
Faith	—	—	—	—
Greg	3	4	4	4
Johnson	—	—	—	—
Justin	—	—	—	—
Key	—	—	—	—
Marie	3	4	5	4
Ryan	4	4	4	3
Sam	4	5	5	3
Tara	—	—	—	—
Mean	3.83	4.33	4.33	3.83

Note. Items on a 5-point Likert scale, with "1" meaning "Not at all" and "5" as "A great deal." "—" means the participant did not take the survey.

the unit (post-unit survey), and six months following the unit (follow-up survey).

Quantitative data derived from three, Likert-scale questions across all surveys that asked participants to self-report their levels of comfort, preparation, and knowledge in teaching autistic college students (see Table 3), I also gathered data from Likert-scale questions in the post-unit survey that asked participants how particular course activities helped them learn about autistic college students (Table 4).

Data Analysis. Due to the limited quantitative information gathered, I depict the results descriptively, via the aforementioned tables. This data both informed the questions I posed during interviews and was combined with qualitative data, in order to track participants' level of alignment or deviation in how they responded to items related to topics like comfort and preparation.

Qualitative Phase

Data Collection. I collected qualitative data via three platforms: surveys, vignettes, and interviews. This allowed me to gauge students' understandings across not only various points in time, but also different platforms and ways of communicating their knowledge.

First, surveys included questions that asked participants to share their understandings of autism, potential pedagogical techniques to support autistic students, personal experiences with autistic individuals, and envisioned strengths of autistic students across various classroom settings. Second, during the autism unit, I delivered a brief lecture on autism in higher education and prompted participants to engage in discussions featuring vignettes. These vignettes provided participants with opportunities to address one of four hypothetical situations, each depicting a unique class context (e.g., online, lab) where they were teaching students they suspected were autistic. Placed in small, virtual breakout rooms within Blackboard Collaborate, participants individually noted their responses to resolving the situation and then collectively shared ideas with other classmates.

Third, following the course, I emailed students who both consented to study participation and indicated interest in being interviewed. Due to participants living across the United States, I conducted these semi-structured 45-60-minute interviews via phone or Skype. I paired interviews with survey data following data collection. Interview questions primarily centered on participants' perspectives of course activities, which aimed to help them learn more about teaching autistic college students across various course settings. Six to seven months after the course concluded, I followed up with participants through surveys and interviews to measure their evolving interpretations of autism. I

formed follow-up questions through assessing the findings of the prior interview and surveys. I transcribed each interview and placed them on Dedoose.

Data Analysis. I engaged in three types of coding procedures. First, I used descriptive coding to capture key phrases or words illustrating topics that participants covered. Second, I concurrently employed structural coding, which helped in categorizing the data based on the research questions at hand. While reviewing the data, I looked at each phrase that the participant shared and determined if I could later collapse it under a common theme (Saldaña, 2016). Upon coding both surveys and interviews for the same individuals – for participants who engaged in both steps – I reviewed these codes in relation to one another. Comparing these descriptive codes across both methods was helpful in determining the level of congruence participants demonstrated depending on the context and timing of being asked similar questions. Third, I employed process coding when coding vignettes, since participants possessed more time to craft written responses. Process coding works to "connote observable and conceptual action in the data" (Miles et al., 2019, p. 66). Later I assembled codes from the first cycle to determine which codes appeared most frequently and within specific topics or common nodes (Saldaña, 2016). This led me to employ pattern coding, which organizes material and assign meanings to codes (Saldaña, 2016).

I also engaged in member checking through allowing my participants to review the transcripts and interview summaries that I crafted. This process allowed them to verify the accuracy and context of content. Furthermore, the study's PI engaged in interrater reliability regarding pieces of transcripts to ensure alignment in analysis (Creswell, 2013). These steps entailed showcasing descriptive and structural codes I assigned to sections of transcripts, receiving feedback from the PI to what extent her interpretations reflected my perceptions, and making adjustments to codes after sorting through the information. For example, the PI pushed back on my perception of a participant statement as encompassing deficit-based language, prompting me to revisit the material and how I applied initial coding.

Positionality

At the end of the autism course unit, I aimed to be transparent with participants about my own background as an autistic scholar. I kept my biases in check by adopting several techniques. First, I was explicit with participants about my motivations and affiliation with autistic college students (Creswell, 2013). Second, during data collection, I framed almost all questions in a neutral manner, in order to allow participants to make meaning of autism in their own way. Third, I allowed participants to ask any questions they had of me. I

recognized, however, that I cannot speak for, nor represent, the experiences of all autistic individuals.

Limitations

This study provides insight into the efficacy of the course unit, though possesses limitations. Self-selection bias was prevalent due to the course not being a requirement for graduate students, postdocs, and instructional staff in their degree programs or professions. Based on the course's virtual setting, I could not monitor participants' level of engagement in unit activities held outside of the synchronous class sessions. It is possible that participants may not have been completely truthful about partaking in activities, unless they directly mentioned it during the interview. Participants may have engaged in social desirability bias to appear more understanding of autistic individuals, especially since I, as their former instructor, interviewed them. As a course limitation, due to participants sharing the same writing space on the virtual whiteboard during the vignette activity, I could not completely eliminate peer bias in students reviewing one another's responses. Based on the study's longitudinal nature, I anticipated and experienced participant attrition. However, I remained proactive in reaching out to all study participants who consented to each of the measures following the autism unit.

Results

Future faculty demonstrated three notable processes as they engaged in and reviewed their course experiences: (a) reflecting on past understandings of autism; (b) utilizing the course to spark new insights on autism; and (c) working to create more inclusive classroom experiences. Throughout, participants demonstrated the iterative nature of learning about autism in higher education and applied takeaways to their lives and respective disciplines.

Reflecting on Past Understandings of Autism

During several occasions, future faculty participants explained their interpretations of autism based on previous knowledge. Four sub-themes are illustrated.

Exposure to Autistic Children

Often participants' first exposure to autism came from their colleagues or friends who had contact with autistic children. Consequently, even for participants who had psychology experience, they originally viewed autism as being limited to childhood. Ashley said her autism knowledge derived from observing autistic children in her mom's elementary classroom. Sam's

familiarity came from her advisor's research focus and drawing upon autism knowledge in her psychology training as a graduate student. However, the inclusive teaching class afforded more insights about autism across the lifespan. "The biggest change for me was transferring what I knew about childhood to what it looks like in adulthood and then thinking about the specific strategies in the classroom that might work," Sam said.

Prior Teaching Experiences

Future faculty suspected they previously taught autistic students upon reflecting on past students' various mannerisms and behaviors associated with autism. Marie, for instance, noted one past student shared overly personal information with her, sent "intense" and frequent emails, and experienced difficulties in communicating with his peers. Although the student obtained academic accommodations, such as extra time and extensions on assignments, he struggled. Marie said that this experience reminded her to be intentional and transparent in her teaching.

Key and Johnson, future faculty born outside the United States, self-reported lacking much knowledge about autism before the course unit. That said, they believed that previous school-aged students they taught in their home countries were autistic. Johnson, for instance, did not realize autism was a disability, and felt that his past student's disengagement in talking with peers and relentlessness in asking for help via sending text messages were related to having an ego or disrespecting others. Ultimately, the student completed the class, and Johnson considered her to be one of his best students.

Dante was the sole participant who had a student disclose an autism diagnosis to him. He initially viewed the student, who had rarely participated in class activities, as "grouchy" and "reserved." However, when the student spoke up in class, she discussed romantic relationships and veered off topic. "There were a couple of instances where I was like… 'so, anyway, let's go ahead and move on.' I didn't know what to say and [said] 'let's talk about this thing instead.'" Over time, the student eventually contributed to class discussions and disclosed her autistic identity, both to Dante and the class more broadly.

Common Autistic Characteristics

Each survey prompted participants to note three characteristics they might find in autistic students. Many participants mentioned terms on the pre-survey that represent deficit-based descriptors, such as autistic individuals often lacking eye contact, engaging in stimming (repetitive behaviors), desiring rules, demonstrating "atypical communication barriers," and

"not picking up on social cues." Other examples similarly centered more on struggles, as illustrated in one participant's description of "preoccupation with narrow interests," which implies that students' passions can entail negative fixations. Post-unit interviews, which involved asking participants to expand on initial descriptions, often centered on autistic students' sensory difficulties and social awkwardness. Not until future faculty elaborated on their new knowledge of autism, discussed later, did their descriptors of autism possess more positive and empowering undertones.

Hesitancy in Teaching Autistic Students

Future faculty explained that, before the autism unit, they generally felt both unprepared and uncomfortable in teaching autistic students. Some initial uneasiness derived from lack of teaching experience, as Greg noted, whereas participants like Sam described that her unfamiliarity with autism in adulthood served as a main reason for feeling uncomfortable. Amy said that she experienced discomfort because she has long viewed classrooms as requiring consistent engagement and movement, though this approach may not align with autistic students. During an interview, Dante noted the following thoughts coming to mind as he completed the pre-unit survey:

> I was thinking like "oh man, like I don't know any of this. I don't feel comfortable at all." Because I've had some experiences where maybe I was working with students, or I was in a situation, even in my personal life, where there was someone on the spectrum, and I just like, it was an awkward experience, right? I didn't know how to deal with what was happening.

Utilizing Course to Spark New Insights on Autism

The inclusive teaching course afforded future faculty the opportunity to learn about autism and thus feel more confident in their aptness in teaching autistic college students. This growth was evident in participants' self-reports of knowledge, comfort, and preparation in survey results, as well as in their statements via surveys, vignettes, and interviews.

Helpfulness of Particular Autism Unit Activities

Future faculty consistently vocalized how specific unit activities helped in understanding more about autism and embracing these activities in embracing their potential as instructors. For one, participants vocalized how much they appreciated engaging in vignettes, in that they individually developed solutions to problems and then collectively discussed strategies with peers. Marie expressed her takeaways:

> It was just really helpful to practice and then on some level it was a nice affirmation that it's okay to not always know what to do, and that these are, or can be, challenging experiences for everyone. And so working together to kind of arrive at a solution is just a really helpful practice.

Meanwhile, Ashley said the activity reminded her of different presentations of autism and that "there's not a one-size-fits-all treatment for a struggling student who's on the spectrum."

Dante elaborated on how he valued the postsecondary education institution-produced video. "Having that (faculty) perspective in concert with the students' perspective gave it a much more robust picture than if you had one or the other." Meanwhile, he said that he applied lessons from the Austin and Peña (2017) reading into his daily life. During an interview, Dante reached out to a sticky note on his desk that included a quote from the article that reinforced the importance of being patient with autistic students.

Though future faculty did not frequently talk about the autism-centered PowerPoint during interviews, Sam said her initial expectations of the presentation as boring were unwarranted, as she now viewed it as a great resource. "I think it was a good combination of some background information about autism and the specific behaviors that might be most important in the classroom."

Redefining Autism Knowledge

While participants expressed feeling more knowledgeable about autism based on the course unit's impact, there was no formal instrument for measuring growth. However, participants' self-reports of their understandings of autistic college students shed light on both reinforced stereotypes and expanded insights.

Whereas via post-unit and follow-up surveys participants tended to describe similar autism characteristics, often focusing on topics like hypersensitivity, nonverbal communication differences, and lack of eye contact, their explanations during interviews were more nuanced. Johnson, who once lacked familiarity on autism and used deficit-based language, described autistic individuals as independent and smart in specific fields. Sam said that, following the course, she read a journal article written by her graduate advisor on how society must dismantle the stereotype of autistic individuals as not wanting social interactions. Some future faculty sought campus programming to further learn about autism. Marie, for instance, attended a campus panel on female autistic college students to learn about their college transitions. In this sense, exploring autism was not limited to the context of the course, but rather folded into campus life more generally.

In particular, participants expressed greater thoughtfulness in interacting with and teaching students. Amy said she wanted to create more comfortable learning environments by including a course statement that would communicate, "I've tried my best in my curriculum to cater to everyone, but if you have an issue, please let me know early on so we can work something out." Ashley, who tended to allude to pop culture in classes to boost student engagement, realized that both autistic students and international students may not pick up on certain cultural references, and thus this practice lacked transferability. Consequently, Ashley indicated that she may use them more sparingly or give greater context. Dante shared that he was reevaluating facilitation of discussions to ensure that each student offers contributions.

Working to Create More Inclusive Classroom Experiences

Participants frequently expressed a desire to strengthen their teaching skills to benefit all of their students, autistic or not. Future faculty referred to UDI takeaways and how they plan to change their teaching techniques based on particular classroom settings. They also explained their evolving interpretations of their comfort and preparation in working with autistic students.

Utilizing UDI

Though participants did not always use UDI-specific terms, during interviews they illustrated examples of how they planned to engage in teaching techniques that meet students' various ways of learning. In particular, participants discussed the vitality of having students choose the assignments and activities they complete or possess flexibility in how they participate in group work. For instance, both Key and Greg talked about pairing autistic students with peers who exhibit greater patience, respect, and understanding. Participants said they wanted to help students find ways to channel their interests into the course. For example, Marie said that students should identify journal articles that connect with their passions and share them with peers. Meanwhile, participants described having class PowerPoint presentations accessible before or right after class. Greg said he would scope out classrooms before class time to identify potential visual or aural distractions.

Though participants tended to harken back to describing UD more generally, as opposed to UDI, they repeatedly expressed mindfulness in ensuring that learning environments support students' various ways of processing information. For Greg, UD involves "designing the classroom and lesson plan in such a way that all students will be able to achieve the same objectives, so it's not sort of making little modifications here and there." Meanwhile, Marie described UD as "thinking about the physical space, the learning environment, as well as the different types of teaching strategies, that an instructor uses, so that all students can kind of benefit and kind of have equal access to different learning opportunities."

Adjusting Techniques Based on Classroom Context

During the course unit, participants were prompted to think about how varying classroom settings may influence the types of teaching techniques to employ. Later, during interviews, participants were asked how they may make modifications for autistic students based on these settings, as well as how autistic students may find certain settings to be particularly favorable or uncomfortable.

Within large lecture halls, participants described their goal of being accessible to students, no matter the size, to make autistic students feel more at ease. They also talked about familiarizing students with helpful campus services, such as counseling, should they need additional assistance. Both Greg and Johnson suggested sending out a survey before class to gauge students' potential supports.

Meanwhile, participants described seminar settings, with their smaller size, in a paradoxical light. On one hand, seminars can promote greater comfort or inclusion; on the other, they may inadvertently spotlight students who would rather remain quiet.

Online classes were also viewed divisively, in that while they may allow students to participate in various ways (discussion boards, chat rooms, voice), these spaces could also be difficult for peers to interpret communication patterns without existing in the same physical environment. Marie believed that having breakout groups would allow students to connect with a few other peers and feel less overwhelmed.

Several participants described labs as spaces that may produce greater anxiety due to unexpected noises or other forms of stimulation associated with an active research environment. Therefore, they suggested developing ways of easing the experience, from having students complete work outside the physical environment (Sam), to working in quieter areas of the classroom (Amy).

No matter the classroom context, all participants desired modifying their current pedagogical practices, as well as instituting new tools, to best serve their students – autistic or not. Table 5 illustrates strategies that participants indicated they would implement, both in their own self-development and in their teaching.

Table 5
Participants' Envisioned Strategies

Recommendations to campus leaders
Offer autism trainings at teaching assistant orientations (Greg, Marie)
Screen autism documentaries (Sam)
Incorporate autistic student narratives at freshmen orientations (Sam)
Feature focus groups of autistic individuals (Ashley)
Teaching techniques
Offer "explicit specific guidelines for group work and roles" (Sam)
Ensure students understand assignments' instructions (Greg)
Leverage class assignments to support students' interests (Sam)
Connect students' tangential questions and comments to course content (Marie)
Catalogue students' interests and find ways of having them present these topics in class (Dante)
Scaffold assignments and provide continuous feedback (Greg)
Provide clear course expectations (Ashley)
Share resources of campus supports that students can access (Johnson)
Handling disclosure
Distribute "anonymous pre-class survey(s) asking the class to describe any needs/accommodations" (Greg)
Be accessible to meet with students across different platforms (Greg, Marie)
Talk with students to understand their struggles and identify solutions (Sam)
Include a diversity statement in the class syllabus and talk about it (Dante)

Expressing Greater Comfort and Preparation

Over the course of the study, participants expressed feeling more comfortable and prepared in teaching autistic college students, shown via both surveys and interviews. Any feelings of discomfort typically decreased upon simply learning more about autism and more inclusive teaching practices, as well as having more teaching experience. Greg, for example, had yet to teach his own course when first taking the inclusive teaching course, but now felt greater confidence in his ability to support student learning. Dante, who had previously interacted with autistic individuals, described those experiences as awkward because of lacking autism familiarity. However, Dante now said, "I felt like I had more tools in my toolbox to deal with things where I personally feel uncomfortable."

Regarding preparation, participants harkened to the class activities as enhancing their understandings in teaching autistic college students. Marie felt that vignettes, as one tool, increased her familiarity with encountering different situations. This course, as a refresher on autism, reminded her that "students are eager and willing to learn, and you just have to do your best and help meet them with where they are so they can just succeed as much as possible in the classroom." Greg said, "having more teaching experience does better prepare you, but you should also be having that experience in thinking about how to look out for and care for students with autism, too."

Discussion

The purpose of this study was to discover how an autism course unit contributed to future faculty members' understandings of autistic college students and plans to more inclusively teach this student population. The study was undergirded by the philosophy that modeling inclusive teaching practices in a professional development course for future faculty would help them learn, experiment with, and conceptualize their own ideas of utilizing UD with teaching autistic college students. This hands-on approach – orienting future faculty members on strategies they should incorporate to not only serve students broadly, but also autistic college students in particular – builds upon studies by Benedict et al. (2011) and Austin and Peña (2017) that center on either disabled students or current faculty, respectively. Furthermore, this study sheds new light on how perceptions of autism are contingent on engaging individuals in immersive programming that teaches about autism, as opposed to just drawing on societal stereotypes (Wood & Freeth, 2016). Equally as important, the study demonstrates the autism unit's success in advancing how participants described their understandings of, and aptitude to teach, autistic college students through UD principles.

Study findings illustrate the degree to which the research questions were addressed. RQ1 asked how future faculty described characteristics of autistic college students. Participants showed a surface level understanding of autism via survey contexts, tending to rely on common, if not unexpected, stereotypes about

hypersensitivity. However, participants who engaged in interviews elucidated specific ways they could redesign their classrooms to account for sensory processing. Greg, for instance, said he would scope out classrooms to reduce distractions. This example also draws upon one technique directly mentioned in the PowerPoint I shared with students. While it could be argued that participants repeated techniques that I directly mentioned, participants shared these examples one or many months following the course's completion, showing how the instructional strategies delivered in class served as lingering takeaways.

Even more, participants exemplified original ideas of turning a common stereotypical challenge into an opportunity for enhanced classroom experiences. Both Key and Greg said, if offering group work, they would work to pair autistic students and those demonstrating autistic traits, with peers who appear more patient and understanding. Other participants called for giving students choice in group work and assignments, thus connecting back to multiple means of engagement (Rose et al., 2006). In this way, RQ2, centered on determining how faculty describe their teaching techniques and incorporate UD principles in planning to teach autistic college students, was highly evident in what participants discussed following completion of the autism unit.

Meanwhile, RQ3 worked to track how the course unit impacted participants' levels of comfort, knowledge, and preparation in teaching autistic college students. All participants who completed multiple surveys exhibited growth in their self-reports. Similarly, this was exemplified in the verbiage that participants used during interviews. Marie, for example, already possessed much autism knowledge due to her psychology background, though was more nuanced, following the autism unit, in how she explained the manifestation of autistic students' distinct qualities:

> People who are on the spectrum can present in a variety of different ways with a lot of different symptoms, and it's important to realize that there are different ways of interacting with individuals and being sensitive across different ways that they present.

RQ4 centered on how future faculty perceive the contributions of course unit activities in promoting their understandings of autistic college students. For participants who had no familiarity with autism, the unit served as a game changer in enlightening them on autistic individuals. Johnson said,

> The most significant takeaway for me on this unit is that I started to think that I, I mean, as an instructor, lecturer, or teacher, whatever, you have to, you have to face the phenomenon that your students might have autism and you should give the support instead of ignoring them.

This quote demonstrates an example of how, with the proper training and guidance, future faculty can be further empowered to work proactively in supporting autistic students.

Implications for Researchers

Scholars may extend this work by incorporating formal instruments that measure perceptions of autism. Though this study did not integrate popular instruments like the Attitudes on Postsecondary Education for Students with Intellectual Disabilities and Autism Survey (APES-S; APES-F), used in studies like Gibbons et al. (2015) that gauged faculty attitudes, such measures may be useful for complementing other methods that track changes. Additionally, researchers who can follow a cohort of participants in a future faculty program, or even an incoming group of new faculty at an institution, may consider employing a several-year longitudinal study, including teaching observations and subsequent interviews, to determine long-term impacts on both perceptions of autistic students and evolving teaching practices. Utilizing these means may also work toward eventually identifying what particular teaching techniques are most helpful to support autistic students in specific classroom settings.

Implications for Practitioners

This study's findings reveal many opportunities for both future faculty and current faculty to refine their teaching practices to create more inclusive classroom experiences. Indeed, some autism-specific techniques also apply to supporting students more generally.

First, as several participants reported, distributing a pre-semester survey to identify students' course anxieties may work toward modifying classroom activities and assignments, as well as better understanding individual students' needs. In this same vein, these techniques prompt instructors to have students tailor assignments based on their interests. For autistic students, having this context may alleviate feeling overwhelmed, overstimulated, or unsure how their defined interests can translate to course content. As many study participants indicated, this is a viable and easy-to-implement method.

Second, instructors must work to make themselves approachable and accessible to students, with the first class establishing that foundation. Participants expressed discussing their backgrounds and interests, to reinforce that, even as faculty, they have lives outside academia. Furthermore, they described explicitly mentioning how they welcome students to talk with them after class, during office hours, or reaching out via other methods of communication. These strategies all work toward putting

students at ease and seeing the instructor as a supportive individual.

Third, and most relevant to the autism front, study participants described the necessity of campuses offering autism trainings, whether via standalone lectures, student panels, or integrated into inclusive teaching workshops. This study demonstrates both the importance and promise of professional development opportunities for future faculty to become further enlightened, equipped, and empowered in inclusively teaching autistic college students.

Acknowledgments

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, K. S., & Peña, E. V. (2017). Exceptional faculty members who responsively teach students with Autism Spectrum Disorders. *Journal of Postsecondary Education and Disability*, *30*(1), 17-32.

Baio, J., Wiggins, L., Christensen, D. L., Maenner, M. J., Daniels, J., Warren, Z., ... & Durkin, M. S. (2018). Prevalence of autism spectrum disorder among children aged 8 years—Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2014. *MMWR Surveillance Summaries*, *67*(6), 1-23.

Benedict, K. M., Johnson, H., & Antia, S. D. (2011). Faculty needs, doctoral preparation, and the future of teacher preparation programs in the education of deaf and hard of hearing students. *American Annals of the Deaf*, *156*(1), 35-46.

Bickman, L., & Rog, D. J. (Eds.). (2008). *Handbook of applied social research methods*. Sage.

Burgstahler, S., & Russo-Gleicher, R. J. (2015). Applying universal design to address the needs of postsecondary students on the autism spectrum. *Journal of Postsecondary Education and Disability*, *28*(2), 199-212.

Center for Universal Design. (1997). "Seven principles of Universal Design." North Carolina State University. Retrieved from https://projects.ncsu.edu/ncsu/design/cud/about_ud/udprinciplestext.htm

Cox, B. E., Thompson, K., Anderson, A., Mintz, A., Locks, T., Morgan, L., … Wolz, A. (2017). College experiences for students with Autism Spectrum Disorder: Personal identity, public disclosure, and institutional support. *Journal of College Student Development*, *58*(1), 71–87.

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Sage.

Dymond, S. K., Meadan, H., & Pickens, J. L. (2017). Postsecondary education and students with Autism Spectrum Disorders: Experiences of parents and university personnel. *Journal of Developmental and Physical Disabilities*, *29*(5), 809–825.

Gibbons, M. M., Cihak, D. F., Mynatt, B., & Wilhoit, B. E. (2015). Faculty and student attitudes toward postsecondary education for students with intellectual disabilities and autism. *Journal of Postsecondary Education and Disability*, *28*(2), 149-162.

Gillespie-Lynch, K., Bublitz, D., Donachie, A., Wong, V., Brooks, P. J., & D'Onofrio, J. (2017). "For a long time our voices have been hushed:" Using student perspectives to develop supports for neurodiverse college students. *Frontiers in Psychology*, *8*, 544.

Gobbo, K., & Shmulsky, S. (2014). Faculty experience with college students with autism spectrum disorders: A qualitative study of challenges and solutions. *Focus on Autism and Other Developmental Disabilities*, *29*(1), 13-22.

Hotez, E., Shane-Simpson, C., Obeid, R., DeNigris, D., Siller, M., Costikas, C., ... & Gillespie-Lynch, K. (2018). Designing a summer transition program for incoming and current college students on the autism spectrum: A participatory approach. *Frontiers in Psychology*, *9*, 46.

Knott, F., & Taylor, A. (2014). Life at university with Asperger syndrome: A comparison of student and staff perspectives. *International Journal of Inclusive Education*, *18*(4), 411-426.

LeGary, R. A., Jr. (2017). College students with Autism Spectrum Disorder: Perceptions of social supports that buffer college-related stress and facilitate academic success. *Journal of Postsecondary Education and Disability*, *30*(3), 251-268.

Mace, R. L. (1985). Universal design, barrier free environments for everyone. *Designers West, 33*(1), 147–152.

Miles, M. & Huberman, A. M., & Saldaña, J. (2019). *Qualitative data analysis: An expanded sourcebook. (4th edition)*. Sage.

Miller, R. A., Nachman, B. R., & Wynn, R. D. (2020). "I feel like they are all interconnected": Understanding

the identity management of autistic LGBTQ college students. *College Student Affairs Journal, 38*(1), 1-15.

Nachman, B. R., & Brown, K. R. (2020). Omission and othering: Constructing autism on community college websites. *Community College Journal of Research and Practice, 44*(3), 211-223.

Newman, L., Wagner, M., Knokey, A.-M., Marder, C., Nagle, K., Shaver, D., . . . Schwarting, M. (2011). The post-high school outcomes of young adults with disabilities up to 8 years after high school: A report from the National Longitudinal Transition study-2 (NLTS2)(NCSER 2011-3005). Menlo Park, CA: SRI International. Retrieved from www.nlts2.org/reports

O'Meara, K., & Jaeger, A. J. (2007). Preparing future faculty for community engagement: Barriers, facilitators, models, and recommendations. *Journal of Higher Education Outreach and Engagement*, *11*(4), 3-26.

Plano Clark, V. L., & Ivankova, N. V. (2015). *Mixed methods research: A guide to the field* (Vol. 3). Sage.

Rose, D. H., Harbour, W. S., Johnston, C. S., Daley, S. G., & Abarbanell, L. (2006). Universal Design for Learning in postsecondary education: Reflections on principles and their application. *Journal of Postsecondary Education and Disability*, *19*(2), 135-151.

Saldaña, J. (2016). *The coding manual for qualitative researchers (3ʳᵈ edition)*. Sage.

Scott, S.S., McGuire, J.M., & Shaw, S.F. (2001). Principles of Universal Design for instruction. Storrs: University of Connecticut, Center on Postsecondary Education and Disability.

Shattuck, P. T., Narendorf, S. C., Cooper, B., Sterzing, P. R., Wagner, M., & Taylor, J. L. (2012). Postsecondary education and employment among youth with an autism spectrum disorder. *Pediatrics*, *129*(6), 1042-1049.

Shmulsky, S., Gobbo, K., & Bower, M. W. (2019). STEM faculty experience teaching students with autism. *Journal of STEM Teacher Education*, *53*(2), 43-59.

Sniatecki, J. L., Perry, H. B., & Snell, L. H. (2015). Faculty attitudes and knowledge regarding college students with disabilities. *Journal of Postsecondary Education and Disability*, *28*(3), 259-275.

Snyder, T. D., de Brey, C., & Dillow, S. A. (2016). *Digest of education statistics 2014, NCES 2016-006.* National Center for Education Statistics.

Taylor, C. M., & Colvin, K. L. (2013). Universal Design: A tool to help college students with Asperger's Syndrome engage on campus. *About Campus*, *18*(3), 9-15.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Sage.

Van Hees, V., Moyson, T., & Roeyers, H. (2015). Higher education experiences of students with Autism Spectrum Disorder: Challenges, benefits and support needs. *Journal of Autism and Developmental Disorders, 45*(6), 1673-1688.

White, S. W., Ollendick, T. H., & Bray, B. C. (2011). College students on the autism spectrum: Prevalence and associated problems. *Autism*, *15*(6), 683-701.

Witman, M., & Richlin, L. (2007). The status of the scholarship of teaching and learning in the disciplines. *International Journal for the Scholarship of Teaching and Learning, 1*(1), 2-17.

Wood, C., & Freeth, M. (2015). Students' stereotypes of autism. *Journal of Educational Issues, 2*(2), 131-140.

Wurgler, E., VanHeuvelen, J. S., Rohrman, S., Loehr, A., & Grace, M. K. (2014). The perceived benefits of a preparing future faculty program and its effect on job satisfaction, confidence, and competence. *Teaching Sociology, 42*(1), 50-60.

Zeedyk, S. M., Bolourian, Y., & Blacher, J. (2019). University life with ASD: Faculty knowledge and student needs. *Autism*, *23*(3), 726-736.

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