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A new chapter for JAASEP

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Dear Readership,

We are honored to introduce ourselves as the new Co-Editors of the Journal of the American Academy of Special Education Professionals (JAASEP). As we step into this role, we carry deep appreciation for the journal's long-standing commitment to applied scholarship, professional relevance, and accessible publishing in special education. Our vision for JAASEP centers on expanding the journal's reach and impact by fostering work that is inclusive, equity-focused, practice-informed, and grounded in real-world educational challenges and opportunities.

Although we were not serving as editors when the manuscripts in this Fall 2025 issue were selected and accepted, we are proud to present the articles in this issue. Together, they represent a strong foundation from which we are building the journal's next phase. The themes, insights, and critical questions raised across these articles align with our renewed focus on amplifying diverse voices, challenging deficit-based thinking, and supporting actionable, systems-informed research and practice.

Reaffirming JAASEP's Aims and Scope

As part of our editorial transition, we have refined the aims and scope of JAASEP. The journal continues to welcome a wide range of methodologies and perspectives, but with greater emphasis on:

- Research that is directly relevant to the daily work of special education professionals
- Studies that foreground inclusion, equity, and the lived experiences of students and educators
- Articles that inform practice, preparation, and policy across educational settings
- Work that bridges research and action, especially within underrepresented or under-resourced contexts

We are especially interested in manuscripts that reflect collaboration across disciplines, promote strengths-based approaches to disability, and address structural challenges in the field.

Themes from the Fall 2025 Issue

This issue features ten articles that cover a broad range of timely and enduring topics in special education. While each study offers distinct insights, several key themes emerge that exemplify the kind of scholarship we aim to elevate in future issues.

Elevating Educator Voices and Lived Experience

Several authors highlight the importance of teacher knowledge and experience in shaping inclusive, responsive practice. Juarez's phenomenological study on educators working with young students with autism offers a deeply personal look at the social dynamics of the classroom. Wildmon and colleagues examine how special education teachers perceive the supports and training they receive when using AAC devices, underscoring the value of individualized, sustained professional development. These studies recognize teachers as both informants and change agents in improving services for students with disabilities.

Confronting Systemic and Structural Challenges

Other authors grapple with structural barriers that shape how students are identified, served, and supported. Bagley interrogates the misidentification of trauma-affected students as having disabilities, raising important questions about teacher preparation and systemic bias. Gotte and colleagues examine factors influencing teacher retention in a rural district, revealing how administrative support and community connection can mitigate widespread shortages in special

education. These studies help push our field toward more contextually responsive and ethically grounded systems of support.

Reimagining Core Practices in Special Education

Several papers take a close look at foundational practices in the field. Claude, Nagro, and Brigham examine the quality of IEPs and PLAAFP statements, advocating for better training and tools to ensure meaningful educational planning. Horne's survey study points to both the promise and persistent challenges of co-teaching models, particularly the lack of time and preparation that impede successful collaboration. These contributions call attention to the need for stronger alignment between policy mandates, teacher preparation, and instructional reality.

Centering Strengths-Based Inclusion

Tobon and Hughes explore general education math teachers' perceptions of Latinx students with learning disabilities, revealing a tension between high expectations and deficit views. Smith and colleagues focus on creative self-efficacy among students with learning disabilities, challenging assumptions about ability and talent. Both studies call for greater recognition of student strengths and more inclusive pedagogical approaches.

Preparing the Next Generation of Educators

Two papers look to the future by exploring how teacher candidates are being prepared. Lewis-Pratl and colleagues examine preservice teachers' culturally responsive teaching self-efficacy, particularly when working with students with disabilities from culturally and linguistically diverse backgrounds. Ahmed and Al Jaffal present a peer-mediated intervention to support writing development in students with autism, offering one example of inclusive instructional design that can be embedded in general education classrooms. These articles underscore the critical importance of research-informed teacher preparation.

Looking Ahead

The Fall 2025 issue reflects the breadth, complexity, and practical relevance of current scholarship in special education. As new editors, we are energized by the opportunity to build on this strong foundation.

Readers may also notice some subtle but important changes in this issue. The updated layout and formatting reflect our commitment to increased professionalization and consistency in how the journal presents high-quality, accessible scholarship. These design improvements are just one part of our broader effort to bring greater clarity, rigor, and visibility to the important work being published in JAASEP.

Looking forward, we welcome submissions from special education researchers, practitioners, teacher educators, and interdisciplinary partners whose work can inform, challenge, and advance the field. Whether you are exploring innovative practices, evaluating inclusive policies, or addressing persistent systemic inequities, we invite you to share your scholarship with the JAASEP community.

To view our updated aims and scope, consult author guidelines, or submit a manuscript for future consideration, please visit our new website: https://www.aasep.org. We are excited to support and feature work that contributes to a more inclusive, equity-focused, and practice-centered future for special education.

Thank you for being part of the JAASEP community. We look forward to your continued engagement as readers, reviewers, and contributors to the field.

Drs. Morris and Boquet
Co-Editors-in-Chief, JAASEP

Volume 20, Issue 3 – Included Manuscripts

Effectiveness of a Peer-Mediated Intervention on Writing Skills for Students with Autism Spectrum Disorder

Authors: Siddiq Ahmed & Mohammed Al Jaffal

Abstract: The current study aimed to investigate the effectiveness of a Peer-Mediated Intervention (PMI) on writing skills for students with autism spectrum disorder (ASD) in the inclusive classroom. The participants in this study were two seventh-grade students, one neurotypical student who acted as a tutor and has achieved high academic outcomes in the area of writing, the other participant is the tutee, who had been diagnosed with autism spectrum disorder (ASD) and struggled with development of writing skills. The study utilized multiple-baseline design across behaviors to identify the effectiveness of a PMI on writing skills for the student with ASD in three areas of writing skills (i.e., subject-verb agreement, capitalization/spelling, punctuation). The results of the present study showed that PMI yielded significant improvements in academic achievement for the target student. This study suggests that further studies replicate the current study with an intensive focus on other academic skills, such as reading comprehension and mathematics.

Special Education and Trauma: Are We Correctly Identifying Our Students?

Author: Gretchen Bagley

Abstract: The number of students who have experienced trauma is impacting education in greater numbers. This trauma manifests as behavioral or academic issues that result in the students being placed in a special education setting. However, special education classrooms may not be the correct setting for these students. The needs of trauma students are in some cases very similar to those in special education, however, research shows that there are additional needs that today's teachers are ill-prepared to address in the traditional special education classroom setting. This pilot study examines the knowledge of special education teachers and how the identification of trauma students as special education students impacts their daily teaching. As a result of this pilot study, it is evident that more research is needed to determine the best course of action for students identified as having trauma and how to help them succeed in a classroom setting.

IEP Quality in Focus: Legal, Research, and Practical Perspectives

Authors: Christopher Claude, Sarah Nagro, & Frederick Brigham

Abstract: Individualized Education Programs (IEPs) are crucial for the educational planning and service provision for students with disabilities (SWDs) in special education. Within the IEP, the Present Level of Academic Achievement and Functional Performance (PLAAFP) statement forms the basis for developing goals and interventions. Despite its importance, there is limited empirical research on the quality and consistency of PLAAFP statements. In this paper, we underscore the necessity of evaluating IEP and PLAAFP quality, tracing the evolution of special education laws and their impact on the academic and functional expectations for the individual progress of each SWD. By examining various IEP assessment rubrics and psychometric considerations, we highlight the relationship between IEP quality and student outcomes, as well as its implications for teacher preparation and retention amidst special education teacher shortages. With our findings, we advocate for further investigation into IEP quality to enhance outcomes for both SWDs and educators.

Retaining Special Education Teachers in a Rural Southern United States School District

Authors: Eric R. Gotte, Jessie S. King, Karen Farley, Paula Rose-Greer, and Annette R. Hux

Abstract: Rural school districts across the United States need help to recruit and retain special education teachers. This study presents findings based on special education teachers' experiences teaching within one rural Southern United States school district. This instrumental single case study investigates the factors that encourage special education teachers to remain in their current position within a rural Southern United States school district. Qualitative data is analyzed from 11 participants: nine current special educators, one special education director, and one retired special education teacher. All participants are from one rural Southern United States school district to gain insight from their experiences and perspectives. Significant findings include factors that positively influence the retention of special education teachers within one rural Southern United States school district: the small scale of the district, administration support, student rapport, positive school culture, extended family living in the local area, and the supportive culture of the rural community.

Current Challenges and Practices in Co-Teaching in K-12 Schools

Author: Sarah Horne

Abstract: The inclusive classroom has become an increasingly popular classroom model but is not consistently implemented in schools. This paper seeks to find which collaborative teaching practices are commonly used in K-12 schools today, how teachers perceive the effectiveness of co-teaching methods, how teachers are prepared for co-teaching and their perception of the effectiveness of their training, the current challenges of co-teaching, and how those challenges are resolved. To achieve this, a survey was conducted amongst 54 anonymous and voluntary participants to compare the perceptions and experiences of those

currently co-teaching with varying years of teaching and co-teaching experience. The results show that most teachers enjoy co-teaching and collaborating with their co-teaching partners, but the most common challenge of co-teaching is finding time to meet and plan. Similarly, most are not adequately prepared for pre-service or in-service teaching training, leading many to use ineffective co-teaching practices.

Math Teachers' Perceptions, Practices, and Self-Efficacy Related to Supporting Latinx Students with Learning Disabilities

Authors: Geraldo Tobon & Marie Tejero Hughes

Abstract: Latinx students with learning disabilities (LD) possess inherent strengths and bring valuable contributions to math learning, yet teachers often view them through a deficit-oriented lens. These students frequently experience limited opportunities to participate in math learning beyond learning procedures. This limiting exposure to math learning can adversely affect their self-perception as competent math learners. In this study, we administered surveys to general education (GE) middle school math teachers. Subsequently, we interviewed a subset to delve deeper into their perceptions, practices, and confidence in teaching this population. Our research yielded three main insights: (a) While teachers typically endorsed the inclusion of these students in GE math settings and recognized their potential for math achievement, there was also a sentiment that students lacked foundational knowledge and motivation; (b) the teaching methodologies employed reflected these beliefs; and (c) teachers expressed confidence in their ability to instruct Latinx students with disabilities effectively.

The Lived Experiences of Teachers Working With Young Students With Autism

Author: Suzy Lea Juarez

Abstract: In the last 5 years, teachers have reported challenging experiences while educating young children with autism spectrum disorder (ASD) as the diagnostic numbers have increased from one in 60 in 2019 to one in 33 in 2021, impacting the classroom ratios and social dynamics (Artigas-Pallarès & Paula, 2020; Maenner et al., 2020; Rosen et al., 2021). The increase in the prevalence of ASD diagnosis is impactful, specifically for teachers educating these students in the classroom. Educational psychology and ASD research highlights the issues students with ASD have during the school day, struggling with social skills, social communication, and social exchanges with their peers and teachers (Baron-Cohen, 1988, 2006, 2017; Silverman, 2015; Simó-Pinatella et al., 2021). This trend made a study regarding teachers' lived experiences (i.e., social interactions) essential for informing professional development content for special education teachers working with students with ASD (Baron-Cohen, 1988, 2001, 2006, 2017; Josilowski, 2019; Silverman, 2015). This transcendental phenomenological study, using constructivist research questions, captured teachers' lived experiences of social activities with students with ASD. Educational psychologists, educators, and professionals in the ASD field will benefit from better understanding of the lived experiences, specific knowledge about teacher-student social interactions to inform training practices, and detailed evidence to enhance professional development.

Understanding Preservice Special Education Teachers' Culturally Responsive Teaching Self-Efficacy: A Mixed Methods Study

Authors: Krystal Lewis-Pratl, Yojanna Cuenca-Carlino, Tara Kaczorowski, & Mark Zablocki

Abstract: There have been increases in the culturally and linguistically diverse (CLD) student population over the last two decades; however, these changes have not been realized in the diversification of educators in the field. This sequential explanatory mixed methods study examined preservice special education teachers' (N = 54) culturally responsive self-efficacy beliefs and the factors and experiences that influenced their self-efficacy through semi-structured interviews (n = 8). This study sought to extend the work of Siwatu (2011a) by administering the culturally responsive teaching self-efficacy (CRTSE) scale and modifying it to include the language of disability (Chu & Garcia, 2014). Results indicate special education preservice teachers have moderately high CRTSE for teaching CLD learners with disabilities. Differences and commonalities between high and low self-efficacy groups are discussed.

Perceptions of Creative Self-Efficacy of Students with Learning Disabilities

Authors: Jennifer Elaine Smith, Tracy Griffin Spies, Kyle Higgins, Monica R. Brown, Joseph John Morgan, & Randall K. Boone

Abstract: Creative self-efficacy, a subcomponent of creativity, is the belief in one's ability to be creative. It is a necessary construct for a well-developed sense of creativity. With creativity being a vital skill cited by employers for employees to be prepared for 21st century careers, it is necessary to research creative self-efficacy early on and with all students. Limited research regarding students with learning disabilities and creativity, creative thinking, and creative self-efficacy exists. Because higher creativity is necessary for greater positive post-secondary outcomes, research in creative self-efficacy is needed. This study examined the perceptions of creative self-efficacy of students in the third, fourth, and fifth grades (n=495). A comparison between students with learning disabilities and their peers in general education and peers with gifts and talents was made. Results indicate similar perceptions of creative self-efficacy amongst students with learning disabilities and students in general education. However, a significant difference was indicated between students with learning disabilities and students with gifts and talents.

Special Education and AAC Devices: Teachers' Perspectives on Training Needs and Support

Authors: Mark E. Wildmon, Jamie Moss, Mattie Williams, MacKenzie D. Sidwell, Julie C. Herbstrith, and Kasee K. Stratton

This study investigates special education teachers' perceptions of the effectiveness of support and training received while working with Augmentative and Alternative Communication (AAC) device users. The research evaluates important components of AAC implementation, such as the range of support available, quality of training programs, degrees of adaptation, and levels of inter-professional support from a teacher's perspective. The conclusions drawn from this study indicate a need for continuous professional development, which necessitates personalized, individual training approaches and interdisciplinary collaboration to enhance the use of AAC devices. The study also confirms that individualized training is crucial in meeting the unique requirements of AAC users and special education teachers. These findings are meaningful in understanding AAC device use in special education classes, leading to appropriate interventions and improved communication outcomes among individuals using low- and high-tech devices.

RESEARCH

Effectiveness of a peer-mediated intervention on writing skills for students with autism

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Abstract

The current study aimed to investigate the effectiveness of a Peer-Mediated Intervention (PMI) on writing skills for students with autism spectrum disorder (ASD) in the inclusive classroom. The participants in this study were two seventh-grade students, one neurotypical student who acted as a tutor and has achieved high academic outcomes in the area of writing, the other participant is the tutee, who had been diagnosed with autism spectrum disorder (ASD) and struggled with development of writing skills. The study utilized multiple-baseline design across behaviors to identify the effectiveness of a PMI on writing skills for the student with ASD in three areas of writing skills (i.e., subject-verb agreement, capitalization/spelling, punctuation). The results of the present study showed that PMI yielded significant improvements in academic achievement for the target student. This study suggests that further studies replicate the current study with an intensive focus on other academic skills, such as reading comprehension and mathematics.

Keywords: autism spectrum disorder, inclusive education, peer tutoring, writing skills, multiple-baseline design

Introduction

Peer-Mediated Intervention (PMI) is an effective strategy that has been found to enhance social skills deficits and academic performance in students with autism spectrum disorder ASD (Hart & Banda, 2018). It is a concept that has its roots in the regular education initiative of the mid-1980s and instructional approaches such as Multi-Tiered Systems of Support (MTSS), which have the shared goal of creating an inclusive general education (GE) setting where children with special needs are educated alongside their typical peers (Hart, & Banda, 2018; Leach & Helf, 2016). The amendment of the Individuals with Disabilities Education Act ([IDEA], 2004) directs that student with disabilities, including ASD, should be educated in GE classrooms with their typical peers to the maximum extent possible (McCurdy & Cole, 2014). Research has shown that peer-tutoring intervention is an effective strategy to improve children and adolescents' academic and life skills (Hart &

Banda, 2018, Fetko, Collins et al. 2013, Odluyurt et al. 2014). However, less attention has been given to its implications for the development of writing skills. This research aimed to investigate the effectiveness of PMI on writing skills in inclusive classrooms for a student with ASD.

Writing Skills of Students with ASD

Writing is an important tool for learning and communication, but it is especially challenging for students with special needs, particularly in the area of constructing well-formed sentences. The writing skills of these students are generally less syntactically complex, and their sentences often contain grammatical errors (Saddler et al., 2008). Such individuals tend to produce writing with capitalization, punctuation, and spelling errors and the overall quality of their writing tends to be lower than that of their typical peers. Therefore, it is important to support these students in overcoming this challenge through proven strategies that incorporate evidence-based practices. Whitby et al. (2009) stated that written expression is identified as a deficit for many students in the category of High Functioning Autism and 60% of these individuals may present with writing learning disabilities. (The category of "high functioning autism" best correlates with the current category of Level 1 ASD as described in the *Diagnostic and Statistical Manual of Mental Disorders-5* (American Psychiatric Association, 2013.) Although there might be less concern about social and behavioral impairments for high-functioning students with ASD, these characteristics of ASD must still be considered when developing supports for these students so that they can achieve to their greatest academic potential. Thus, teachers need to match interventions to the unique academic profile of the student to increase their success. Furthermore, it has been shown that students with Levels 1 and 2 (high- and moderate-functioning) autism spectrum disorder exhibit significantly better performance in academic tasks when external support is provided to them (Whitby et al., 2009).

Asaro-Saddler and Bak (2014) noted some characteristics of children with ASD that may affect their ability in writing essays. These characteristics include: (a) lack of Theory of Mind, a characteristic that causes them to have difficulty understanding that others might think differently than they do; (b) having weak central coherence, meaning difficulty distinguishing between important and unimportant details that impairs the ability to incorporate meaningful supporting concepts into writing; (c) limited interest or over-focus on only certain topics that could impair the ability to choose a topic for writing assignments that others will find interesting; (d) lack of self-regulation skills, which can impair the ability to create an outline, be flexible in constructing an essay, and impact the ability to self-monitor during the writing process; and (e) social skills and social communication deficits that might carry-over to their writing process. Since so many of these issues can relate to limited interactions with others, settings where socialization occurs in a structured environment like the GE classroom can support students with ASD across skillsets, including writing. Thus, peer-mediated intervention approaches create a unique and powerful opportunity to provide support to students diagnosed with ASD, especially those diagnosed as at Level 1.

Effectiveness of Peer-Mediated Intervention for Students with ASD

Due to the progress made in the past few decades regarding mainstreaming and inclusion, many students with ASD, emotional behavioral disorders, and multiple developmental disabilities are now educated in inclusive GE classrooms; however, researchers have found there continues to be a lack of appropriate accommodations for these students (Carter et al., 2015). As a result, these students with special needs may struggle in their academic performance and may need substantial support to meet their academic potential. One evidence-based method that has been found effective is peer-mediated intervention (PMI) (Heron et al., 2006). This practice involves cooperative teaching involving a high-ability student (the tutor) and a student with, for example, ASD (the tutee) who is struggling. This

practice is grounded in the early 20th century psychologist Vygotsky's (1978) theory of the Zone of Proximal Development which describes how children learn, and his related concept of the More Knowledgeable Other (MKO), where a child's exposure to and interactions with an individual (a peer or adult) who has greater understanding of a concept leads to the child then being able to comprehend the idea on their own. In PMI, the tutor (MKO peer) guides the tutee (the child with disabilities) through the assignment under the supervision of a teacher. PMI creates a social interaction between children with a variety of cognitive abilities to promote the optimal education for students with disabilities through an interactive and collaborative learning activity (Ayvazo & Aljadeff-Abergel, 2014). McCurdy and Cole (2014) identified several advantages to such interventions, such as: (a) peer supporters are available across a variety of school settings and are willing to assist their peers with educational and behavioral tasks, naturally affecting each other's behavior. (b) Peers are present across multiple school settings, which promotes maintenance and generalization of positive behavior change. (c) The behavior of the peer mediators gives cues to the child with special needs to remind them of the appropriate behaviors learned during the intervention process. Additionally, peer mediators effectively meet the students' needs, allowing the teacher to spend more time teaching and programming for all students' educational needs. Finally (d), using peer mediators in classroom interventions provides students with increased opportunities to receive feedback and modify behaviors, resulting in a higher level of attention, cognitive response, and social gains.

Carter et al. (2005) cited PMI as an effective intervention and alternative to traditional teaching strategies as it creates opportunities for more efficient instruction for students with moderate and severe disabilities within the GE classroom. While Carter et al. (2015) noted that there are challenges in providing students with disabilities meaningful access to the GE curriculum in an inclusive setting, the authors stated that PMI can be a practical, promising support to deliver the full range of the curriculum through shared learning opportunities. PMI has been shown to provide increased accessibility to interesting curricular content, raised expectations for performance, and established new and positive social relationships among students of a diversity of abilitites (Carter et al., 2015).

Ayvazo and Aljadeff-Abergel (2014) described class-wide PMI as an evidence-based practice that naturally encourages interactions between peers and holds promise for the education of learners at risk for low academic achievement. PMI may also improve social skills in children with Autism by engaging neurotypical peers as social models to stimulate social interactions and reactions (Chang & Locke, 2016). Determining the way in which peers provide support to students with disabilities using this strategy, especially at school level, would indicate the fidelity of implementation and offer substantial insights to the high achieving school students who work cooperatively with SWDs within inclusive classrooms (Carter et al. 2011).

Numerous studies have shown the efficacy of PMI, whether within-group or in individual settings (e.g., Bowman-Perrott et al., 2013; Hart & Banda, 2018; Matthews et al., 2018). For example, Vukelich et al. (2013) stated that typical students who tutor their peers have benefited substantially more than their untutored peers. Furthermore, many researchers have investigated the outcomes of students who were tutored in one-on-one PMI and found those who had received such tutoring outperformed their classmates

who had not received such tutoring (Ayvazo & Aljadeff-Abergel, 2014; Haas et al. 2020). This indicates that regardless of whether they have disabilities, under well-structured and organized conditions, all low-performing students can learn effectively through PMI. Even though the intervention has been employed in many inclusive settings to help low academic achievers improve their academic outcomes (Haas et al.,2020), few studies were found regarding peer-mediated intervention specifically with regard to writing skills. This study therefore endeavored to address this gap in the research by focusing on a PMI in the specific context of an under-achieving student with ASD struggling with writing skills to determine whether the intervention could improve his writing skills through a process that could be delivered in the inclusive GE classroom.

Research Questions

The literature review led to the following Research Question: (a) What is the effectiveness of a peer-mediated intervention on writing skills in students with autism spectrum disorder in inclusive classrooms?, and (b) Would this increase of writing skills behaviors be maintained when the PMI was withdrawn?

Design and Procedure

This study utilized a multiple baseline design across behaviors. The multiple baseline design across behaviors assesses participants who demonstrates three or more behaviors that functionally similar but independent **(**Richards, Taylor, & Ramasamy, 2014**).** This design aimed to assess the use of PMI (the independent variable) to improve writing skills in the three areas (dependent variables) of: (a) subject-verb agreement, (b) capitalization, and (c) punctuation. The multiple baseline design across behaviors was selected as the participant had multiple challenging behaviors that functional similarity as well as the effects of the independent variable could not be reversed.

The study's PMI followed the procedural recommendations of Jameson McDonnell et al. (2008), which state it is important to provide individual training sessions, a written manual, and verbal feedback to peer tutors. In addition, Jameson et al. note the peer tutor should be trained quickly and efficiently for the accurate performance of the technique in the designated setting, in this case an inclusive GE classroom. The study comprised three phases:

1. Phase I - Baseline: The first phase involved collecting baseline data on the tutee over several days during 40-min sessions for each of the three target behaviors to observe the natural behavior and assess the typical class performance of the target student (the tutee). This was accomplished by tracking the student with ASD's academic performance on the standard classroom writing exercises assigned during the sessions (designated A on Fig. 1). During this phase, no interaction occurred nor were services provided to the target student to observe his natural behavior and assess his typical class performance.
2. Phase II - Intervention: The second phase was the implementation of the PMI (designated B on Fig. 1), which occurred during 40-min sessions over days of Intervention phase of each behavior. During the intervention phase, the student with ASD completed and was evaluated on standard academic tasks involving reading, writing, and spelling under two conditions: (a) Active Peer Tutoring, one of the adult supervisors (the teacher or the main researcher) evaluated the tutee's work and tracked their scores on the rubric for comparison with the scoring/coding of the tutor.
3. Phase III – Maintenance: The third phase (designated C on Fig. 1) was to measure the maintenance of any improvement obtained from the

PMI after the intervention ended. This was conducted by the main researcher for 40-min sessions over two days.

Setting

The study took place at a nonprofit school located in Pennsylvania in the United States. The school provides a safe and intellectually stimulating environment that will empower students to become innovative thinkers, creative problem-solvers, and inspired learners prepared to thrive in the 21st century. The study was conducted in an inclusive seventh-grade English GE classroom that included students with and without disabilities.

Participants

The target population for this study was 7th grade middle school English Language Arts (ELA) teachers, 7th grade middle school students diagnosed with ASD and potential peer participants. Recruitment of the teacher, student with ASD and the peer tutor for this study were selected by consulting with the principal and interviewing a seventh-grade English teacher at their middle school (see Table 1).

Table 1

Study Participant Demographics

Participant	Gender	Age	Grade	Race/Nationality	Type of Disability
Tutor	Male	14	7	White American	None
Tutee	Male	13	7	White American	ASD – Level 1*

The participants were as follows: 1) A student participant with ASD, a 13-year-old male diagnosed with ASD who has an individualized educational plan (IEP), 2) A 14-year-old peer tutor was selected by the interviewed ELA teacher based on his academic achievement and ability/willingness to help the tutee in writing activities. Both students were interviewed regarding their willingness to participate and to explain the structure of the study. Written permission/consent to participate was obtained from both students and their parents. To safeguard student anonymity, no names or quotes have been disclosed. Both participants are fluent in reading and speaking; however, the tutee's writing skills needed to be improved

Measurement and Data Analysis

Instrument: Rubric

The primary measurement instrument of the study was a self-developed rubric (See appendix … for rubric) used to record the tutee's writing errors in the three categories during each of the phases of the study (baseline, intervention, maintenance) (see Table 2 for an example). The rubric was adapted from the Pennsylvania core standards writing (citation), and tutors support intervention for specific use with students with ASD. Additionally, to ensure that any change in performance was not attributable to factors other than experimental variables, the researcher and classroom teacher observed the target student in the classroom during writing activities without any reinforcements. The procedure used to record the three types of errors on the rubric is called "event recording". The tutor was trained in how to assist his peer, how to mark his tutee's errors directly on the

student's work, and how to record those errors on the rubric. These were the only requests that were made of the student participants.

Table 2

Rubric of Seventh-Grade Writing

Grammar Usage/Mechanics	Code	Example of Mistake	Example of Correction
Subject-verb agreement (tense and grammar usage)	SV	I goes	I go.
Capitalization and spelling	Sp	my name is eric.	My name is Eric.
Punctuation	P	What is your name.	What is your name?

Data Collection

The participant was assessed based on the number of non-accurate sentence structures (grammar usage and mechanics) including, (a) subject-verb agreement and verb tense and usage, (b) spelling and capitalization, and (c) punctuation. Throughout the intervention, errors were recorded by the main researcher, the classroom teacher, and the peer tutor using the rubric. The peer tutor provided editing by underlining and coding the frequency of the mistakes that the tutee made based on the rubric provided. After the peer tutor intervention, the number of sentence structure errors were recorded to assess the effects of the intervention, which consisted of writing and spelling activities focused on academic performance to encourage desirable outcomes for the target student.

Data Analysis

Dependent variables for the study were characteristics of writing performance, specifically subject-verb agreement, capitalization and spelling, and punctuation. Behaviors that were tracked and coded included the number of times the student wrote the words and sentences accurately during classroom exercises. It was also required that the target student exhibited correct sentence structure free of grammatical errors. To analyze the data, a graph was constructed with the X-intercept indicating the sessions of the day and the Y-intercept indicating the number of errors in each area the target student made during the session. SSD utilized the visual to analyze its data and consider level, trend and verbality to assume the effectiveness of the independent

Reliability & Treatment fidelity

To confirm the scoring and coding of the peer tutor, an adult (either the main researcher or the classroom teacher) acting as an independent observer conducted frequency counts of each of the three target behaviors along with the tutor for 25% of the sessions; 95% agreement was achieved. In addition, the researchers observed the interactions between the participants to analyze the tutor's implementation of the intervention to ensure that the intervention was delivered correctly. This helped ensure participant response and procedural fidelity (Essig et al., 2023).

Results

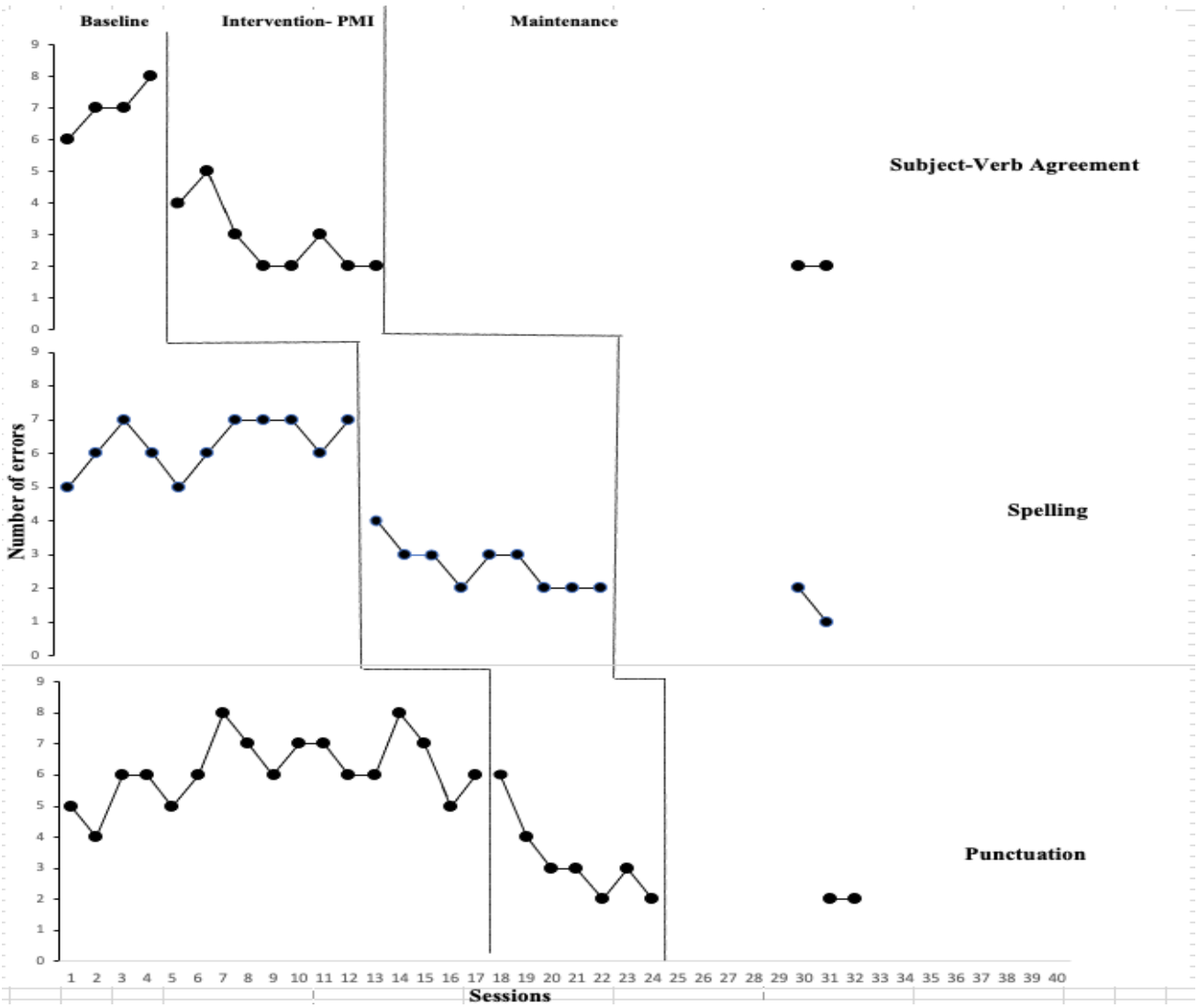
Behavior 1: Subject-Verb Agreement

To establish a baseline, observations for subject-verb agreement behavior were conducted for a period of 40 min daily for four sessions. The target student's

baseline for Subject-Verb Agreement mistakes was in the range of 6–8 errors (*M* = 7). After the 8 days of the intervention (five 40-min sessions), performance in this category was in the range of 2 to 5 errors (*M* = 2.9) errors. Finally, during the maintenance phase, which was conducted 20 days later and comprised 40-min sessions over 2 days in the GE classroom, the target behavior occurred twice in each session (*M* = 2). Comparing the means of errors in the baseline and the intervention phases, the target student showed a substantial improvement in the area of subject-verb agreement (see Fig. 1).

Figure 1

Graph of the Study Data



Behavior 2: Capitalization

To establish a baseline, observations for capitalization and were conducted during class time for a period of 40- min daily for 11 sessions. The baseline for frequency of spelling mistakes was in the range of 5–7 errors (*M* = 6). After presenting the intervention, which comprised 9 days of 40-min sessions, the level of spelling errors was in the range of 2–4 errors (*M* = 2.7). In the maintenance phase, which was conducted after 10 sessions and lasted for 2 days in the GE classroom, the capitalization and

spelling behavior occurred in the range of 1–2 (*M* = 1.5). Comparing the means of errors prior to peer-mediated intervention and post-intervention, the student showed an improvement in the area of capitalization and spelling (see Fig. 1).

Behavior 3: Punctuation

Baseline data were recorded during class time for a period of 40 min daily for 17 sessions. During 17 sessions of the baseline, the frequency of punctuation behavior was in the range of 4–8 (*M* = 6; see Table 3).

Table 3

Findings Baseline and Intervention

Behaviors	Baseline		Intervention		Maintenance	
	Errors' range	*Mean*	Errors' range	*Mean*	Errors' range	*Mean*
Subject-verb agreement	6-8	7	2-5	2.9	2-2	2
Capitalization	5-7	6	2-4	2.7	1-2	1.5
Punctuation	4-8	6	2-6	3.2	2-2	2

After delivering the intervention, which lasted over 7 days for eight 40-min sessions, the range of errors in punctuation performance was 2–6 (*M* = 3.2). In the maintenance phase, which conducted a week after the termination of the intervention and lasted for 2 days in the GE classroom, punctuation errors ranged from 2–2 (*M* = 2). Comparing the means of errors prior to PMI and post-intervention, the student showed an improvement in the area of punctuation (see Fig. 1).

Table 4

Varied Errors Observed in Target Student With ASD

Dependent Variable: Writing skills; three behaviors of the same function
Subject-verb agreement
Capitalization
Punctuation

Note. No errors occurred for the student in singular/plural noun agreement and verb tense and usage.

There were no errors that occurred in singular/plural noun agreement and verb tense and usage for the target student. These findings indicate that the student is fluent in spoken word agreement in terms of common verbal usage and singular/plural noun agreement, both of which occur naturally when speaking aloud. In contrast, the errors occurred specifically during the task of writing and consisted of grammatical and semantic techniques that are more profound when observing the written word.

Summary of Findings and Discussion

This study aimed to evaluate peer-mediated strategies to support a student with autism spectrum disorder in improving his writing skills, an area previous unexplored by the research. The researchers developed a measurement tool based upon the according to the core writing curriculum of 7th grade in Pennsylvania, focusing on grammar usage, semantic mechanics, and punctuation. Before the intervention, the student with ASD exhibited low writing ability with a high range of errors. After the PMI, the student

showed reduced errors and was able to maintain this improved writing ability after the intervention was withdrawn. However, this study presents a lack of transferability and generalization across settings.

This study was undertaken to investigate the following research questions (a) What is the effectiveness of a peer-mediated intervention on writing skills in students with autism spectrum disorder in inclusive classrooms? (b) Would peer-mediated intervention be maintained when the intervention is withdrawn? It is essential to note that, for this study, effectiveness is perceived: How students consider that their skillsets can motivate or demotivate their writing experiences on task initiation and completion, remaining on-task, self-regulation and goal setting (Skar et al., 2023).

In cases where the use of PMI has proven to be effective, what factors can be found to be the most relevant to their success? To start with, addressing the first question, the visual assessment of data shows that the peer-mediated intervention on writing skills for the student with autism caused an immediate decrease in mistakes in the student's writing skills. In addition, the peer-mediated intervention maintained the student's writing skills. Thus, the finding indicated the effectiveness of the peer-mediated intervention in improving the student with ASD's writing skills.

It should be noted that the number of errors in all three areas of the target student (subject-verb agreement, capitalization punctuation) were considerably reduced in the maintenance phase, which indicates the PMI maintained effectiveness with the student. The frequency of the various types of errors that occurred were also of note. The rate of error was greatest in spelling and capitalization with punctuation next in frequency and subject-verb agreement showing the fewest number of occurrences. Carter et al. (2011) widely recommended the use of peer support strategies to contribute to the social and academic participation of students with disabilities in inclusive education schools. It is indicated that substantial and significant increases in the occurrence of peer interaction can occur when students with disabilities are educated in peer support environments and with a one-on-one paraprofessional (Carter et al., 2011).

Peer-mediated intervention has been established by the research as effective (Hart & Banda, 2018, Fetko et al., 2013, Odluyurt, et al., 2014). Its advantages to both peer tutors and target students have both academic and social benefits. Employing an intervention where the role of the tutor is taken by a peer student allows adaptation of classroom activities to enable student participation, provides instruction related to IEP goals, offers frequent feedback directly to the student with disabilities, implements relevant behavior intervention plans, and promotes communication between students with disabilities and their peers (Carter et al., 2005).

Social Validity

After the intervention, the main researcher conducted brief individual interviews with the peer tutor, the tutee, and the classroom teacher to obtain information from each regarding their opinion of the process and the intervention. Each reported satisfaction with the intervention. The teacher stated that the intervention helped her to focus on other students and granted the responsibility to students with high academic accomplishments. The satisfaction ratings of the tutor and tutee indicated a positive reaction and high-level motivation toward this intervention. The teacher and students also reported that all students experienced augmented validation within the classroom post-intervention. Jameson et al. (2008) emphasized that the peer-delivered embedded instructional package has a positive impact on the

social validity of the procedures and outcomes. Therefore, the peer tutor, the student with high academic success, was able to adopt the role of instructor, validating his previous efforts and establishing his skill in this position. The target student, the student with ASD, was exposed to the one-on-one tutor dynamic that the teacher had previously been unable to provide due to time constraints and obligations to the other students in the classroom. These one-on-one settings enabled the target student to get the help and peer encouragement he needed to succeed in the inclusive classroom. Finally, the teacher was able to focus more on the class who was previously given less attention and validation due to the teacher's previous increased obligations to the student with ASD.

Conclusions and Future Directions

Many types of work accomplishments the tutees performed with peer tutoring support included repetition of the dictation of the teacher's spelling tests and consistent writing with minor grammatical errors, such as completed sentences, and sentence structure. The results of this study show the effectiveness of using peer tutoring support, specifically in the area of improving writing skills in this one, single instance. Both students involved expressed satisfaction with using this strategy and stated they would use it again in other subjects and classes. The tutor reported that this strategy not only improved the writing abilities of the students with ASD but also improved his own writing skills through the process of supporting his peer by helping him recognize the specific conventions used when writing. Both participants also reported that the intervention helped to foster a friendship between the tutor and tutee. In addition, the study emphasized the importance of using the rubric as the measurement tool to evaluate the writing, which made both students more aware and able to recognize the strategies in their own writing. Furthermore, the success of the intervention confirms that inclusion of students with disabilities, and specifically autism spectrum disorder in GE classroom settings is not only appropriate but beneficial to students with and without disabilities. For the purpose and available resources of this study a multiple baseline design across behaviors was used. In addition, it would be useful to investigate PMI for other types of academic skills, such as reading comprehension and mathematics, since the data collected in such research could provide information that more accurately shows the benefits of peer-mediated interventions across a variety of groups and academic areas. Due to these various limitations, replication is needed to include, for example, genres of writing, such as opinion essays and story writing.

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RESEARCH

Special education and trauma: Are we correctly identifying our students?

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Abstract
The number of students who have experienced trauma is impacting education in greater numbers. This trauma manifests as behavioral or academic issues that result in the students being placed in a special education setting. However, special education classrooms may not be the correct setting for these students. The needs of trauma students are in some cases very similar to those in special education, however, research shows that there are additional needs that today's teachers are ill-prepared to address in the traditional special education classroom setting. This pilot study examines the knowledge of special education teachers and how the identification of trauma students as special education students impacts their daily teaching. As a result of this pilot study, it is evident that more research is needed to determine the best course of action for students identified as having trauma and how to help them succeed in a classroom setting.

Keywords: trauma, special education, professional development, behavior

Students with special needs are often placed in specific settings to allow them to receive interventions that allow them to succeed academically, socially, and emotionally. These students are frequently separated from peers and placed in an environment designed to meet their specialized learning requirements. At the same time, students are experiencing significant traumas in their everyday lives that impact them throughout their school day. This trauma also requires specialized instruction to help students succeed academically, socially, and emotionally. However, while the needs appear similar, if not identical, they are not the same. Trauma can be overcome, while learning disabilities (even if compensated for) remain for a lifetime. As part of her argument for including trauma as a subcategory of emotional disturbance, Winder (2015) proposes providing additional training for educators and parents to help them understand the nature of trauma and how it impacts the learning process. She suggests that training programs should be

practical and help parents learn to manage their child's behavioral challenges. This pilot study seeks to determine if students with trauma are over identified as students with special needs and if the two should be identified as separate disabilities.

A Review of the Literature

In order to qualify for special education services, students must meet a set of very specific requirements that are described in the Individuals with Disabilities Education Act, more commonly known as IDEA. These requirements are determined through a series of tests and evaluations as part of a Multi-Factored Evaluation (MFE) that is then discussed with the team and a determination of qualification is made. But, what if those requirements are met, not because of an actual disability, but because the student being evaluated has experienced significant trauma in their young life?

Trauma is "an overwhelming experience that can forever alter one's belief that the world is safe and good" (Brunzell et al., 2015), Students may experience simple trauma as the result of a car accident or living through a natural disaster like a tornado or fire. More complex trauma occurs when students experience traumatic events such as abuse or violence that are ongoing. According to Brunzell et al. trauma that is experienced in childhood may result in psychological or neurological damage that can be lifelong (2015). According to the National Child Traumatic Stress Network, more than 50% of children have experienced trauma in their young lives (NCTSN, 2018). The Centers for Disease Control defines Adverse Childhood Experiences (ACEs) as "potentially traumatic events that occur in childhood (0-17)" 2023). These events may occur one time (acute experience) or multiple times across the lifetime (chronic experiences). ACEs are not an uncommon experience—64% of adults report having an ACE score of at least one and 17.3% of adults report an ACE score of four or higher (2023).

This trauma and the subsequent effects of it, whether diagnosed by a medical practitioner or not, may lead to behavioral, socioemotional, and academic issues. These issues and their impact on learning in the school setting may ultimately lead to identification as a special education student (Ormiston et al., 2022). Some professionals believe that special education teachers are more likely than general education teachers to work directly with students experiencing trauma (Ormiston et al., 2022). A study completed by Sullivan & Knutson (2000) found that students who experienced trauma had a greater likelihood of being identified as needing special education services.

Relationship between Trauma and Special Education

Andrea Zetlin (2006) notes that while approximately 10% of a schools' population is identified as requiring special education services, between one-third and one-half of children placed in foster care are identified with disabilities requiring special education. Zetlin further notes four additional issues with special education and students who are in foster care: transiency of foster children often leads to lack of correct identification of needs due to delayed receipt of records; there is unsurety who holds educational rights and who is legally responsible for ensuring the education of said student; no one is monitoring the placement and/or advocating for the progress of said student; the quality of some private special education schools is questionable.

Waitoller, et al (2009) examined overrepresentation research in an attempt to determine the impact on the educational system. They found that overrepresentation research and studies dramatically increased after 2000. According to their findings, overrepresentation is not as simple as it has

been portrayed in other studies. Factors come into play based on the location of the school being studied and the population of that school. Waitoller, et al. note that the diversity in the African American community has an impact on the disproportionality of identified students in special education (2009). Additionally, findings indicated that while poverty and special education identification are related, ethnicity may also be a contributing factor to identification–minority students may be identified at a higher rate than majority students in affluent districts (Waitoller, et al., 2009). Students of color in high poverty districts frequently experience ACEs at a higher rate than White students in more affluent districts.

Felicia Winder (2015) wrote in the Hofstra Law Review that IDEA is failing students with trauma because IDEA does not recognize trauma as a disability on its own. Rather, under IDEA. Students with trauma experiences must have another identifiable disability to qualify for special education services. She stated that trauma can negatively impact the learning capacity of students and that this trauma occurs in many variations. A key component of the trauma she references is community trauma and violence, which occur most often in poor, inner city neighborhoods. These students experience trauma both personally and vicariously as the witness to the trauma or the child of the victim. She further identifies different types of stress and abuse that lead to trauma in today's youth.

IDEA defines emotional disturbance (ED, one of the qualifying categories for identification as a special education student) as a condition that affects a student's educational performance over a long period of time. According to Winder (2015), this definition is unclear and too vague to be applied equally across all school settings. Instead, Winder argues for the inclusion of a new subcategory of ED that will encompass the trauma that students have experienced. ACES Aware, a program in California, has developed a screening program that can be used to identify students who have experienced trauma (2023). This screening would allow students to be identified earlier and outside of a clinical setting in order to provide interventions.

Availability of Trauma-Informed Professional Development/Training Programs

According to research completed by Miller & Santos (2020), school employees believed that providing trauma-informed interventions for students through the special education department would be beneficial, but often did not occur due to financial constraints. Chudzik, Corr, & Fisher (2023) attempted to determine how well prepared early childhood special education teachers were to service students with trauma needs. Their findings indicated that while teachers had a general idea about the benefits of trauma-informed practices, there is a need for further professional development of those educators. Specifically, the research completed by Chudzik, Corr, & Fisher (2023) showed that teachers were aware of the impact of trauma on their students and that social emotional learning was important for the well-being of students. However, the same responders indicated that they felt unsupported when they faced challenging circumstances. The participants in the Chudzik, Corr, & Fisher study indicated that barriers to implementing successful trauma-informed care to their students were lack of staff, lack of training and negative attitudes toward programming (2023).

O'Neill, et al. (2010) address some of the ways that teachers can address trauma within the classroom, the first and most important way being a trusting relationship with a single, caring adult. In order to achieve this, teachers must be provided with adequate professional development to educate them to

understand the impact of trauma. Brunzell, et al. (2018) notes that teachers often attempt to meet the social and emotional needs of trauma affected students through the hidden curriculum in their classrooms. Brunzell, et al. also note that teacher preparation for educating students with trauma must also include information about secondary trauma and teacher wellness.

Hackney et al. (2023) offers strategies for creating trauma safe spaces for students. Among the strategies suggested are creating a home-like environment where students can see themselves both visually represented and experience the pride of seeing their own work on display (2023). Walls should reflect vibrancy and differentiation of color rather than be one institutional color. Calming rooms should be included and should not be confused with isolation/time-out rooms. Instead, these rooms should contain items known to be calming and teachers should be trained how to teach students to use them. Of note, Hackney et al. (2023) recommend that staff use earpieces rather than walkies to communicate to minimize auditory disruptions. Along with physical, visual, and auditory sensory recommendations, Hackney, et al. (2023) further recommend consistency in expectations and interactions from day to day in addition to building routine and structure into the school day.

Special education classrooms are filled with students of varying needs, often overflowing, in schools across the United States. And while many students in these classrooms fit the traditional definition of a student with a disability, other students have experienced trauma that these teachers are unprepared to address in their classrooms. While students who have experienced trauma have academic needs, their behavioral and emotional needs are often unmet in the typical special education setting because teachers lack the knowledge of trauma and the tools to use in order to help these students. If these trauma students were identified specifically as students with trauma, plans could be implemented that would better aid these students to be successful in both school and life outside of school. In order to better meet the needs of these students and teachers, professional development about the nature of trauma and how to deal with trauma in the classroom should be provided to all teachers, not just those who may deal with students in a special education setting.

Methods

This study was conducted as a case study to determine the comorbidity of trauma and special education and whether the two should be separated in the educational setting. A case study allowed the researcher to gather in-depth information about the topic and how it impacted educators. It should be noted that the outcome of the study may not generalize into a broader population due to the unique experiences of those who participated. However, a case study allowed the researcher to gain a deeper understanding of the complexities of secondary trauma/compassion fatigue and the factors that contributed to those experiences.

After gathering background information, the researcher interviewed educators who currently work in a high-poverty school district, specifically at a school in the area of town considered to be the “worst” by the population of the area. The school is surrounded by public housing on all sides. There is a general perception that the school is located in an unsafe area of the city. These interviews were done virtually or in person, depending on the preference of the interviewee. Permission to interview was obtained from the school principal and each participant was asked to sign a paper stating that they agreed to be

interviewed. No identifying information was retained and transcripts were assigned a random number. No key was kept. Data collected was coded and analyzed for patterns and commonalities.

A total of three special education teachers were interviewed as part of this pilot study. The experience of these educators ranged from one year (first year teacher) to ten years. One teacher taught previously in a private school setting and one teacher taught previously in a different building within the same school district. All three teachers are Caucasian women.

The district is located in a medium sized city in the Midwest. All students in the school (and in the district) receive free breakfast and lunch. The district educated 7733 students in the 2022-2023 school year. . The make-up of the student population is 36.6 % white and 36.2 % Black with 16.4 % of students identifying as multi-racial and 10.3 % of students identifying as Hispanic. There are 1255 (16.2 %) students identified as having a need for special education services and 387 students identified as English language learners. The specific school used in this case study educated 393 students in the 2022-2023 school year and is located within the center of the city's housing projects. The ethnic make-up of the school is 49% Black (193 students), 25.9 % white (102 students), 18.9 % multi-racial (74 students) and 6.2 % Hispanic (25 students). There are 67 students identified as requiring special education services (17.1%) (Ohio State Report Card, 2023).

Results

The teachers interviewed had a working knowledge of trauma and how it could impact the students being taught. However, none of the teachers had been provided with professional development that would help them understand how to teach students with traumatic experiences. Instead, those students were included in special education classrooms where the presence of these students can be a disruption to the education of classmates.

Typical behaviors exhibited by the students being taught by these teachers included sleeping in class (due to lack of sleep at home related to nightmares or the actual trauma experience), food hoarding, verbal lashing out at other students, and complete meltdowns. These students exhibit difficulty with recall both short and long term.

The teachers also had knowledge of the physical symptoms of trauma experiences and how those symptoms could manifest in a classroom setting– particularly citing hypervigilance, anxiety, and distractibility. They were also aware of the physical symptoms of trauma–adrenaline rush, irregular heartbeat, and memory impairment.

These teachers recognized that trauma often mimics attention deficit hyperactivity disorder (ADHD) and could lead to identification of trauma students as students with other health impairment (OHI-minor). In particular, the ten-year teacher believed that students with trauma are able to "recover" with professional help and that the label of special needs student would then be inappropriate.

However, the teachers also acknowledged that there is currently no category under IDEA that allows for trauma as a disability. Students with significant trauma must be identified under another category in order to receive special education services. This lack of a specific trauma-based category forces students to be identified as special education students (a lifelong label) rather than students who have experienced trauma that impacts their lives. The teachers acknowledged that trauma can be overcome and once overcome, would no longer impact student learning, leading to the student exiting special education services.

Discussion

The teachers were concerned that a special education label could be detrimental to students and could lead to students not receiving the necessary social emotional learning services needed to overcome severe trauma. Among suggestions provided were creating a new category for identifying students needing specially designed instruction to include a separate category for trauma and then providing SEL and intensive wrap-around services. The teachers also suggested that perhaps reevaluation for this category could occur more frequently than the current triennial reevaluation for special education. By doing this, students with trauma could be provided with services for a time period that is appropriate to their individual needs.

Another possibility is to provide targeted professional development that allows teachers to learn the tools needed to assist students with trauma. Teachers know what trauma is and how it manifests, but they do not know how to educate students experiencing trauma. Special education teachers understand how to accommodate for the learning needs, but are ill equipped to deal with the emotional needs of these students. Teachers believe that the education they were provided as preservice teachers fails to provide the necessary information for teachers to offer appropriate intervention for students with trauma. Most teachers are able to provide appropriate academic intervention based on their education, but they feel inadequate when faced with the significant trauma many of their students have experienced.

Teachers need to learn how to teach resilience to students with trauma. Resilience is more than just telling a student they will get over it. It is more than just offering an ear to listen. Resilience means teaching students how to find ways to cope, accommodate and overcome their personal traumas. Teachers need to learn ways to provide the emotional support students with trauma require. They need to be given the tools that will allow them to help their students be successful. Trauma students can be successful in the general education curriculum with the proper support, but because that professional development has been lacking, these students are placed with special education teachers who have specific training in learning disabilities.

Limitations

The researcher is also an employee of this school district and this specific school. It will be necessary to view any information collected with the understanding that there may be some biases that need to be addressed. Additionally, the researcher grew up in an area near this district, but vastly different demographically, leading to possible biases. These potential biases and any others that may arise need to be viewed carefully and reflected upon to ensure that those biases are not included in the final research.

Additional limitations include the type of school district where the participants were employed. All of the participants in this pilot study were employed by a school, surrounded by housing projects, within an urban district. Should this study be continued in the future, participants from all types of school districts would be included to ensure that the results remain valid.

Implications

This pilot study was begun with the hope that it would indicate the need for further study of the relationship between special education and students who have experienced trauma in their lives. More specifically, should the two areas of need be separated and students who have experienced trauma be provided with a different type of special education that is targeted to their specific needs? A relationship between the two variables was confirmed and further

research is indicated to determine the degree to which special education and students who have experienced trauma are influenced by each other.

Conclusion

Special education is not a place, but a service provided to students with disabilities. However, it has long been used as a place where students who struggle in a myriad of ways are put in order to remove them from the larger, typical group of their peers where they are perceived as disrupting the learning process. As time passes and more students than ever are experiencing significant trauma, this is more and more common. Special education classrooms that once addressed learning disabilities and helped students overcome challenges and deficits are now becoming more behavior oriented with behaviors that today's teachers are ill-equipped to address in the classroom setting. More research is needed to discover the best way to educate trauma affected students in ways that are not further traumatizing to these students. Special education classrooms are not the place for trauma students unless the two are comorbidities. True trauma informed settings are lacking and the number of students being misidentified as requiring special education is growing. Without more research into the best placement for these students and quality professional development to assist teachers in learning how to educate trauma students and provide safe environments for these students, trauma students will continue to be placed into special education classrooms where they will languish without the appropriate accommodations to meet their special needs.

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NARRATIVE REVIEW

IEP quality in focus: legal, research, and practical perspectives

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Abstract

Individualized Education Programs (IEPs) are crucial for the educational planning and service provision for students with disabilities (SWDs) in special education. Within the IEP, the Present Level of Academic Achievement and Functional Performance (PLAAFP) statement forms the basis for developing goals and interventions. Despite its importance, there is limited empirical research on the quality and consistency of PLAAFP statements. In this paper, we underscore the necessity of evaluating IEP and PLAAFP quality, tracing the evolution of special education laws and their impact on the academic and functional expectations for the individual progress of each SWD. By examining various IEP assessment rubrics and psychometric considerations, we highlight the relationship between IEP quality and student outcomes, as well as its implications for teacher preparation and retention amidst special education teacher shortages. With our findings, we advocate for further investigation into IEP quality to enhance outcomes for both SWDs and educators.

Keywords: Individualized Education Plan (IEP), Special Education, Education Policy, Progress Monitoring

IEP Quality in Focus: Legal, Research, and Practical Perspectives

Individualized Education Programs (IEPs) guide educational planning and service provision for students with disabilities (SWD) who access special education. Central to a high-quality IEP is the Present Level of Academic Achievement and Functional Performance (PLAAFP) statement, which lays the foundation for developing appropriate goals and designing relevant interventions (Yell et al., 2021). Despite the critical importance of the PLAAFP in shaping students' educational trajectories, there is limited empirical literature evaluating the quality and consistency of PLAAFP statements (Burns et al., 2023; Goran et al., 2020; Hott et al., 2021a). Therefore, the purpose of this paper is to establish the importance of measuring IEP and PLAAF

quality. We begin by describing the legal history of special education. Specifically, we will consider how legislation, policy, and case law transformed special education based on the expectation that SWDs demonstrate progress toward explicitly defined standards; to meet these standards, SWDs must have both high-quality instruction and a high-quality IEP (McLaughlin, 2010). We then address the complexity of measuring IEP and PLAAFP quality by describing examples of IEP assessment rubrics and by addressing psychometric considerations for interpreting such rubric-derived data.

Next, we provide context for this issue with two key strands. First, we outline how scholars have characterized the relationship between IEP quality and student characteristics and outcomes. Second, we will consider how advances in IEP quality research may influence teacher preparation and teacher working conditions, both of which have been linked to the shortages of special education teachers experienced across the country (Billingsley & Bettini, 2019; Mason-Williams et al., 2020; Peyton et al., 2021). Thus, we demonstrate that IEP and PLAAFP quality, respectively, merit further investigation due to their potential to improve outcomes for SWDs and their teachers.

History and Evolution of Special Education

Although the United States Constitution does not enumerate education as a federally guaranteed right, scholars have argued that education is a prerequisite for citizens to participate in the civic responsibilities necessary for a functioning democracy (Almond & Verba, 1989; Black, 2020). Notably, the United Nations General Assembly (UN; 1948) declared that public education is a human right, stating that education may empower individuals and promote understanding, tolerance, and peace among peoples. Nevertheless, the Supreme Court of the United States ruled in *San Antonio Independent School District v. Rodriguez* (1973) that there is no constitutional right to education. Each state was thus vested with the autonomy to implement education policy. By the mid-1970s, millions of SWDs were either excluded from public education or received an inadequate education (Yell et al., 1998; Zettel & Ballard, 1982) and were thus deprived of what the UN considered to be the human right to education. In 1975, the United States enacted federal legislation known as the Education for All Handicapped Children Act (EAHCA; PL. 94-142), mandating that all public schools provide free and appropriate public education (FAPE) alongside relevant services to SWDs in their least restrictive environment (LRE). This information is documented in the student's IEP to ensure SWDs receive services to which they are entitled. Initially, due to limited federal guidance, lower courts were tasked with interpreting FAPE (Zirkel, 2013), and the outcomes-based school reforms of the early 1980s, in conjunction with subsequent case law, would come to further refine interpretations of FAPE.

In 1981, Secretary of Education T.H. Bell convened the National Commission on Excellence in Education to investigate allegations that the educational system in the United States was lagging behind other developed countries (Good, 2010; National Commission on Excellence in Education, 1983). The goal of the Commission was to assess the relationship between secondary education and postsecondary employment (Good, 2010). After collecting a wide range of data, the Commission published *A Nation at Risk: The Imperative for Educational Reform* in 1983. This 30-page report was critical of the American educational system (Bell, 1988) and ended with the following five recommendations: (a) to standardize graduation requirements; (b) to adopt more rigorous standards for

academic performance; (c) to increase the time spent learning; (d) to improve teacher preparation; and (e) to emphasize the roles of leadership personnel (National Commission on Excellence in Education, 1983).

Scholars have suggested that *Nation* set the stage for such outcomes-focused and accountability-based educational reforms as those codified into the No Child Left Behind Act of 2001 and standardized into the Common Core Curriculum (Pajak, 2011; Sourdot & Janak, 2021; Young, 2018). Similarly, the reauthorization of EAHCA in 2004, known as the Individuals with Disabilities Education Act (IDEA; PL. 108-446), has drawn scholarly attention due to its amendments that emphasized the accurate and unbiased assessment of outcomes for SWDs (Ruble et al., 2010b; Shriner et al., 2013). Thus, legislators elevated the standard of FAPE by emphasizing outcomes for SWDs. In addition to these standards-based updates to federal special education law, case law has had a profound impact on interpretations of FAPE.

Two Supreme Court cases and one 6th Circuit Court case have issued rulings that have affected the interpretation of FAPE. The first Supreme Court case was the *Board of Education of the Hendrick Hudson Central School District v. Rowley* (1982). In this case, the family of a deaf student argued that she was denied FAPE because the school did not provide her with a long-term sign language translator. The student was, however, provided with other related services—including a short-term translator who did not believe the student needed his services—and the school argued that she was demonstrating academic progress. Therefore, the Supreme Court ruled that the school had provided the student with FAPE since the student was demonstrating progress toward meeting her IEP goals. The *Rowley* (1982) decision federally operationalized FAPE to mean that SWD must receive some educational benefit, enabling local education agencies (LEAs) to argue that placement was sufficient to derive benefit. In other words, a student's LRE alone was enough to provide FAPE. The Supreme Court was careful not "to establish any one test for determining the adequacy of educational benefits conferred upon all children covered by [EAHCA]" (*Rowley*, 1982, p. 188). Consequently, lower courts were able to establish the minimum academic benefit necessary to confer FAPE to SWDs. Notably, the 10th Circuit Court of Appeals adopted the standard "merely more than de minimis" (*Endrew F. v. Douglas County Public School District*, 2015, p. 1342). However, this low standard was not universally accepted across the country, demonstrating differences in the approaches to providing FAPE nationwide (Yell & Katsiyannis, 2020).

Although the *Rowley* (1982) decision represented the first federal case law interpreting FAPE, the Court's ruling reserved the power to fully operationalize FAPE to lower courts; hence, subsequent judicial rulings have been necessary to provide additional clarity on the federal interpretation of FAPE. Thus, the *Endrew F. v. Douglas County Public School District* (2017) case was brought to the Supreme Court because a student with Autism was not making progress toward meeting his IEP goals despite working on the same set of goals for multiple years. As a result, the Supreme Court ruled that LEAs are required to show that SWDs "make progress appropriate in light of the child's circumstances" (*Endrew F.*, 2017, p. 15), rather than simply deriving educational benefits. With "appropriate" re-operationalized, there is an increased expectation of FAPE for SWDs (McKenna & Brigham, 2019; Sayeski et al., 2019). Second, in *Gary B. v. Whitmer* (2020), several families sued Detroit Public Schools for depriving their students of a basic minimum education,

citing the widespread employment of long-term substitute teachers, dilapidated facilities, and inadequate instructional materials. The plaintiffs contended that these poor school conditions contributed to poor student achievement. Significantly, the federal court ruled in favor of the plaintiff and declared that a basic minimum education was a human right. Further, the Court operationalized a "basic minimum education" to include teaching, facilities, and educational materials (*Gary B. v. Whitmer*, 2020, p. 57), all of which are likely linked to student achievement. Taken together, the *Gary B*. and *Endrew F*. decisions raised the standard for providing FAPE. Thus, SWDs need to demonstrate sufficient progress, and SWDs need a qualified teacher and appropriate educational materials to receive the basic minimum education to which all students are entitled.

Since PL 94-142 was enacted, philosophies towards special education and interpretations of FAPE have changed broadly (e.g., Kurth et al., 2021) and specifically (e.g., McKenna & Brigham, 2019; Zirkel, 2013). Simply, case law and federal legislation have shaped special education around the necessity that SWDs demonstrate progress toward rigorous standards in their LRE (Department of Education, 2022). To document the provision of FAPE, school personnel work with the student and their family to create an IEP; general and special education teachers must be prepared to implement the IEP (Rotter, 2014), making IEP quality a key issue for all educators. Accordingly, in the following section, we will consider how the IEP documents the provision of FAPE. First, we will outline the legal requirements of the IEP as they relate to progress monitoring. Then, based on commonly reported IEP errors, we will describe how IEP quality has been conceptualized by scholars.

The IEP to Document FAPE

An IEP consists of at least one quantifiable goal, a plan for measuring student progress toward that goal, and procedures for monitoring student progress (Yell, 2021). As it relates to FAPE, the IEP operationalizes the academic standards for the student and documents how the student will demonstrate meaningful progress. The IEP team considers the diverse strengths and needs of the SWD and makes judgments about how to implement the IEP. This team includes the SWD and their family, as well as their teachers and support staff (Gartin & Murdick, 2005). These judgments may attend to day-to-day decisions, such as the intensity of an intervention, or longer-term decisions such as planning the course sequence necessary to achieve the appropriate type of secondary diploma (e.g., modified, standard, advanced; Institution for Education Sciences, n.d.). Nevertheless, researchers have noted such judgments involve the possibility of error (Kauffman et al., 2019); errors with IEP composition may result in a denial of FAPE and costly legal disputes between local education agencies (LEA) and families (e.g., Schanding et al., 2017). Therefore, scholars have identified common IEP errors (Yell et al., 2016) and used this information to inform what they believe constitutes a high-quality IEP (Yell et al., 2021).

First, Yell and colleagues (2016) identified errors in the procedural and substantive information documented in IEPs. Procedural information refers to the processes that IEP teams must follow, such as sending prior written notice of IEP meetings, adhering to timelines, and implementing the IEP as written. Substantive information refers to the content of the IEP, including the measurable goals, PLAAFP statement, and accompanying progress monitoring data. The authors noted that substantive errors are more likely to result in a denial of FAPE. For example,

in *Roland M. v. Concord School Committee* (1990), the First Circuit Court of Appeals ruled that procedural flaws do not automatically constitute a denial of FAPE; however, if procedural flaws affected the substantive content of the IEP, this would constitute a denial of FAPE. Thus, there is a scholarly and legal precedent for considering the quality of the substantive content of an IEP. Accordingly, Yell and colleagues (2021) developed a rubric (i.e., assessment instrument; Jonnson & Svingby, 2007) based on hearing officer decisions from due process hearings targeting substantive errors in the IEP for identifying high-quality IEP goals.

Although low-quality IEPs may lead to legal disputes for their disallowance of FAPE (Blackwell et al., 2019; Mueller & Carranza, 2011), Ruble and McGrew (2013) noted that high-quality IEPs may predict student goal attainment. In so doing, these researchers have presented cascading implications for the present research. First, the ramifications of low-quality IEPs have manifested through legal disputes stemming from the denial of FAPE (Blackwell et al., 2019; Mueller & Carranza, 2011); on the other hand, there's an increasingly prominent silver lining to the discourse on measuring IEP quality. Ruble and McGrew (2013) underscored that high-quality IEPs have the potential to predict and possibly enhance student goal attainment. This dual perspective – the legal implications of subpar IEPs and the educational advantages of superior ones – reflects a broader evolution in the educational landscape. As our understanding of the link between IEP quality and student outcomes deepens, it is plausible to anticipate that the benchmarks defining the minimum standards for FAPE will ascend. Historically, the criteria for FAPE have been dynamic, adapting to the ever-expanding knowledge base and pedagogical advancements. Consequently, this research stands as a testament to the pivotal role of high-quality IEPs in fostering better student outcomes and is undergirded by the notion that the evolution of FAPE standards is, and ought to be, intrinsically tied to our understanding of what constitutes an effective IEP.

Previous researchers have noted that adherence to procedural requirements alone (i.e., compliance) does not guarantee the development of a high-quality IEP (Boavida et al., 2010; Rowland et al., 2015). Further, compliance alone may not predict student achievement (Hawkins, 2012). Together, these findings reinforced the distinction between procedural compliance and IEP quality and indicated that IEP quality is more closely tied to the substantive content of the IEP. Therefore, for this paper, IEP quality will be operationalized as the quality of the substantive information in the IEP, with specific attention to PLAAFP statements. To do so, we must first consider the legislation and case law that directly link the PLAAFP statement to FAPE.

The PLAAFP to Document FAPE

According to IDEA (2004) §1414 (d)(1)(A), IEP teams must include a PLAAFP statement describing how the child's disability affects their involvement and progress in the general education curriculum. Two court rulings have highlighted the integral role of the PLAAFP in the conferral of FAPE to SWDs. First, in *Kirby v. Cabell County School District* (2006), the United States District Court for the Southern District of West Virginia emphasized the importance of the PLAAFP when they ruled that an IEP that does not assess a student's PLAAFP does not comply with IDEA §1414. The justices stated, "the child's level of academic achievement and functional performance is the foundation on which the IEP must be built" (*Kirby*, 2006, p. 694). Thus, special educators use the information from the PLAAFP to make decisions regarding a student's instructional programming to

prove that each SWD is receiving FAPE. Second, in *N.S. vs. District of Columbia* (2010), the judge noted that it is impossible to assess student progress without a PLAAFP statement. Together, these rulings require that each SWD demonstrate progress towards meaningful goals as outlined in their IEP and that each IEP must include a statement of PLAAFP to help the IEP team determine which educational and related services the student needs. Therefore, the FAPE mandate necessitates that SWDs demonstrate progress, and the interpretation of progress monitoring data is dependent upon the PLAAFP statement.

Although the IEP is composed of more than just the PLAAFP, there is a direct link between the conferral of FAPE and the PLAAFP statement. Special education researchers and policymakers may consider how to measure the quality of an IEP and PLAAFP statement, respectively. In the next section, we will use examples of existing rubrics to describe how scholars measure IEP quality and consider how to quantify the properties of such rubrics. Then, we will investigate how rubric-derived scores affect both student outcomes and the ability of teacher educators to train special education teachers to write high-quality IEPs and PLAAFP statements.

Measuring IEP and PLAAFP Quality

States are responsible for proving that an IEP confers FAPE (National Council on Disability, 2005). Given this requirement, policymakers and researchers have proposed several rubrics for measuring different components of IEP quality. Such rubrics have measured the quality of an IEP generally (e.g., Hott et al., 2021), the quality of IEP goals and objectives (e.g., McWilliam, 2009; Notari & Bricker, 1990), and the quality of a PLAAFP statement (e.g., Yell et al., 2021). Thus, researchers have generated expectations of IEP quality and assessed the degrees of quality for those expectations (Jonsson & Svingby, 2007). Taken together, scholars have developed rubrics to evaluate IEPs in terms of the quality of IEP goals (e.g., McWilliam, 2009), the quality of PLAAFP statements (e.g., Shriner & Carty, 2018), and overall IEP quality (e.g., Hott et al., 2021b), indicating that each of these constructs is discrete enough to merit individual attention.

The rubrics developed by Shriner and Carty (2018) and McWilliam (2009) provide two additional insights into the scholarly discussion of rubrics measuring IEP quality. First, each rubric had a different number of items (viz., seven vs. eleven) and used different scales (viz., four-point Likert-type scale vs. binary rating) to score the items. Although scores obtained from rubrics need to be highly reliable, if rubrics are over-specified (i.e., have too many scored items or have too wide of a range of possible scores) or too complicated, this will increase the probability of unreliability. Thus, special education researchers and policymakers must balance specificity with parsimony. Although tricky, doing so will center the accurate measurement of IEP quality alongside the feasibility with which this can be accomplished. In other words, the ideal rubric will be one that reliably and accurately captures IEP quality and one that IEP teams can use and interpret easily. This may support teachers with IEP composition to have cascading impacts on teacher self-efficacy regarding IEP management, and potentially reduce the burden of non-teaching duties on special education teachers. Second, the PLAAFP quality rubric (Shriner & Carty, 2018) was general enough to be applicable across various student ages and disability identifications, making this a potentially attractive tool due to its comprehensive utility. Conversely, although some of the items on the GFS-III refer to general aspects of high-quality goals (McWilliam, 2009), such as the acquisition criterion, generalization criterion, and timeframe (Hedin &

DeSpain, 2018), other GFS-III items, such as the emphasis on student routines, apply more directly to the needs of ECSE students (Boavida et al., 2010). Thus, notions of IEP quality may vary depending on student characteristics such as age and disability identification. Many IEP quality rubrics have been developed for students of various ages (e.g., Notari & Bricker, 1990; Lombardi et al. 2017) and disability identifications (e.g., Müller et al., 2022; Ruble et al., 2010).

To ensure that practitioners can effectively use the appropriate rubrics to support IEP development for a variety of students, special education researchers and policymakers may consider the properties of such rubrics. That is, through rigorous analysis, scholars may be able to provide evidence in support of the psychometric robustness of rubrics. Once the scores from a rubric are considered reliable and valid, then such data may be used in additional analysis to consider how the underlying construct (e.g., IEP quality scores) predicts external outcomes (e.g., student achievement, teacher self-efficacy). The veracity of the conclusions drawn from IEP quality research, therefore, depends upon the psychometric properties of the rubrics used to assess IEP quality. Before we can consider such research (i.e., what we claim to know about IEP quality), we must consider how we measure IEP quality (i.e., how we know what we claim to know).

Considerations for Measuring IEP and PLAAFP Quality

When attempting to measure a qualitative concept, such as IEP quality, scholars consider the psychometric properties of the scores obtained from the rubric. Psychometrics "provides a way to quantify the precision of measurement of qualitative concepts" (Utwin, 1995, p. 1). In psychometrics, the reproducibility of rubric-derived data must be established before researchers can consider the extent to which those data accurately measure the intended construct (Utwin, 1995). In other words, without corroborating reliability estimates, the generalizability of inferences drawn from scores obtained from rubrics remains limited.

There are two primary ways that scholars discuss reliability. The internal consistency of the instrument indicates the degree to which the items measure the same construct, often measured by Cronbach's α (Tavakol & Dennick, 2011). The consistency of the application of the instrument across users is calculated as either interrater reliability (IRR) or interrater agreement (IRA; Gisev et al., 2013); the latter is commonly estimated in IEP quality research (e.g., Catone & Brady, 2005; Hill, 2004; Müller et al., 2022). Further, scholars have recommended calculating and reporting multiple reliability estimates to demonstrate the comprehensive consistency of the instrument (Hallgren, 2012; McHugh, 2012). Specifically, Hallgren (2012) noted that IRA alone may not be a robust indicator of reliability as it fails to account for agreement expected due to random chance. Thus, scholars may consider how to conduct rigorous psychometric development of IEP and PLAAFP quality rubrics to ensure that practitioners employ such rubrics with relative ease. Moreover, considering the psychometric properties of the scores obtained from rubrics may contextualize the conclusions drawn from such data. Using this lens, we will next describe how IEP quality research has been related to student and teacher outcomes, respectively. In so doing, we hope to present these results with both caution regarding the psychometric evidence and optimism for the future of IEP quality research.

Research on IEP Quality and Student Outcomes

Though researchers have made connections between IEP quality and student outcomes (Hott et al.,

2021a; La Salle et al., 2013; Pretti-Frontczak & Bricker, 2000; Ruble & McGrew, 2013), the quantity of such research is limited and the results are mixed (Mitchell et al., 2010). For example, using a researcher-created rubric to grade IEP quality, Ruble and McGrew (2013) found that IEP quality significantly predicted a student's goal attainment, accounting for 34.7% of the variance in the dependent variable. Conversely, using a different researcher-created rubric to assess IEP quality for SWDs that scored proficient on the Indiana Statewide Testing for Educational Progress, LaSalle and colleagues (2013) noted that IEP quality demonstrated a limited association with student performance on a statewide assessment. Both the IEP quality rubric and the criterion differed across studies, underscoring the heterogeneity in this research.

These studies present several implications for research and practice for both SWDs and their teachers. First, there is a need to review the empirical literature for research on IEP quality. Specifically, each study used a different rubric to measure IEP quality, indicating that additional research may be needed to consider the features of the various rubrics designed to measure IEP quality. Moreover, each study used a different student outcome as the dependent variable. Researchers may investigate which features of the IEP rubric are appropriate for students of varying ages and disability identifications. Then, researchers may consider how to relate specific rubrics to a variety of student outcomes. Therefore, considering the components of the IEP and how to measure the quality thereof is an important topic that may assist IEP teams, and specifically educators, in improving their provision of FAPE to SWDs.

IEP Quality, Teacher Preparation, and Special Education Teacher Shortages

IEP composition is a key responsibility for special educators, and all educators are responsible for IEP implementation (Rotter, 2014; Will, 1986). Further, managing IEPs and ensuring compliance with IDEA are key responsibilities for special education teachers; however, scholars have suggested that special education teachers find such non-teaching duties burdensome and may contribute to attrition (Billingsley & Bettini, 2019). This is critical because there are well-documented shortages of special education teachers across the country (Mason-Williams et al., 2020; Peyton et al., 2021) and teacher attrition may negatively affect student academic outcomes (Ronfeldt et al., 2014) and the overall quality of the teaching staff at the school experiencing turnover (Sorensen & Ladd, 2020). On the other hand, researchers have suggested that high-quality teacher education may have positive effects on teacher retention (Ingersoll et al., 2012; Ronfeldt et al., 2014) and that more effective teachers are also associated with higher retention rates (Feng & Sass, 2017; Goldhaber et al., 2011). As such, teacher preparation program personnel might consider how conceptions of IEP quality influence teacher preparation in a time of widespread teacher shortages. As scholars refine notions of IEP quality, teacher preparation and professional development may become increasingly specified.

Investigating IEP quality for a variety of student populations may benefit special education teacher preparation by providing special educators with more condition-specific scaffolds to support IEP composition. Specifically, researchers have noted that teasing out the salient features of a quality IEP may enable the development of scaffolded IEP software (Müller et al., 2022), which may decrease the burden

of paperwork on teachers, allow for the flexible modification of goals, and ensure federal compliance (More & Hart-Barnett, 2014). Therefore, additional research on IEP quality could enable stakeholders to more efficiently streamline the way IEP-related data are collected and recorded. More research on rubrics measuring IEP quality is thus warranted. Such research holds the potential to directly improve outcomes for SWDs and concurrently simplify IEP development for special educators, thereby improving working conditions, mitigating turnover, and combating nationwide teacher shortages.

In the absence of such research and software, special education teachers must have the skills to develop IEPs for students across a spectrum of strengths and challenges. Such skills include the collection and interpretation of individualized progress monitoring data necessary to compose PLAAFP statements and create IEP goals. When done correctly, researchers have suggested that such data-based decisions, specifically those that include rules based on graphical representations of student data, may result in positive effects on academic outcomes for SWDs (Carter et al., 2020; Kuntz et al., 2023). However, scholars have noted that special educators may not be able to connect the importance of their teaching practices with special education law (Markelz et al., 2022), and special education teachers have reported challenges making decisions based on progress monitoring data (Espin et al., 2021). Accordingly, teacher preparation programs should explicitly emphasize data literacy and the practical application of legal frameworks, ensuring that future educators are equipped to make informed, legally grounded decisions that enhance IEP quality and improve outcomes for students with disabilities.

In light of the aforementioned legal requirements and the difficulties experienced by some special educators, professional organizations have

developed standards for teacher preparation and professional development to ensure their graduates have the skills to assess a student's progress toward their IEP goal(s). Specifically, Key Element 4.2 in the Standards for Initial Special Education Preparation states that special education teacher candidates "use knowledge of measurement principles and practices to interpret assessment results and guide educational decisions" (Council for Exceptional Children, 2015). Further, the Interstate Teacher Assessment and Support Consortium emphasizes that teachers must interpret student performance data to monitor progress and guide planning (Council of Chief State School Officers, 2013). The systematic use of such assessment data to provide appropriate interventions and modifications to programming is considered a high-leverage practice in special education teacher preparation (HLP 6; Council for Exceptional Children & CEEDAR Center, 2017; Fuchs et al., 2021). Thus, additional research on IEP and PLAAFP quality could refine standards for teacher preparation, improve the quality and specificity of teacher preparation, and ultimately reduce special education teacher attrition. Regardless, IEP and PLAAFP quality are complicated topics and more research is needed to investigate the link between such quality scores and student and teacher outcomes.

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RESEARCH

Retaining special education teachers in a rural Southern United States school district

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Abstract

Rural school districts across the United States need help to recruit and retain special education teachers. This study presents findings based on special education teachers' experiences teaching within one rural Southern United States school district. This instrumental single case study investigates the factors that encourage special education teachers to remain in their current position within a rural Southern United States school district. Qualitative data is analyzed from 11 participants: nine current special educators, one special education director, and one retired special education teacher. All participants are from one rural Southern United States school district to gain insight from their experiences and perspectives. Significant findings include factors that positively influence the retention of special education teachers within one rural Southern United States school district: the small scale of the district, administration support, student rapport, positive school culture, extended family living in the local area, and the supportive culture of the rural community.

Keywords: special education teacher retention, rural school district teacher recruitment

Teacher retention in special education is a persistent national concern, with novice educators leaving the profession at significantly higher rates than their general education peers. According to the U.S. Department of Education (2022), nearly 50% of new special education teachers leave the field within their first five years, contributing to widespread staffing shortages. A 2023 report from *USA Today* revealed that 45% of schools across the United States are currently experiencing shortages of qualified teachers, with special education being one of the most

critically impacted areas (Wong, 2023).

These challenges are exacerbated by geographic isolation, limited resources, and high poverty rates. Data from the National Center for Education Statistics (2023) shows that 14% of children in rural areas live in poverty, further complicating efforts to provide equitable special education services. This study focuses on one rural school in the Southern United States district to explore the localized impact of these national and state-level challenges and identify key factors that contribute to special education teacher retention in this context.

Problem Statement

The ramifications of teacher shortages extend far beyond the insufficient availability of certified educators. Teacher shortages manifest as disruptions in educational services, inflated class sizes, and a heavy reliance on long-term substitutes, all of which detrimentally impact student learning outcomes (Wong, 2023; Billingsley & Bettini, 2019; Bounds & King, 2017).

High attrition adversely affects teacher interactions, whose collective teamwork is vital for accelerating students' progress. With a constant change in special education personnel, it is more difficult for students and families to establish rapport with special education teachers. School leaders' interactions with special educators are often thwarted or interrupted by the high attrition rates of special education teachers (Vittek, 2015). Maintaining highly skilled special education teachers is vital to the success of students with disabilities who attend the rural Southern United States school district and other districts across the nation.

As the population of students identified with a disability increases, special education teachers are leaving rural school districts or the profession entirely. Vittek (2015) stated, "13.2% of special educators leave their jobs each year." Research shows that among special education teachers, almost 50% will leave the field within the first 5 years, even before they become highly qualified. Additionally, attrition rates have led to many vacant jobs that can be filled by uncertified individuals, such that "the high turnover rate has a negative effect on students as well as the district as a whole" (p. 1).

With fewer experienced special education teachers staying in rural school districts, there is a growing need for the mentorship of new special education teachers. Lack of resources often results in a teacher outside of the special education field mentoring new special education teachers. This poses more retention-related challenges for new special education teachers than those being mentored by staff within the special education department. Statistically, novice special education teachers are more likely to leave the education profession due to factors such as high workloads, insufficient preparation, lack of administration support, and challenging working conditions (U.S. Department of Education, 2022). A well-planned mentoring program using seasoned special education teachers is crucial to a new special education teacher's success. This leads to assisting in establishing a more experienced special education teacher workforce.

Furthermore, teacher attrition rates, whether attributed to teachers transitioning between schools, districts, and states or leaving the public education workforce altogether, carry diverse implications not only for the stability of rural Southern United States's teacher workforce but also for the nationwide teaching environment. Bounds and King (2017) emphasized the adverse impact of the departure of qualified special education teachers on student achievement (Bounds & King, 2017). The exit of special education teachers from their roles not only diminishes the

collective effectiveness of all teachers within a school but also disrupts collaborative relationships, which negatively affects the remaining educators. Subsequently, it becomes imperative to prioritize the retention of highly qualified special education teachers as a crucial factor for enhancing overall student achievement. Consequently, addressing teacher attrition necessitates a unique and multifaceted approach.

If teacher turnover is predominantly linked to educators exiting the profession entirely, it signals a pervasive dissatisfaction that demands systematic efforts to comprehensively address underlying issues (Camp et al., 2023). Conversely, suppose attrition is primarily due to teachers transitioning between schools and districts. In that case, policy solutions should be strategically directed toward understanding the factors influencing their preferences for one educational institution over another. In alignment with this individual perspective, a distinctive instrumental single-case study has been initiated to establish the factors that encourage special education teachers to remain within the confines of one rural Southern United States school district. This study seeks to extricate the complexities surrounding teacher retention, with a specific focus on the inimitable context of special education.

Literature Review

The first step in gaining a highly qualified pool of special education teachers is attracting their interest in a rural school district's special education teaching position. The subsequent step in successfully maintaining qualified special education teachers involves retaining those who are hired. Retaining qualified special education teachers is a revolving door of the replacement cycle of teachers. To further develop the conceptual framework for this study, the literature review is organized into seven subcategories: (1) recruiting rural special education teachers, (2) the idea of growing your teachers, (3) retaining rural special education teachers, (4) induction/mentoring programs, (5) professional development support, (6) role design within rural school districts, and (7) positive work atmosphere within the rural school culture.

Recruiting special education teachers

A recruitment strategy implemented by rural school districts in partnership with colleges is exposing college students to teaching practice opportunities within a rural district before graduation. This opportunity, wherein college students are paired with a host teacher, gives future teachers a realistic idea of the conditions associated with teaching in a rural school district. As revealed by Barton (2012), "after surveying participants in the program, the researchers found that even a one-week program can start the change process for pre-service teachers unaware of the opportunities and dilemmas facing those who teach in rural, remote locations" (p. 4). There is a great need to inform potential teachers of the benefits of working and living in a rural setting. Typical benefits are smaller class sizes and less expensive housing costs. Ideally, this strategy attracts teacher candidates who remain in the rural district (Barton, 2012). Teacher candidates placed in rural school districts for their field experience are exposed to the benefits of rural communities, schools, and classrooms, including a safe community environment, strong parental involvement, and a close family atmosphere. The most favorable outcomes resulted from rural districts closely coordinating with university partner schools (Sindelar et al., 2018).

Technology has assisted rural school districts with encouraging results. Many rural school districts have utilized social media for recruitment by advertising

incentives and the benefits of living in their rural community (Sindelar et al., 2018).

The Idea of Growing Your Own Teachers

Some rural school districts have incorporated a "grow-your-own" (GYO) approach by developing programs that assist in training paraprofessionals employed by the district. Another GYO approach is financially assisting those who plan to return and teach in their community (Barton, 2012). Candidates within the local rural area provide cultural capital that other novice candidates cannot provide (Sindelar et al., 2018).

Retaining Rural Special Education Teachers

A significant contributor to teacher shortage is simply high attrition. Rural districts must provide a work environment that meets teachers' needs so that experienced teachers are retained. As Berry (2012) indicated, feelings of isolation can lead to attrition, especially from teachers without personal ties to the rural area. Berry (2012) also emphasized that "a lack of recognition from colleagues, lack of support from administrators, and insufficient assistance grappling with the challenges of their position contributed to rural teacher attrition" (p. 4).

Adequate teacher support by staff and administration is one tool that can increase the likelihood of retaining both novice and veteran teachers. Research by Cullen (2019) reveals that among factors that encourage special education teacher retention, "Fellow special education colleague support was the highest rated out of the most influential factors; it was rated at 84.21% collectively by the special education teachers who were surveyed" (p. 88). Ensuring teachers are recognized and rewarded for their successful classrooms can also promote retention.

A study by Morrison (2013) found that it is essential for novice teachers in rural districts to "establish relationships with colleagues and school leaders" (p. 130). Morrison (2013) further explained how a novice teacher in a rural school district felt isolated and how "the absence of meaningful and productive relationships with others in her professional environment had significant and detrimental effects on her professional identity" (p. 130).

Although salary is a factor in attracting and retaining novice teachers, Sindelar et al. (2018) showed that financial incentives increased recruitment numbers, but retention still needs to improve over time. "Approximately 15% of new teachers did not return after their first year of teaching, and after five years, nearly half had left the field" (Sindelar et al., 2018, p. 16).

Induction/Mentoring Programs

Appropriate induction programs can play a vital role in improving the retention of novice teachers, particularly in the field of special education where demands are often more intense and multifaceted. These programs provide much-needed structure and support during the early years of teaching, offering mentorship, professional learning opportunities, and guidance navigating responsibilities like due process paperwork and classroom management.

The success of novice teachers is critical, as Billingsley (2019) noted, "special educators with less experience are more likely to leave" (p. 713). Without intentional support, new special education teachers can quickly feel overwhelmed, isolated, and underprepared for the challenges they face. By implementing meaningful induction practices, especially ones that include mentorship from experienced special educators, districts can help new teachers build confidence, feel more connected, and ultimately remain in their positions longer. For rural districts with limited staffing, strong induction programs are not just beneficial, they are essential. As

technology has improved, it has increased induction opportunities and has provided mentoring that otherwise might not be available. For example, novice teachers can receive additional support remotely from universities via web conferencing, which reduces novice teacher isolation (Sindelar et al., 2018). E-mentoring has also developed as a viable option for some rural districts; Bailey and Zumeta (2015) stated:

> State Education Agencies can reduce professional isolation and improve access to professional development by providing innovative approaches to online mentoring. These programs provide new teachers opportunities to engage in professional collaborative problem solving to address challenging situations, navigate complicated state and federal paperwork requirements, and provide immediate access to answers. (p. 44)

Administrators must know the unique support needed for a novice teacher's classroom success to encourage retention. Results of a study by Willis (2019) indicated "the need for administrators who provide support to early career teachers to be knowledgeable about teachers' needs, despite the novice teachers' inabilities to express the needs specifically" (p. 83).

Professional Development Support

Research shows that more than monetary rewards are needed to retain teachers within rural school districts. Professional development opportunities, connecting with other rural teachers, and developing and nurturing relationships with parents and the community are also needed for retention success (Barton, 2012). Results of a study investigating special education teacher burnout about job satisfaction indicated that special educators' "job satisfaction includes providing meaningful professional development opportunities and helping them feel supported by their school" (Robinson et al., 2019, p. 6).

Professional learning communities (PLC) can allow special education teachers to collaborate with other educators and receive professional development with their colleagues. Jones et al., (2013) stated that "with a considerable amount of clarity and improved cultures, educators in professional learning communities report that the job becomes easier when learning communities are in place" (p. 360). PLC groups can support novice teachers with answers to questions that may arise throughout the school year.

Positive Work Atmosphere Within Rural School Culture

Research indicates that some rural school districts have overcome teacher retention challenges by emphasizing their positive qualities. According to Berry (2012), "researchers have documented how schools that are successful at meeting the challenge of teacher retention have capitalized on the positive qualities found in small, rural school communities" (p. 4).

Billingsley (2019) suggested that "administrative and collegial support and school culture, particularly a culture of collective responsibility, contribute to special education teacher retention" (p. 731). When teachers feel supported by their administrators and connected to their colleagues, they are more likely to remain in their perspective roles, even when faced with the challenges often faced in special education environments. In rural districts, where staff and resources are often limited and teachers must wear multiple hats, a culture of collaboration and shared responsibility can make a substantial difference in the ratings of teacher satisfaction as well as long-term commitment.

The advantages of many rural school districts include smaller classroom sizes, more autonomy for

teachers, a sense of social belonging, and fewer discipline problems; case in point, "the longevity rate for rural teachers staying at one school is an average of nine years. That exceeds the national average of 8.4 years for all public schools and is higher than the rates for both cities and towns" (Barton, 2012, p. 1). Some positive environmental work factors may have a more significant influence on retention than salary alone:

> Teachers' intent to continue teaching in the same rural schools and districts was most powerfully influenced by nonpecuniary factors, including degree of community appreciation and the degree to which teachers perceive the community as being committed to improving and supporting education. (Sindelar et al., 2018, p. 17)

Berry (2012) explained how "special educators who are involved in collaborative relationships with other special educators report lower levels of professional isolation and work-related stress" (p. 4).

Current literature supports the idea that there is a need to discover more about why special education teachers decide to stay within one rural Southern United States school district. There are issues with recruiting and retaining special education teachers within rural school districts. However, there are suggested strategies within the literature for recruitment and retention. Determining factors that influence special education teachers' decision to stay employed in one rural Southern United States school district is the first step in finding solutions to address this problem of practice.

Methodology

To discover factors that influence special education teachers' decision to remain employed with the rural Southern United States school district within this case study, answers to the questions posed in this study were gathered, coded/categorized by theme, reviewed, and compiled into an analytical narrative of the findings. These results can be used by the study's school district and similar districts to support teacher retention.

The central research question guiding this investigation is as follows: What factors contribute to the decisions of special education teachers to persevere in their employment within a rural Southern United States school district? This inquiry is perceived as the initial step toward comprehensively addressing the intricate challenges associated with teacher retention in this specific educational context.

To find accurate information directly linked to the research questions posed within this study, Phase 1 involved nine of the ten special education teachers currently teaching within one rural Southern United States school district. Not all ten teachers could participate; one was out of town during Phase 1. The special educators participated in a focus group discussion in which the focus group protocol questions were general questions closely aligned with the research questions posed in this study. Participants were also requested to fill out a demographic data survey form.

Phase 2 of this research consisted of individual interviews with the focus group participants. The special education director of the same rural Southern United States school district was also interviewed, as well as a retired special education teacher who retired from the same district as the other participants. The interview question protocol for the current special education teachers differed slightly from that for the retired special education teacher. Additionally, the interview protocol questions designed for the director of special education were individualized. All interview protocol questions aligned with the research questions posed within this study.

This single case study's primary data collection method was a three-pronged exploration. The method included a demographic data survey, a focus group, and individual interviews. The use of a case study was found to be a more in-depth informational focus on one rural Southern United States school district but may be useful for similar districts throughout the state. The demographic data survey assisted in attaining information about participants that aided in understanding their frame of reference. A focus group interview created an opportunity to gather general data from participants and set the stage for individual interviews to occur later. Individual interviews allowed the researcher to follow up on the focus group questions and helped to explore other questions in greater detail.

Although there were substantial advantages to utilizing a focus group interview within this study, there were also potential disadvantages. Because participants were in the live presence of other focus group members, their answers and opinions might not have been independent. Other focus group participants may have influenced them. According to Ravitch and Carl, this may especially be the case if some members are viewed as more powerful than others which can influence the general answers of other group members (Ravitch & Carl, 2016).

Discovering factors that promote retention within the rural school district required listening to and analyzing answers directly from special education teachers employed within the district. This approach was optimal for the study since, as described by Ravitch and Carl (2016), "qualitative inquiry seeks to discover and to describe in narrative reporting what particular people do in their everyday lives and what their actions mean to them" (p. 7).

Alignment with research questions was accomplished by piloting the focus group and interview protocol questions with five colleagues. To maintain validity, adjustments were made to the interview protocol questions based on the feedback provided by the pilot participants. The focus group interview took approximately 20 minutes, and each participant's interview took approximately 40 minutes. The data from the focus group and individual interviews explained why the participants chose to teach and remain employed within a rural Southern United States school district. The data also revealed factors discouraging the participants from remaining in their special education position in their rural district.

After analyzing data gathered from the focus group interview, participants were asked to participate in an approximately 40-minute interview that elaborated on the focus group interview with detailed questions aligned with the research questions of this study. Choosing a participant with an administrative role provided information from their perspective regarding strategies used by the district and their perception of which ones provide the most benefit. Participants teaching special education within the rural Southern United States school district provided information regarding their experience and feelings about different teaching aspects. To gain another perspective, a final interview was conducted with a retired special education teacher who taught for over 15 years within the district. The interviews were essential in gathering more in-depth answers in addition to the focus group because more in-depth information was provided as well as multiple perspectives, "one of the most important aspects of the interviewer's approach is conveying the attitude that the participant's views are valuable and useful," as Marshall and Rossman discuss (Marshall & Rossman, 2016, p. 148).

A three-pronged data analysis process is essential for finding accurate data results. The three categories: data organization and management, writing, and

representation, and immersive engagement, were all connected throughout the data analysis process. It is also vital to organize and manage data as data collection occurs by employing a data management plan (Ravitch & Carl, 2016). The analysis process was ongoing and analytic memos were taken as the focus group discussions occurred and throughout the individual interviews. After the interviews, reflections were made based on analytic memos recorded during the interviews and transcripts of audio recordings.

During data analysis, significant patterns and differences in question-and-answer data gathered from interviews were coded, which assisted in identifying correlations, themes, and categories of the research data. Coding according to positive or negative correlation findings assisted in developing themes. As said by Bloomberg and Volpe, the primary goal was to report findings in an interesting, credible, and accurate manner (Bloomberg & Volpe, 2016).

The initial step in the case study data analysis process entailed reading and re-reading the data while posing critical questions about the data's identification. Initial coding provided a basis for further examination. During the Open/Initial Coding phase, the first cycle of assigning unique codes to individual data sections occurred. Many units of data from different participants overlapped in code. This was the initial step in developing themes. Saldana emphasized that "one of the coder's primary goals is to find these repetitive patterns of action and consistencies in human affairs as documented in the data" (Saldana, 2013, p. 5). During the open coding phase, all the transcript data, analytic memos, and demographic surveys were reread several times while initiating codes according to trends in the data. The data supported the development of themes as each piece of data was reduced and categorized.

Axial coding was utilized during the second cycle. Saldana explained that "axial coding describes a category's properties and dimensions and explores how the categories and subcategories relate to each other" (Saldana, 2013, p. 209). Critical questions were asked during data analysis to determine the meaning of the data and the appropriate category and theme to which each data set belonged. Subcategories began to develop within central themes of data.

Selective coding was used for the third and final cycle of coding. Kolb explained selective coding as "the process of identifying and choosing the core category, systematically connecting it to other categories, validating those similarities and relationships, and then completing categories that need further refinement and development" (Kolb, 2012, p. 84). During the third coding cycle, the themes in the data developed. It became apparent to which theme the individual pieces of data belonged and how they related to other themes and subthemes.

A thematic data analysis approach was utilized to interpret interview data results. The interview questions and responses were transcribed and organized into a summary of the results. These answers were organized according to the category theme to which each question and response applied, as the analysis process was ongoing throughout this study. Utilizing a thematic data analysis method was vital in the development of the report of research findings accurately and credibly. A successful thematic analysis does not simply summarize the data in themes but rather "interprets and makes sense of it" (Maguire & Delahunt, 2017, p. 3353). As a result of a thematic analysis approach, six predominant themes emerged from the data. Each theme contained subthemes that went into greater detail in answering the study's research questions.

The predominant threat to this research study's validity depended on the participants' willingness to contribute and give honest, detailed responses. By not participating, the total number of participants would have been affected, making the data more subject to specific individual experiences, ideas, beliefs, and opinions. It was vital to include specific procedures to ensure that standards of trustworthiness were met. These measures included member checks, peer debriefing, and triangulation (Marshall & Rossman, 2016). Member checks involved sharing data with research participants, including interpretations (Marshall & Rossman, 2016). When necessary, interpretations of the interview data were shared with participants to ensure clarification.

Peer debriefing involves sharing findings with critical reviewers to "ensure that analyses are grounded in the data" (Marshall & Rossman, 2016, p. 46). The study's findings were shared with several colleagues to assist in identifying any weaknesses in the data analysis.

In data triangulation, researchers utilize multiple sources through different methods to gather data (Ravitch & Carl, 2016). This included analyzing demographic, focus group, and individual interview data to determine whether a second interview with any of the participants was needed to clarify any information in question. This process assisted in gaining insight into factors that encourage a special education teacher to stay employed within one rural Southern United States district. The focus group interview questions and the individual interview questions protocol were closely aligned with the study's research questions.

No research project is perfectly designed; they all have limitations and tradeoffs (Marshall & Rossman, 2016). This study relied on potential participants agreeing to participate and giving thorough, honest answers to interview questions correlated with the study's research questions. Information obtained from the group study could be skewed if any participant's answers were influenced by other members of the group study (Ravitch & Carl, 2016). Data collected from the interviews was subject to the willingness of participants to give candid, complete answers. By making participant confidentiality a top priority in this research, the identities of all participants remained confidential, and pseudonyms were used throughout the findings report. None of the participants were identified or linked by their real name to their responses in the qualitative study, as participant privacy is a priority. Privacy was ensured by assigning a unique pseudonym to each interview transcript instead of using individuals' actual names or school district names. All interview recordings were destroyed after being transcribed. Furthermore, this process allowed continued trust to be maintained with participants.

Participation in this study included the special education director, one retired special education teacher, and all currently employed special education teachers in the district except one who was out of town. Nine of the ten currently employed special education teachers (at the time of this study) contributed to this qualitative single case study for 11 participants. To protect participant identity, pseudonym names were assigned to everyone.

As far as delimitations are concerned, by design, this study limited its scope to just a tiny percentage of all special education teachers across the state who teach in a rural school district. The study's selected group represented the entire population of special education teachers who teach within that one rural school district in a Southern State within the United States. Answers to the research questions depended on the sample of rural school district special education

staff. By focusing this case study on one rural school district and by being able to follow up with more interview questions as necessary, the answers to the study's research questions provided more comprehensive and in-depth answers. Moving forward, these findings may predominantly be helpful to this specific district and other rural school districts in the Southern United States. Some aspects of these special education teacher retention strategies might also be helpful to larger school districts.

Findings and Analysis

Demographic data provided information revealing participants' perspectives. Of the 11 participants in this study, eight had extended family living in the local area, and five of the participants were raised within the local community. The age range of participants was 33 to 69. Degrees attained by participant members ranged from Bachelor of Science to Educational Specialist. Three participants were seeking an additional degree; one of the participants seeking an additional degree was pursuing a counseling degree and planned to seek a position within the counseling field. Key to this study, six of the participants were certified in special education when they began their careers. All of the participants employed by the district were licensed in special education. Of the participants, two were new to the district, and three others considered leaving their job positions after the school year. Of these, one was considering retirement or returning for one more school year, one was planning a career shift into the counseling field within another district, and one wanted to move to a district closer to her family with a higher salary schedule. Experience within the district ranged from 1 to 32 years. Experience within their current position ranged from 1 to 21 years. Only one teacher had a mentor within the district, and she was in her third year of teaching. Additionally, one teacher returned from retirement to fill a special education teaching position that would have otherwise remained unfilled. The special education teacher, already retired from the rural school district, was the only one with experience in an urban school district setting.

Analysis of interview data revealed six major categories of environmental influences on special education teachers' decisions to remain employed within their current rural school district. Each of the six core categories contains themes that go into further detail. The six predominant categories that emerged were as follows: (1) encouraging components, (2) discouraging components, (3) hiring and supporting novice teachers, (4) advantages of a local rural community, (5) disadvantages of the local rural community, and (6) strategies recommended for retention.

These six categories, and the themes within each category, assisted in answering the research question posed in this study. By organizing and analyzing the data into six major categories, answers to the research questions posed in this study were revealed by identifying themes. These themes within each category were found by coding and analyzing the qualitative data gathered from the participants through their lived experiences as discovered through surveys and interviews.

Encouraging Components

Benefits of a Small School System

Out of the 11 participants, the rural school district's small scale was referred to by nine participants positively. The interviews revealed that participants enjoyed the small size of their classes, the small system, and the small number of staff members.

When discussing what she valued most about

teaching at a rural district, Sophia Perkins mentioned "how small our classes are and that we're able to build a rapport with our students and see them grow."

Both novice and veteran teachers articulated how they enjoyed the small scale of the rural school district; in fact, 82% of the participants commented positively regarding the smaller size of the district. This positive factor contributes to why some special education teaching staff decide to remain in their current position in the rural district.

Importance of Administration Support

Participants spoke very positively regarding their administrators, most notably the special education director. Eight participants in their interviews mentioned how supportive the special education director is. Building administrators were also viewed positively. This collaborative approach between building administrators and the special education director was a factor that participants expressed as something that encouraged them to stay in the rural school district.

Rural Student Rapport

The data revealed that not only was having the opportunity to teach students within the rural setting favored among staff, but it was also mentioned by 100% of the participants in the study. Participants expressed how working with students provided intrinsic value in their position within the district, thus encouraging all participants to remain in their current positions.

School Culture Characteristics

Based on interview responses, the rural school culture was highly valued among participants, with nine out of 11 indicating the school culture being a factor that encourages them. The focus group discussion mentioned the school culture's support: "I feel like everyone gets along, willing to try new things. If they don't know something, they ask. We're all kind of a team here."

Under the category of encouraging components of teaching within a rural Southern United States school district, four themes emerged from the qualitative data. The themes identified were small system, administration, students, and school culture. All participants referred to at least three themes as encouraging in their decision to remain in their current position within the rural school district. All four themes were indicated by 54% of the participants as a positive factor in their choice to stay in the district. These themes assisted in answering the questions posed in this study as they addressed factors that contribute to special education teachers' decisions to stay within their rural Southern United States school district.

Discouraging Components

Due Process Paperwork

Often stated as a great source of stress throughout the interviews, due process paperwork was negatively referred to by 82% of the participants. Based on participant interview responses, the stress from due process paperwork was due to the extensive time it takes to develop IEPs and other paperwork associated with special education due process conferences. The legal responsibility associated with special education due process paperwork added to the participants' stress levels. It was suggested by some participants that time set aside expressly to complete paperwork would assist in lowering their anxiety related to maintaining due process records.

Communication Obstacles

A lack of communication was reported as a challenge by four participants. Three participants discussed occasional communication interruptions with their supervisors or coworkers outside the

special education department. Emma Avery, who was in her third year of teaching, discussed a need for more communication she sometimes experienced with general education teachers. Emma suggested more robust communication with general education teachers and building administrators: "I always feel like there's ways to improve better communication. So that would be something they could improve on and have better communication between the general education and the special education teachers, and from the administrators to the teachers."

Although communication was not a significant obstacle reported, the data suggested that communication was essential to participants. The novice teacher was one of the participants who noted communication as an area that could be improved upon, which might be necessary, especially for novice teacher support.

Salary Challenges

Aspects of individuals' salaries were cited in 100% of the interviews with currently employed participants. Participants often mentioned salary as a challenge, and staying within the rural district would be easier if monetary compensation was higher. The only participant that did not mention salary was the retired special education teacher.

Delilah Navarro discussed the salary steps and that she had reached step 19, the highest step for teachers in the district, "my income has stayed steady for the last several years. However, my bills keep going up, and our income keeps staying here." A lack of salary steps was only one factor viewed as a challenge.

The special education director Jasmine Hughes agreed that the district paid less than some larger districts. However, the local economy was different than in larger districts: "Oftentimes the pay is not as good as it is in bigger districts, but when you live in a rural area, the cost of living you know is usually less than in an urban area."

Number of Responsibilities

Responsibilities were identified as a challenge. Of the 10 participants employed within the rural district, 80% felt overwhelmed with their responsibilities. Several participants had similar challenges as Delilah Navarro, who expressed feeling stressed by having multiple responsibilities but the same accountability: "If you're wearing more hats in a small district, then you're stretched thin. That makes it scarier because it's the same accountability, but you're stretched doing more roles."

Four themes emerged under the category of discouraging components: due process paperwork, communication obstacles, salary challenges, and the number of responsibilities. These themes addressed concerns that possibly discouraged special education teachers' decision to stay within their rural Southern United States school district.

Hiring and Supporting Novice Teachers

Recruiting Strategies

According to the district special education director, Jasmine Hughes, recruiting special education teachers has been a challenge for the district:

> Finding teachers, getting good quality applicants, finding any applicants, you can't. I mean, it's just tough finding people in this area, and it's hard to attract people who are not from this area unless they know somebody or their family or there's some incentive. One of the things as far as how I try to address it is, I reach out, I have a lot of connections, so I try to reach out or contact people to try to get more people to apply; it's hard though.

Special education teacher, Julia Homme suggested advertising how family-oriented the district culture is and "making sure that the new teachers know there is support and that you're not just going to be thrown in a classroom with no help or assistance. If they know that in advance, maybe they will come and stay." Julia also suggested the possibility of a sign-on bonus: "A sign-on bonus would probably help if the district could afford that."

Mentoring of Novice Teachers

Third-year teacher Emma Avery was the only participant who received mentoring at the district. When asked how she rated her mentoring experience as a mentee, she replied:

> Very good. You know, any problem I had, they would help me with, and I had more than one person, you know, more than just my mentor that I could go to help me. So, I felt like I had many mentors to help me learn everything, so yeah, it was very good.

Emma's only suggestion for improvement was "having a meeting once a week and just go over the things that's going on in your room and make sure that you're staying on task with things and see if you can improve things."

In reflecting on the mentoring process, director Jasmine Hughes stated that in addition to teaching aspects of special education, she tries to ensure that due process training is included as an essential part of the mentoring process. Gordan Hewson had a similar comment, suggesting a more hands-on approach to mentoring: "I would say more hands-on, showing things one on one, and more of the due process side."

Advantages of Local Rural Community

Grew up in the Area

Of the 11 participants, five grew up in the local area and viewed growing up locally positively. Sophia Perkins discussed how she has enjoyed living in the rural community: "It's a close-knit community. I've lived here all my life." Growing up and having family roots in the local area seemed to encourage participants to stay.

Extended Family

When discussing the local community, eight of the 11 participants mentioned families living there. Even after retiring, Penelope Farrell stayed in the area because of family: "Actually, because my family was here, I wanted to retire here." Delilah Navarro commented, "I'm still here because my family's here, we own a home here, and my roots are here." The extended family in the area seemed to influence participants' decision to remain there.

Supportive Culture

When discussing the local community, six of the 11 participants mentioned how supportive the community can be. During the focus group, someone stated, "I like the fact that everybody knows everyone, so they help you out. If someone has cancer, everybody shows up to lend a hand."

Three themes emerged in the advantages of the local rural community category: growing up in the area, extended family, and supportive culture. These themes addressed factors that participants enjoyed about the local rural community they teach. These positive attributes of the local rural community contribute to special education teachers' decision to stay within their rural Southern United States school district.

Disadvantages of Local Rural Community

Fewer Opportunities and Resources

According to participant interviews, there are generally fewer opportunities and resources within this rural community than in larger communities. Of the 11 participants, six mentioned fewer opportunities

as a negative aspect of their rural community. When discussing the disadvantages of the local community, retired teacher Penelope Farrell mentioned not having a hospital or any industry jobs for younger people:

> Sometimes you don't have access to things you need, resources like medical facilities. Other disadvantages would probably be the economy, and of course, we have no industry of any kind in this area, so our children have to move away after high school for college.

Prevalent Poverty

Low income in the area was attributed by four of the 11 participants as a negative characteristic of the local community. Diana Evans mentioned that poverty may rise in the local area: "It is a poor district, it's gotten worse, but I think it's just the economy, and I wouldn't live anywhere else; it's a special place."

Strategies Recommended for Retention

Income Increase

During the interview process within this case study, participants suggested several retention recommendations. 100% of the participants currently employed within the rural school district suggested an increase in income in some form. This was the only recommendation made by all participants currently employed; the only participant who did not mention raising income was the retired special education teacher. Julia Homme who offered a creative suggestion:

> I thought for teacher retention that if every five years, special education teachers had some type of stipend or bonus along with their salary, or even if it was just a flat rate of $500. Or, I mean, something small would even help keep teachers longer.

All participants currently employed within the district discussed salary as an area the district could improve upon. Several suggestions were made, such as extending teaching contracts, adding steps to the salary schedule, or having a stipend according to how many years a teacher stays within the district.

Due Process Support

Six of the 11 participants mentioned extra support for due process paperwork, making it the second most popular strategy proposed for retention. Gordon Hewson offered an idea from a previous school district he had taught at that was supportive: "We had a clerical assistant, so they handled all of the conference notifications and set up the conferences, which helped out a ton. I think that would help retain teachers."

Administration Support/More Inclusive

Of the 11 participants, four mentioned that administrative support was necessary. Paul Sumner felt it was essential to have positive leadership to set the culture of the school campus: "Administration support, I feel like the administrator could make or break a school year for teachers and students. A positive administrator that allows a teacher to do his or her job is going to go a long way." When explaining what administrators could do to support her more, Julia Homme commented: "Just including me more, not planning necessarily, but just information that would help me better benefit my students. That way, I could help other special ed teachers that struggle that are new."

Novice Special Education Teacher Support

Only one participant, Emma Avery, was considered a novice teacher with two years of experience. Emma's mentoring experience was positive as her mentor was a certified special education teacher, whom Emma felt was highly supportive of her professional growth. Emma also

reported that other special education teachers were supportive and explained how she felt comfortable asking questions due to her colleague's approachability and willingness to assist.

Emma mentioned two factors that discouraged her: the responsibilities of filling many different job roles and sometimes feeling overlooked due to a lack of communication with administrators. Being a smaller district, sometimes extra duties and responsibilities were given to Emma, which caused her to feel overwhelmed while learning new responsibilities as a novice teacher. While Emma reported that administrators were supportive, she felt that sometimes when building information was dispersed, she was omitted.

When asked about strategies the district could utilize to support and retain novice special education teachers, Emma specified a higher salary, more administrative support, and a more inclusive environment for special education teachers. Emma was not alone in her suggestion of a higher salary, as all of the participants recommended a raise in pay as an area the district could improve upon.

Recommendations

The central research question posed in this study is, *What factors contribute to special education teachers' decisions to continue employment in their rural Southern United States school district?* This study is significant because it provides qualitative data from the perspective of nine of the ten special educators within a rural Southern United States school district and the factors influencing their decisions to stay. The rural Southern United States school district might find this research valuable in retaining special education teachers. Other rural districts with a similar problem might find this research helpful in developing special education teacher retention strategies.

Several positive attributes that participants reported within this study are also reflected in the literature. Positive factors that encouraged participants to stay in their current position within a rural Southern United States school district were rapport with students, the small scale of the district, positive school culture, and administration support (primarily via the special education director). There were also encouraging factors within the local community, such as extended family living in the area, the supportive culture of the local community, and participants growing up locally.

Recruitment of Teachers Who Stay

Of the 10 participants employed by the rural district, 50% grew up in the local area, and 70% had extended family living there. The district may want to consider the correlation between the participants in this study and the advantages of having extended family in the community. Seventy-three percent of the participants had extended family living in the area, and 55% grew up within the local community. By investing training efforts in people from the local community, the district could benefit from filling open teaching positions and offering high school students interested in pursuing a teaching career elective educator course as an introduction to a teaching career. These courses may encourage high school students to pursue a teaching program in college.

According to the data, participants enjoyed the small scale of the district and the supportive culture within the district and local community. Participants also found supportive administration as an encouraging factor in their decisions to stay in their current position within the district. These are assets the district could also underscore when advertising available teaching positions.

Salary Increase

Some discouraging findings within the rural district found within this study were also reflected in the literature. Jasmine Hughes, the special education director, reported on her challenges in finding and hiring licensed teachers.

Based on qualitative data, the rural school district could use recruitment strategies such as emphasizing the positive quality-of-life factors of the local community since some of these factors compensate for lower salaries. Barton (2012) discusses how it is essential to inform potential teachers during recruitment of the advantages of working and living in a rural setting, such as smaller classes and cheaper housing. The district's small scale is a positive attribute to consider and emphasize in recruiting efforts. It can assist in offsetting the lower salary compared to larger, more urban school districts.

All of the participants (100%) in this study currently employed by the rural school district suggested some form of higher salary as an improvement the district could attempt. Suggestions included days added to their contract (which would also help with completing due process paperwork), steps added to the salary schedule, or providing a stipend according to how long teachers have been in the district. Participants also suggested higher salaries so their district could compete more with neighboring districts.

Unfortunately, not all rural school districts can afford to raise salaries. Therefore, creative solutions might make various types of salary increases feasible. For example, the district could develop a grant application committee for special education teachers and administration to assist with expenses. Bailey and Zumeta (2015) emphasized how applicable applying for federal grants could be for rural districts, "help rural LEAs maximize federal funding opportunities for special populations. Investing in staff with grant writing skills, along with training and targeted support from SEAs, can increase rural LEA participation in federal grant initiatives" (p. 47). Another option is if the rural school district could collaborate with other rural districts within the state to produce appeals to the state's legislative representatives for budget increases that might assist in funding salary increases.

The district could also explore possible school loan forgiveness programs for rural special education teachers. Rude and Miller (2018) suggested utilizing "policies that provide loan forgiveness to government-sponsored loan program recipients for employment in rural and hard-to-fill positions" (p. 27).

Administrative Support

Although only 27% of the participants in this case study reported occasionally feeling overlooked by administrators from a lack of communication at some point, improvement in this aspect could be crucial in bolstering retention rates. Rude and Miller (2018) stated that "the demands placed on special education professionals are unique in rural school environments for a variety of reasons, which may include social or professional isolation" (p. 26). Administrators could prioritize communicating directly with special teachers, especially those with less experience.

Utilizing the rural school district's collaborative and supportive culture, ensuring that special education teachers can continue participating in PLC learning groups, is a strategy the district is currently utilizing. Special education PLC learning

groups could collaborate with neighboring rural school districts' PLC learning groups, especially now that online meetings have gained popularity. Harmon (2005) reported that "collaboration among schools can contribute to important school improvement" (p. 2). Harmon (2005) further explained that collaboration between school districts could also positively affect students' academic success. Rude and Miller (2018) stated that "the best investment that can help to assure the retention of highly effective educators in rural communities is the provision of high-quality professional development programs" (p. 28). Given the high mobility rates of students in rural areas, increased collaboration between school districts could offer valuable consistency and support, not only for the students transitioning between schools, but also for the educators who serve them. Strengthening connections across districts can help ensure that students experience smoother academic and social transitions, while also giving teachers a broader professional networking system, shared resources, and a greater sense of community.

Strategies for more support with due process paperwork and conferences were also mentioned by participants, such as adding extra days or adding scheduled blocks of time to complete due process requirements. According to the participants, the district currently holds annual reviews during April and May. According to the Individuals with Disabilities Education Act, a student's IEP must be reviewed annually and active at the beginning of each school year. There are no restrictions on which month an annual review can be held during the school year. Therefore, the district might consider holding annual review conferences throughout the school year so that conferences are more equally distributed to ease the stress of due process paperwork.

The district could also hire substitute teachers to fill in for special education teachers once each quarter to allow special education teachers an opportunity to collaborate with the special education director while preparing due process paperwork. According to this case study, this strategy might be more feasible than raising salaries. It would support special education teachers by providing more time to prepare and maintain due process paperwork.

Summary of Recommendations

The outcomes of this investigation complement those of earlier studies. The insights gained from this analysis suggest that the rural district involved in this case study should consider utilizing positive aspects of the district when recruiting new teachers. Attributes include the small scale of the classes and staff, encouraging administration, and collaborative school culture. Current special education teachers view the rural community as supportive. Recruitment efforts could include information about the local area's advantages.

The rural district might provide extra time for special education teachers to prepare due process paperwork. Administrators could diminish some duties for special education teachers, allowing more time for due process paperwork preparation. The district should be aware that special education teachers must be included in all lines of communication and in disseminating information shared with general education teachers.

If feasible, the district could add steps to the salary schedule, a stipend according to the years a teacher is employed or add days to special education teachers' yearly contracts. Extending

contracts will give special education teachers a higher salary and extra time to complete due process paperwork. Other options with a less fiscal impact would be to spread out Annual Review Dates and provide quarterly meeting times to address paperwork needs.

Conclusion

Utilizing the findings discovered from this study, the rural Southern United States school district within this case study could lower the attrition rates of special education teachers. It is vital to take steps to lower attrition rates to provide more consistent special education services from teachers who have established a rapport with their students and their families. To support teacher retention, the results of the study indicated that the district in this case study should address the following:

1. Recruitment – includes positive factors regarding the district work environment and the community in recruitment efforts. Utilize local talent and encourage future growth by offering introductory teaching courses at the high school to possibly encourage students to consider a career in education—partner with colleges to offer student-teacher opportunities for college students in the special education field.
2. Administrative Support – diminish some duties for novice special education teachers, allowing new teachers time to acclimate to their new responsibilities. Distribute annual review conferences throughout the school year instead of holding conferences only in April and May to assist in alleviating time constraint stress for participants. Provide a substitute teacher for all special education teachers on the same day once a quarter to allow special education teachers an opportunity to collaborate while developing due process paperwork. Have the building administration arrange a meeting with special education teachers to discuss strategies that will assist in being more inclusive of special education teachers by distributing information.
3. Salary Increase – If feasible, the district could consider a stipend for teachers according to how many years they have taught there. For example, every fifth year of service within the district, a teacher could receive a stipend according to what the district could financially afford. Another consideration, if possible, would add steps to the salary schedule.

Rural school districts across the United States are challenged with recruiting and retaining special education teachers. This single case study identified factors that encourage the recruitment and retention of special education teachers within a rural Southern United States school district. Other districts with a similar problem of practice can utilize these strategies to create support plans to meet their own unique needs.

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RESEARCH

Current challenges and practices in co-teaching in K-12 schools

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Abstract

The inclusive classroom has become an increasingly popular classroom model but is not consistently implemented in schools. This paper seeks to find which collaborative teaching practices are commonly used in K-12 schools today, how teachers perceive the effectiveness of co-teaching methods, how teachers are prepared for co-teaching and their perception of the effectiveness of their training, the current challenges of co-teaching, and how those challenges are resolved. To achieve this, a survey was conducted amongst 54 anonymous and voluntary participants to compare the perceptions and experiences of those currently co-teaching with varying years of teaching and co-teaching experience. The results show that most teachers enjoy co-teaching and collaborating with their co-teaching partners, but the most common challenge of co-teaching is finding time to meet and plan. Similarly, most are not adequately prepared for pre-service or in-service teaching training, leading many to use ineffective co-teaching practices.

Keywords: *Co-teaching, inclusive classrooms, teacher preparation*

This study addresses the problem of determining the current challenges faced by collaborative teachers and the strategies they are using to create an effective co-taught classroom.

Purpose

The average classroom in the American public school system is becoming increasingly more inclusive as more students are classified in special education and more special education students are placed in general education classrooms. In the last ten years, the number of students who receive special education services in the United States has steadily grown from 6.4 million in the 2010-2011 school year to 7.3 million in the 2021-2022 school year (National Center for Education Statistics, 2023). The percentage of special education students who spend 80% or more of their day in the general education classroom is now 66.17% (National Center for Education Statistics, 2023). With more special education students in the general education classroom, there is a greater need for effective co-taught classrooms. The collaboration between a special education teacher and a general education teacher in one classroom helps ensure that the appropriate class content is taught and that it

is accessible, so all students can succeed. In the last few decades, more schools throughout the United States have incorporated the co-taught classroom model.

This increasingly common classroom model allows more students to have access to an accessible education while in the mainstream classroom, instead of being taught in a different classroom for most of the day, which separates them from their peers. To ensure that students are being taught effectively, it is important to understand how teachers perceive their co-teaching, what challenges they encounter, how they resolve those challenges and how they are prepared for co-teaching.

Synopsis

More students are classified in special education, and the teacher shortage, especially among special education teachers, has grown; there is a greater need to accommodate special education students in the mainstream classroom. Both issues highlight the immediate need for effective co-teaching in the mainstream classroom to ensure that the needs of all students are met, however, not all teachers are adequately or equally prepared or feel that they have enough time to collaborate with their co-teacher. This study explores different types of inclusive classrooms, how teachers are prepared by their schools, which co-teaching models and strategies are effective and why, and the obstacles that interfere with collaborative co-teaching and co-planning. For this study, the research question to be explained is whether current practices in collaborative teaching are effective in terms of teacher preparedness, effective teaching strategies and practices, and effective problem-solving strategies. As well as, how teachers are prepared for collaborative teaching, how they perceive their co-teaching, and how they collaborate with their co-teacher in an inclusive classroom. Participants, therefore, were asked to participate in the survey.

Literature Review

The Inclusive Classroom

According to the National Center for Educational Disabilities, the database that tracks all students served by IDEA, the percentage of students provided benefits through special education has increased from 8.3% in 1976 to 13.2% in 2015. According to the Individuals with Disabilities Act, there are thirteen disabilities (a) autism; (b) hearing impairment; (c) emotional disturbance; (d) deafness; (e) blindness; (f) intellectual disability; (g) multiple disabilities; (h) orthopedic impairment; (i) other health impairment; (j) specific learning disability; (k) speech or language impairment; (l) traumatic brain injury; and (m) visually impairment (U.S. Department of Education, 2018). In recent years, the areas of greatest increase were in other health impairments (OHI) and autism spectrum disorder (ASD) (National Center for Education Statistics, 2023). In addition to the increasing number of students identified as having a disability, the frequency with which students with disabilities are educated in general education settings has also increased. (Allen, et al., 2020). These numbers and rapidly changing student population demographics affect a school's ability to service all these students appropriately and effectively. In recent years, the increased prevalence of Diversity, Equity, and Inclusion principles in schools has emphasized the need for more inclusive classroom settings. For example, in New York, The New York State Board of Regents stated, "that all school districts and institutions of higher education [would] develop and implement policies and practices that advance diversity, equity, and inclusion ['DEI']—and that they will implement such

policies and practices with fidelity and urgency" (Rosa & James, 2023, p. 2). Schools throughout the country have begun to, and continue to, place a greater emphasis on the need for acceptance and inclusion throughout the school community, so the inclusive classroom is an important place to showcase and solidify these ideals.

Historically, special education classrooms have been separated from general education classrooms, thus creating a segregated school community. This model separated and disconnected students with disabilities from their general education teachers and placed the responsibility of this population on the special education teachers. (Allen, et al., 2020). To do away with this model, schools took a proactive approach to the vision of an inclusive learning environment. One of the ways schools were able to achieve this vision was by incorporating students with disabilities into the mainstream classroom. Inclusive classrooms help provide a solid education for all children and may help change prejudiced attitudes toward students with disabilities (Krischler et al., 2019). In-service teachers have also been provided with specific professional development designed to promote an inclusive culture, to reinforce this idea in the school community.

The Individuals with Disabilities Education Act (2004) states that all students with disabilities are to receive a free, appropriate public education in the least restrictive environment (U.S. Department of Education, 2023). The least restrictive environment for any student with disabilities is the general education classroom. According to the Sustainable Development Goal and the Education 2030 Framework for Action stated that "[inclusion] and equity in and through education is the cornerstone of a transformative education agenda, and we, therefore, commit to addressing all forms of exclusion and marginalization, disparities and inequalities in access, participation and learning outcomes" (United Nations Educational, Scientific, and Cultural Organization, 2015, p. 7). Inclusive classroom environments aim to increase the efficiency of the students with disabilities and their peers who do not have disabilities by differentiating teaching materials and teaching methods (Gokbulut, 2020). Instead of having a separate general education classroom and a separate special education classroom, the inclusive classroom model combines the two. While it may seem like a simple idea to execute, the inclusive classroom requires the organization of the schools, teachers, and pedagogies involved, which are provided for each student to ensure they receive an education that fits their needs (Allen et al., 2020). The school and faculty involved in these inclusive classrooms must ensure that all students are supported and given the necessary tools to succeed.

Practices and Strategies for Collaborative Teaching

For collaborative teaching to be effective, both the special education teacher and the general education teacher need to work together to create a classroom that allows students with disabilities to be part of the learning community (Battaglia & Brooks, 2019). The special education teacher and the general education teacher can use their content specialties to ensure that an inclusive learning community exists and helps all students succeed. It is the role of the general education teacher to use their knowledge of their specific content area, while it is the role of the special education teacher to use their knowledge of the student's Individualized Education Program (IEP) and the use of different strategies to assist the students with disabilities by differentiating lessons. In an inclusive classroom,

both teachers should be able to share in the learning and teaching process.

There are several ways in which general education and special education teachers can collaborate. One of the most important ways teachers can collaborate is by preparing and planning their curriculum ahead of time (Solone, et al., 2020). Typically, the general education teachers will share their lesson plans with the special education teacher so the special education teacher can prepare accommodations and modifications students with disabilities may need or benefit from; however, this is not always the case. Special education and general education teachers may co-plan lessons together. This allows both teachers and the class to be more organized and ensures that both teachers understand the lessons, the goals, and their roles. According to Paju et al. (2022), there are three modes of collaboration which include coordination, collaboration, and reflective communication. These three modes have been identified to characterize and analyze how co-teachers relate to their work activity and the objective of their work (Kajamaa & Lahtinen, 2016). With coordination, each participant is assigned a specific action which determines their roles and the basic order in which their expected action(s) will be completed. In cooperation, the participants focus on a temporarily shared problem or task; both co-teachers help find a solution to the issue at hand. In reflective communication, the co-teachers focus both on a shared object and their interaction, questioning and revising their interactions and execution of their lessons. Engaging in a reflective process enables co-teachers to shift from an individualistic co-planning process towards a more collaborative planning process (Paju et al., 2022). Engaging in the three modes of collaboration helps ensure that the co-planning process is effective, and that co-teaching is equally as effective.

According to (Grady et al., 2019), there are six advanced collaborative teaching strategies for teachers to use in the classroom. By utilizing one or more of these strategies in the classroom, both teachers ensure that each has an active role in the classroom. “One teach, one observe” is one of the collaborative strategies used in the classroom during instruction. With this method, one teacher leads the classroom while the other gathers information about the class and the delivery of instruction. Another collaborative method is “one teach, one assist,” where one teacher works with the whole class and the other works with a smaller group of students or individual students. Similar to “one teach, one assist” is “parallel teaching,” where each teacher takes half of the class of mixed abilities, and each group completes the same work or different work in similar or different ways. “Station teaching” is another popular method used for collaborating teachers. With this method, students are divided into three or more groups, which rotate through multiple stations facilitated by one teacher per station, and students circulate among stations. “Alternative Teaching” is a method where one teacher works with a large group of students while the other teacher works with a smaller group to re-teach, pre-teach, or enrich the content. The final method used in a collaborative setting is “team teaching” where both teachers present information to the class in the form of debates, modeling information, comparing/ contrasting, or role-playing (Grady et al., 2019). Over time, co-teachers find which model, or models, works best for them, but it involves trial and error.

Regardless of how teachers collaborate, to be successful, both teachers must have open communication and be open to each other’s ideas

and criticisms. To achieve this, the co-teachers must develop an appropriate disposition when working together that allows them to be open to feedback and constructive criticism. Guise et al. (2016) defines dispositions as "a pattern of behavior exhibited frequently and in the absence of coercion and constituting a habit of mind under some conscious and voluntary control, and that is intentional and oriented to broad goals" (Guise et al., 2016, p. 57). When teachers develop an appropriate disposition, they are more open-minded and are more willing to collaborate. This allows co-teachers to have successful collaboration and makes co-teaching more effective.

Benefits of Co-Teaching

An inclusive classroom provides both special education and general education students with a unique opportunity to learn from one another. While this is an exciting step towards an inclusive and diverse classroom environment, it can present challenges to the general education teacher. General education teachers typically hold leadership positions inside their classrooms, but they often need assistance providing differentiating instruction in inclusive settings (Mofield, 2020). The diverse range of abilities can be a challenge for one general education teacher in a classroom (Buli-Holmberg & Jeyaprathaban, 2016). To aid in this challenge, the special education teacher provides insight into how to differentiate class lesson plans and introduce different strategies to help make the content more accessible to all students. According to Hopkins (2023), general education teachers are responsible for all student learning in the classroom while special educators concentrate on individual students with significant support needs and on creating and enacting their Individualized Education Programs (IEPs), collecting data on students' progress toward IEP goals, adapting assessments, and directly teaching students. Co-teaching partnerships may also share the role and responsibility of student learning and supporting the goals and needs of student IEPs. Both teachers share important roles and responsibilities in the classroom and can rely on one another to ensure that their classroom and student's goals are being met.

The collaboration between a general education teacher and a special education teacher makes the lessons, materials, and classroom activities more accessible to special education students which helps them to be more successful in the mainstream classroom with their non-special education peers. Research on the perceptions of co-teachers in the field of special education found that teachers and students perceive co-teaching as favorable because there are lower student-to-teacher ratios, there is more attention paid to individual students, and there is more expertise in the classroom (Guise et al., 2016). This increased student success not only improves their grades but also improves their overall school experience and attitudes and beliefs about their abilities. According to Kirkpatrick et al. (2020), students felt that inclusive environments were preferable to pull-out models for social reasons; when students were separated from their peers, they experienced stress, discomfort, isolation, and stigmatization. Successful inclusion relies on the integration of students with special educational needs into their peer network; support may need to be provided to all students to support this integration (Kirkpatrick et al., 2020). When students feel more comfortable and included in their school and classroom environments, they can perform better on their school assignments and the co-teaching model provides students with that opportunity.

Collaboration also impacts the teachers involved. Often, in-service teachers find themselves isolated and restricted in their classrooms preventing them from growing professionally. Collaboration has many documented benefits for teachers, including higher levels of trust, greater job satisfaction, more positive effect on teaching, improved teaching, and increased teaching efficacy (Goddard & Kim, 2018). While collaborating with another teacher, all teachers involved must have an open mind that can introduce them to different teaching styles, strategies, or classroom activities that can improve their teaching to better aid their students. Teacher collaboration can stimulate educational innovation and professional learning through increased colleague engagement and interaction, critical feedback, and mutual understanding, which can lead to high levels of student achievement (Yuan & Zhang, 2016). In Finland, teachers are increasing collaboration and co-teaching in their schools because they are often regarded as positive and beneficial for the students and the teachers' professional development (Jäppinen et al., 2016). The benefits of co-teaching as a form of professional development are often overlooked when implementing co-teaching, but it is one of the most important and valuable benefits

Challenges of Co-Teaching

Collaboration between two or more teachers in one classroom can introduce new and different challenges for both teachers. One of the most common challenges to successful co-teacher collaboration is the lack of time to meet to co-plan. The workload of the general education and special education teachers, which consists of grading, lesson planning, and meetings, takes time away from collaborative planning on a weekly basis. When both teachers are unable to meet to have meaningful collaboration opportunities, it often leaves the general education teachers feeling unprepared to serve all students' learning needs and leaves the special education educators unprepared to teach the content and make the necessary modifications to support special education students (Blanton et al., 2018). Co-planning and decision-making before, during, and after teaching cultivate a mutually trusting and respectful relationship. However, without this process, there is increased frustration, a lack of mutual trust, and a negative power dynamic, all of which result in ineffective co-teaching (Woodruff, 2023). It can be challenging to find a suitable time for teachers to meet during the school day due to their differing schedules. This may require teachers to meet before or after school, which can be challenging for both teachers. The lack of collaboration is a barrier to inclusive instruction, as both teachers need ownership of the instruction (King-Sears & Strogilos, 2018).

Since many co-teachers do not have time to plan during the school day, many school districts offer additional payment for teachers who collaborate outside of their scheduled working hours. In a study conducted by Woodruff (2023), Katy Vargas, an English as a New Language (ENL) teacher, at Fern Valley Middle School, stated that her school district provides extra pay for collaborating teachers for their additional work: "Our administration was serious about [co-teaching]…Our school was committed to doing it for real" (Woodruff, 2023, p. 88). Often teachers do not receive supplemental pay for their additional hours, which can create a lack of motivation among collaborating teachers. Additional support from school administrators is not always provided to co-teachers, but when it is, it can lessen the challenges of co-teaching and increase teacher motivation.

To prepare and continuously educate teachers on how to collaborate effectively, school districts often utilize a training service or consultant to educate their teachers on co-teaching methods.

Teachers greatly benefit from professional and academic preparation in school-based practices and there is a great need for teachers who are already on the job to be trained in the practices used in inclusive education, such as co-teaching (Chitiyo & Brinda, 2018). While the training has value and serves an important purpose in the collaboration process, there is a severe lack of training or time to complete training. Often, co-teacher training is available through educational institutions and online courses, which may not be feasible due to the time it takes to complete the training or the cost of the training (Battaglia & Brooks, 2019). Without the proper training and foundational understanding of what an inclusive classroom can look like, what roles each teacher has, and the strategies they need to effectively co-plan and co-teach, many teachers are left confused. A lack of understanding of the roles of the general and special education teachers in an inclusive setting can contribute to the sense of unease with the inclusion model (Allen & Barnett, 2020). Teachers should be properly prepared by their school districts on the reasoning, practices, models, and strategies of co-teaching to achieve effective co-teaching. Otherwise, teachers are left feeling confused, frustrated, or upset with their new role because they are unaware of what co-teaching entails.

Another major challenge among co-teachers is the loss of autonomy both teachers may experience (Mackey et al., 2017). Teacher's autonomy is their ability to make decisions and choices about their classroom and the educational activities within it. Teacher autonomy is one of the core factors of a teacher's career. When teachers have higher levels of autonomy, they are more likely to excel in their job performance and better support their student's needs (Tress, 2023). Special educators are often the ones sharing the mainstream teacher's classroom, they often feel that their autonomy is compromised. They feel that they lack the ability to take part in decision-making and planning and rely on the general education teacher (Tress, 2023). This is why teachers need to have open and frequent communication to establish roles and ensure that each co-teacher has a say in how the class is run.

Many pre-service teachers do not feel that their teacher training programs have adequately prepared them for co-teaching or that the expectations of co-teaching are different from what they were taught in school. Often, most pre-service teachers do not have any co-teaching experience during their student-teaching experience. While teacher preparation programs help teacher candidates learn the theoretical value of instructional collaboration, they often lack professional preparation through real experiences to develop collaborative skills as educators in the classroom (Brown & Viator, 2019). The traditional models of student teaching have three common characteristics to support teacher candidates' learning: (1) observation of cooperating educators; (2) feedback from cooperating educators and university field instructors; and (3) teacher candidates' reflection on their practice (Drewes et al., 2022). Teacher candidates often prepare their lesson plans and receive feedback from their cooperating teacher and program supervisors, so there is little to no collaboration in the teaching training process. Additionally, for teacher candidates who collaborate with their cooperating teacher, many worry that student teaching does not provide an adequate opportunity for authentic collaborative teaching. Co-teaching during teacher training occurs when teacher candidates collaborate with their cooperating teacher to co-plan, co-teach, and co-evaluate their instruction (Soslau et al., 2018). Many

cooperating teachers worry that they may provide too much support and do not provide enough opportunities for the teacher candidate to take the lead, which leaves the teacher candidates feeling under-prepared for collaboration when they are employed as teachers (Guise et al., 2016).

However, when authentic co-teaching is achieved during the teaching training experience, student teachers feel better prepared for both the positives and the negatives of collaboration. In a study conducted by Brown and Viator (2019), two teacher candidates found their collaboration beneficial as they enjoyed planning with their cooperating teachers. They found that their lesson plans were richer and more complete. One of the teacher candidates also felt disappointed by their co-teaching experience during teaching training because there was a noticeable disintegration in support. While both teacher candidates had different experiences, they felt that co-teaching experiences better prepared them for future collaboration (Brown & Viator, 2019).

Co-teaching means two individuals with their teaching philosophy, teaching strategies, and procedures working together in a classroom, which can make it difficult for some teachers to work together. The two collaborating teachers may not get along or have different teaching philosophies (Kokko et al., 2021). Teachers who have taught a subject for years and have their system may find it difficult to incorporate another teacher into their classroom. According to Mackey et al. (2017), the time taken to develop trust amongst co-teachers can be a major challenge as they may not know their co-teacher and may not be willing to share their instruction responsibilities with the other teacher initially. Some teachers consider their classrooms as their 'turf' and having an additional teacher might be considered as an invasion of their professional space (Chitiyo & Brinda, 2018). It is often the special education teachers who feel that they lack authority and feel underused while working in a general education classroom (Solone et al., 2019). For example, the most commonly used model is the "one teach, one assist" model. However, this model often leaves the special educator feeling more like an assistant than an equal, collaborative teaching partner. As a result, the collaborative teaching partner is less effective in planning and teaching co-taught lessons (Brawand & King-Sears, 2017). Collaborating can be difficult because it is an adjustment from being the only teacher in a classroom to having another teacher in your classroom and having to coordinate and plan each lesson together. Despite this, for the sake of the success of all students, it is a necessary adjustment.

Resolving Conflict

In education, co-teachers may experience conflict with the planning and implementation of instruction, student outcomes, teacher goals, and personalities (Regrut, 2020). While conflict is inevitable at any point in a co-teacher's career, how the conflict is resolved is what makes co-teaching effective. According to Messarra et al. (2016), there are five main styles of conflict resolution: (1) competing/dominating, (2) compromising/sharing, (3) avoiding/withdrawing, (4) accommodating/ obliging, and (5) collaborating/problem-solving. conflict resolutions that involve For this paper, I will only focus on accommodating/obliging, compromising/sharing, and collaborating/problem-solving to highlight how co-teachers can work together when dealing with a conflict. The accommodating/obliging style involves one teacher forfeiting their wants and needs to satisfy the other co-teacher's wants and needs. The

compromising/sharing style considers all co-teacher's needs, but it often leaves both teachers unsatisfied. The collaborating/problem solving style addresses all individual's needs and reaches a mutually acceptable solution by clarifying differences and maximizing joint gains (Messarra et al., 2016). For co-teaching to be effective, co-teachers must understand conflict resolution styles to reflect on their own practices and make improvements.

This understanding of how the inclusive classroom works, why it exists, why it is necessary, the practices used in an inclusive classroom, and the benefits and challenges of co-teaching was used to create a survey. The survey was created to analyze the perceptions of in-service co-teachers on the benefits, teaching methods, preparation, strategies, challenges, and conflict resolution involved in co-teaching. This section is referred to as the methods section.

Methods

Participants

The subjects of this survey were local elementary school (grades k-5), middle school (grades 6-8), and high school (grades (9-12) level teachers, in a suburban area north of New York City. The participants were general education teachers, who teach math, science, English language arts, or social studies/history, and special education teachers who teach math, science, English language arts, or social studies/history for special education. Some special educators also teach their special education classes in addition to co-teaching. The participants all currently work or have previously worked in an inclusive, co-taught classroom or classrooms.

Procedures

The researcher took the necessary steps to meet the requirements and approval of the Institutional Review Board (IRB) of Manhattanville University. Once approval was granted from the board, the researcher gathered resources for the literature review to understand the challenges of co-teaching and the strategies used while co-teaching. The researcher then created a survey to reflect the literature review research on co-teaching.

The survey includes a section for teacher information because it was important to understand the background of the participants. To understand how many years of teaching experience each participant had, participants stated the total number of years they have worked as a teacher and the total number of years they have worked as a co-teacher. This data would provide an understanding of the correlation between participants who had more teaching experience and teachers who had less teaching experience and whether they had positive or negative experiences with co-teaching. Participants were also asked to state how many classes and subjects they are currently teaching in total, how many classes and subjects they are currently co-teaching, and how many teachers they currently co-teach with. According to Blanton et al. (2018), when co-teachers are unable to be available for collaboration, they are both left feeling unprepared to serve their students properly and effectively. By determining how many classes and subjects each teacher teaches individually and collaboratively, it is easier to see the correlation between their experiences and level of success with co-teaching.

The second section of the survey was included to understand which co-teaching strategies co-teachers are currently using in their classrooms and how effective they believe they are. According to Grady et al. (2019), the six most used methods for co-teaching include (1) one teach, one observe, (2) one teach, one assist, (3) team teaching, (4) parallel

teaching, (5) alternative teaching, and (6) station teaching. Part of the current practices of co-teaching involve planning together and it is one of the major challenges of co-teaching, so participants were asked how often they meet with their co-teacher and if they think that is enough time to meet during the week. According to Woodruff (2023), without planned time for co-teachers to meet, there is increased frustration, a lack of mutual trust, and a negative power dynamic, all of which result in ineffective co-teaching, so it was important to understand this aspect. Another practice of co-teaching is to develop an appropriate disposition which creates a foundation for effective collaboration. To evaluate whether or not this disposition has been achieved or not, participants were asked if their co-teacher is, or co-teachers are, receptive to feedback and constructive criticism and if the participants give feedback to their co-teachers.

The third section of the survey was used to understand the participant's perceptions of their co-teachers and their co-teaching and to evaluate the benefits of co-teaching. According to Hopkins (2023), co-teaching promotes shared classroom and teacher responsibilities, such as grading, classroom management, content instruction, differentiated instruction, and planning which alleviates the amount of work each teacher takes on. Participants were asked how or if they shared those responsibilities to reflect that research. Participants were also asked about their level of trust with their co-teacher, whether collaboration has improved their teaching, and job satisfaction as a co-teacher. Collaboration has many benefits for teachers which includes higher levels of trust, greater job satisfaction, improved teaching, and increased teaching efficacy (Goddard & Kim, 2018).

The fourth section of the survey evaluates the preparation teachers are given before and during co-teaching. Participants were asked what type of training was provided to them by their employers before their co-teaching and to rate the effectiveness of that training. According to Chitiyo and Brinda (2018), teachers benefit from professional preparation in school-based practices, especially inclusive education, but many teachers do not feel adequately prepared to effectively co-teach. Participants were also asked about their preparation for co-teaching through their teacher training programs. Many teacher training programs do not prepare teacher candidates for co-teaching in an inclusive classroom. Brown and Viator (2019) state that teachers often lack professional preparation through real experiences to develop collaborative skills as educators in the classroom. Participants were also asked about their own student teaching experience and whether they experienced effective collaboration with their cooperating teacher. Participants were also asked if they thought student teaching in a co-teaching classroom would be beneficial in supporting this research.

In the last section of the survey participants were asked about the challenges they face while co-teaching. First, participants were asked if they were assigned to co-teach by their administration or if they volunteered to co-teach. Participants were explicitly asked which challenges they encountered while co-teaching to get a solid statistic to compare to the research. Some teachers consider their classrooms as their 'turf' and having an additional teacher might be considered as an invasion of their professional space (Chitiyo & Brinda, 2018). Participants were also asked how they went about resolving those challenges: collaborating, accommodating, or compromising. For co-teaching

to be truly effective, teachers should follow the collaborating/problem-solving style because it addresses all individual's needs and reaches a mutually acceptable solution by clarifying differences and maximizing joint gains (Messarra et al., 2016). It is important to understand how co-teachers are currently addressing conflicts. Participants were also asked whether they believe they have lost some autonomy while being a co-teacher. When teachers have higher levels of autonomy, they are more likely to excel in their job performance and better support their student's needs (Tress, 2023). The level of autonomy teachers feel that they have while co-teaching may impact the effectiveness of their co-teaching.

Data Collection and Analysis

The researcher collected data using a survey constructed in Google Forms and analyzed the results by observing the frequencies of the participants' responses. The results from the data collection will be further analyzed in the results section to provide important insights and implications of the responses.

The data from the survey helps create a better understanding of the challenges co-teachers face, how they are prepared to co-teach, and how they work to improve their co-teaching. The results from the survey are displayed in the results section.

Results

Participant Demographics

The participants in this survey included teachers who teach in school districts in the suburban area north of New York City. Of the participants, 29.6% work in inclusive classrooms at the elementary school level, grades kindergarten through fifth grade. Of the participants, 33.3% of participants work in inclusive classrooms at the middle school level, grades six through eight. Finally, 38.9% of participants work in inclusive classrooms at the high school level, grades nine through twelve. Participants also found the area of certification in which they are currently employed. Of the total participants, 31.5% work in general education grades kindergarten through sixth grade, 16.7% work in general education grades seventh through twelfth, and 51.9% work in special education grades kindergarten through twelfth grade.

Participant Information

Table 1 shows that 79.6% of participants had ten or more years of teaching experience, whereas only 46.3% of participants had ten or more years of teaching experience as a co-teacher.

Table 1
Teaching and Co-teaching Experience

Item	1-3 years	4-6 years	7-9 years	10 or more years
Total years of teaching experience	11.1%	1.9%	7.4%	79.6%
Total years as a co-teacher	22.2%	22.2%	9.3%	46.3%

Table 2 shows that 77.9%t of participants taught four or more classes daily, 66.7% of participants stated that they work with one co-teacher. It also shows 37% of participants teach one co-taught class, 33.3% of participants teach two co-taught classes, 9.3% of participants teach 3 co-taught classes, and 20.4% of

participants teach four or more co-taught classes. Of the co-taught classes, 51.9% said they co-teach one subject, 16.7% co-teach two subjects. 5.6% co-teach three subjects, and 25.9% co-teach four or more subjects.

Table 2

Classes Taught

Item	1	2	3	4
Number of co-teachers	66.7%	24.1%	0%	9.3%
Number of classes taught daily	14.8%	5.6%	1.9%	77.9%

Item	1	2	3	4
Number of co-taught classes taught daily	37%	33.3%	9.3%	20.4%
Number of subjects co-taught	51.9%	16.7%	5.6%	25.9%

Co-Teaching Practices and Strategies

According to Table 3, 83.3% of participants use the "one teach, one assist," so it is the most commonly used co-teaching model amongst participants. Team teaching is that second most used method, with 66.7%. Parallel teaching is the third most used method, used by 55.6% of participants. 48.1% percent of participants stated that they use station teaching and one teach, one observe. Finally, 35.2% of participants stated that they currently use alternative teaching.

Table 3

Co-teaching Model in Current Use

Co-teaching model	Percentage
Parallel teaching	55.6%
Station teaching	48.1%
Team teaching	66.7%
One teach, one observe	48.1%
One teach, one assist	83.3%
Alternative teaching	35.2%

When asked about the effectiveness of each co-teaching model, eighty-one point eight percent of participants agreed that "team teaching" is very effective, while only sixty percent of participants agree that "one teach, one assist" is effective. Similarly, only 55.6% of participants found parallel teaching effective and only 45.5% of participants found alternative teaching moderately effective. Forty-four point seven percent of participants found "one teach, one observe" slightly effective or not effective at all. Seventy-one percent of participants strongly agree or agree that station teaching is effective. Many participants commented that it did not matter which co-teaching model they used because they were in constant communication about what worked and what did not and were able to

adjust. Regarding co-teachers attitudes towards communication and feedback, 77.7% of participants strongly agree or agree that their co-teacher is open to feedback and constructive criticism. When asked about the number of days co-teachers meet to plan, 29.6% of participants stated they only meet one day during the work week (see Table 5).

Table 4
Effectiveness of Co-teaching Model

Item	Not at all effective	Slightly effective	Moderately effective	Effective	Very effective
Parallel teaching	5.4%	10.8%	27%	40.5%	16.2%
Station teaching	2.6%	10.5%	15.8%	44.7%	26.3%
Team teaching	2.3%	2.3%	13.6%	47.7%	34.1%

Item	Not at all effective	Slightly effective	Moderately effective	Effective	Very effective
One teach, one observe	21.7%	23.9%	23.9%	21.7%	8.7%
One teach, one assist	4%	10%	26%	40%	20%
Alternative teaching	6.1%	9.1%	45.5%	21.2%	18.2%

Table 5
Number of Days Co-teachers Meet

Number of days	Percentage
0	14.8%
1	29.6%
2	18.5%
3	7.4%
4	5.6%
5	24.1%

In Table 6, 64.8% of participants strongly agree that collaboration have improved their teaching and 59.3% of participants strongly agree that they work well with their co-teacher. Regarding their student's academic success 46.3% of participants strongly agree that their students have more success academically in a co-taught classroom. 33.3% of participants prefer co-teaching to solo teaching.

Table 6
Benefits of Co-teaching

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree

My co-teaching partner(s) and I work very well together	0%	3.7%	13%	24.1%	59.3%

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Collaboration has improved my teaching	1.9%	3.7%	13%	16.7%	64.8%
My students have more academic success in a co-taught classroom than a solo taught classroom	5.6%	11.1%	13%	24.1%	46.3%
I prefer co-teaching to solo teaching	7.4%	13%	27.8%	18.5%	33.3%

When asked about best practices in co-teaching, most participants agreed that they have generally positive attitudes and outcomes from co-teaching. Eighty-five-point two percent of participants strongly agree or agree that they feel comfortable sharing their ideas with their co-teacher and 77.8% strongly agree or agree that they can trust their co-teacher. Seventy-seven-point eight percent of participants strongly agree or agree that they share classroom management responsibilities and 57.4% established specific areas of responsibility (e.g. teaching and grading), however, 44.4% of participants strongly disagree or disagree that each co-teach contributes equally when planning.

Table 7
Best Practices in Co-teaching

Practices	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My co-teacher(s) and I contribute equally when planning	11.1%	33.3%	20.4%	11.1%	24.1%
My co-teacher and I share classroom management responsibilities.	1.9%	5.6%	14.8%	25.9%	51.9%
My co-teacher(s) and I established specific areas of responsibility	7.4%	13%	22.2%	24.1%	33.3%
I trust my co-teacher(s).	0%	5.6%	16.7%	5.6%	72.2%
I feel comfortable sharing my ideas with my co-teacher(s).	0%	5.6%	9.3%	13%	72.2%

My co-teacher(s) is/are receptive to feedback and constructive criticism	3.7%	5.6%	13%	29.6%	48.1%

Preparation for Co-teaching

Most participants participated in workshops and professional development courses as part of their preparation for co-teaching with 44.4% (see Table 8). However, 37% of participants chose the "other" option and commented that they did not receive any training from their school district prior to their co-teaching experiences. Mentoring was the third most common training amongst 22.2% of participants while consultations were the fourth most common form of preparation amongst 20.4% of participants. Training courses and training programs were the least common forms of preparation in which 13% of respondents participated.

Table 8

Preparation for In-service Teachers

Type of training	Percentage
Workshops	44.4%
Training course/programs	13%
Consultations	20.4%
Mentoring	22.2%
Professional Development	44.4%
Other	37%

When asked about the effectiveness of their training, 66.7% of participants stated that "other" was the least effective form of training and preparation for co-teaching (see Table 9). Most participants specified "other" as no training. Similarly, consultations were identified by 37% of participants as being not effective at all. Alternatively, 37.1% of participants agreed that professional development is effective in preparation for co-teaching. Workshops were identified as being moderately effective by 33.3% of participants. Mentoring was identified as generally effective by 44.4% of participants as was training courses and training programs at 42.3%.

Table 9

Effectiveness of Preparation for In-service Teachers

Preparation	Not at all effective	Slightly effective	Moderately effective	Effective	Very effective
Workshop	19.4%	8.3%	33.3%	19.4%	19.4%
Training courses/programs	23.1%	15.4%	19.2%	15.4%	26.9%

Consultations	37%	14.8%	18.5%	18.5%	11.1%
Mentoring	25.9%	11.1%	18.5%	18.5%	25.9%

Preparation	Not at all effective	Slightly effective	Moderately effective	Effective	Very effective
Professional development	17.1%	8.5%	25.7%	37.1%	11.4%
Other	66.7%	6.7%	13.3%	6.7%	6.7%

When asked about which changes would be beneficial to help better prepare teachers for co-teaching, 72.2% of participants strongly agree that paid planning time during the school year would be the most beneficial change to make co-teaching more effective (see Table 10). Paid planning time during the summer was identified as another beneficial change to make co-teaching more effective with 57.4% of participants strongly agreeing. 46.3% of participants strongly agreed that student teaching in a co-taught classroom would be beneficial preparation for future teacher candidates. Additionally, 29.6% of participants strongly agreed that their student teaching experience provided them with effective collaboration opportunities and 31.5% of participants strongly agreed that improved teacher training programs with an emphasis on co-teaching and collaboration would be beneficial. Furthermore, 25.9% of participants strongly agreed that more in-service training would be beneficial for effective collaboration.

Table 10

Beneficial Changes Recommended in Co-teaching Preparation

Recommended change	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
More in-service training opportunities	9.3%	22.2%	20.4%	22.2%	25.9%
Improved pre-service teacher education program preparation	1.9%	18.5%	25.9%	22.2%	31.5%
Student teaching placement in a co-taught class	5.6%	5.6%	16.7%	25.9%	46.3%
Collaboration with cooperating teaching during student teaching	18.5%	9.3%	16.7%	25.9%	29.6%

Paid planning days during the summer	0%	1.9%	16.7%	24.1%	57.4%
Paid planning days during the school year	0%	0%	5.6%	22.2%	72.2%

Challenges in Co-Teaching

Of the participants, 81.5% agreed that lack of time to meet and plan is the most challenging aspect of co-teaching (see Table 11). The participants stated that the second most challenging aspect of co-teaching was the unequal distribution of workload and classroom responsibilities with 42.6% of the votes. Lack of preparation and training, and loss of autonomy, were the third most challenging aspects of co-teaching, reported by 33.3% of participants.. A total of 25.9% of participants agreed that lack of collaboration was the fourth most challenging aspect of co-teaching. Furthermore, 18.5% of participants agreed that "other" and lack of rapport were the fifth most challenging aspects of co-teaching. Many stated that developing a trusting and dependable co-teaching partnership takes time. Teachers are often moved around, so there is not enough time to build an efficient and effective co-teaching partnership. Among the participants, 33.3% of participants agreed they feel that they have lost some autonomy while co-teaching. Other participants specified "other" as competing responsibilities and the placement of students in inclusive classroom settings. Finally, lack of communication was identified by 16.7% of participants as the sixth most challenging aspect of co-teaching.

Table 11

Common Challenges in Co-teaching

Challenge	Percentage
Lack of time to meet/plan	81.5%
Lack of communication	16.7%
Lack of rapport	18.5%
Lack of preparation/training	33.3%
Lack of collaboration	25.9%
Unequal distribution of workload/classroom responsibilities	42.6%
Loss of autonomy	33.3%
Other	18.5%

Of the participants, 40.7% agreed that the most common way for co-teachers to overcome the challenges they encounter was to collaborate (see Table 12). Secondly, 29.6% of participants stated they use compromising and accommodating to resolve challenges. Alternatively, 20.4% percent of

participants chose “other” as their method of overcoming challenges. Participants provided several responses, such as one teacher did all the planning, both teachers learn together, and both teachers make time to communicate with one another. Of the participants, 75.9% were assigned to be co-teachers, while the other 24.1% of participate volunteered to be co-teachers (see Table 13). With these results, the researcher can analyze and make appropriate suggestions and implications for the future of co-teaching in the conclusion section.

Table 12

Resolving Conflict

Resolution type	Percentage
Created an alternative solution to satisfy both teacher’s wants (collaborating)	40.7%
Created a solution to satisfy some of both teacher’s wants, but not all (compromising)	29.6%
Forfeited your wants to satisfy the other teacher’s wants (accommodating)	29.6%
Other	20.4%

Table 13

Type of Co-teaching Assignment

Type of assignment	Percentage
Assigned	75.9%
Volunteered	24.1%

Conclusion

Discussion

Of the 54 participants in the survey, 79.6% of respondents have ten or more years of teaching experience. This is an important finding because it qualifies them as veteran teachers or teachers with a significant amount of experience. Due to their experience in the field, their responses provide great value to the results of the survey and suggestions for the future of co-teaching.

When asked about how many classes each respondent taught daily, 77.9% of respondents taught four or more classes daily. This is an important finding because it shows that co-teachers are busy and have multiple classes to plan for in addition to their co-taught class or classes. This also includes grading and meetings for several students as well. Since most teachers teach four or more classes, it may be difficult to coordinate meeting times with the other co-teacher or co-teachers to plan lessons or reflect on the previously taught lessons. In fact, 29.6% of respondents said they are only able to meet with their co-teaching partner or partners once a week. Overall, 81.5% of respondents found that the lack of time to meet and plan is the most challenging aspect of co-teaching.

These are important findings because they highlight how busy current co-teachers are with their classes and other work-related obligations which prevent them from planning with their co-teacher. The information from these results could help administrators better understand the amount of work their co-teachers endure and could delegate some of the co-teacher's other responsibilities or classes for them to focus more on their co-taught classes.

According to the results, the most used co-teaching model amongst respondents is "one teach, one assist," which is used by 83.3% of participants. This is consistent with the research by Brawand and King-Sears (2017) which also says that "one teach, one assist" is the most used co-teaching model. Despite "one teach, one assist" being the most used co-teaching model, most teachers who use the model do not find it the most effective. As the results state, 47.7% of participants found "team teaching" to be effective and 34.1% of participants found "team teaching" to be very effective. Only 40% of participants found "one teach, one assist" to be effective and 20% of participants found "one teach, one assist" to be very effective. These findings are important in the field of co-teaching because they raise the question, why are most co-teaching partnerships using "one teach, one assist" as their preferred model when they do not find it to be the most effective? Using the results of this survey could help emphasize the use of team teaching instead of "one teach, one assist" in future preparation and training for co-teaching.

Regarding best practices in co-teaching, 72.2% of respondents feel comfortable sharing their ideas with their co-teacher or co-teachers. Similarly, 72.2% of respondents stated that they trust their co-teachers. This shows that most co-teachers are willing to communicate their ideas and establish mutual trust to create an effective co-taught classroom. Co-teachers should continuously look to communicate with one another because it will improve the quality of their co-teaching and lessons. Additionally, 64.8% of respondents strongly agree that co-teaching and collaboration have improved their teaching. This is an important finding because it shows that there is significant value in having teachers collaborate in addition to collaborating to create an inclusive classroom. This point should be emphasized when preparing teachers for co-teaching because it may make them more willing to co-teach and may make them more optimistic about collaborating.

When asked about preparation for co-teaching, 44.4% of respondents found workshops and professional development as the most common method for co-teaching training as an in-service teacher. Many also found "other" as having no formal training. When asked about the effectiveness of their training, 66.7% of respondents found "other" as the least effective method of training, which was specified as no training. This is a significant finding because many of the respondents did not have any in-service training to better prepare them for co-teaching and what that entails or how to make it effective. School administrators should consider this finding when incorporating inclusive classrooms in their schools so they can prioritize training their teachers. It will help the teachers and the students when the teachers know how to navigate co-teaching, especially if they have not done it before. When asked what recommended changes would be beneficial in helping prepare teachers for co-teaching, 72.2% of respondents strongly agree that paid planning time during the school year would be the most beneficial. This is an important finding because most teachers would rather get paid during

the school year to plan for their co-taught classes than during the summer. This would make planning more effective and efficient since they can reflect on their practices and make necessary adjustments as needed. Implementing this for co-teachers would make co-teaching better because co-teachers would feel more motivated to meet with their co-teachers because they would get extra compensation for their planning, and they would be given dedicated time to plan.

Respondents were asked about how they go about solving challenges with the co-teacher or co-teachers. Collaborating was found by 40.7% of respondents as the most common method by which conflicts are resolved. This is an important finding because most teachers are willing to collaborate and work through challenges with their co-teacher or co-teachers so that all needs are met, without having to compromise or accommodate. This shows that most teachers are effective problem solvers and want to make their co-teaching as effective as possible. This result can help make co-teaching better by incorporating this point into teacher preparation and training for co-teaching. This number can also grow if teachers are made aware of and trained in effective ways to collaborate when resolving conflicts.

Limitations

This study was limited by the amount of time given to conduct this research. The time limitation also prevented the researcher from creating a more in-depth survey. The number of participants was also limited by the time allotted for conducting this survey because, due to their busy schedules, some school administrators did not respond or took too long to respond to the researcher's first request. Another limitation of this study was the ability to send the survey to certain districts. Some schools do not allow surveys from outside their district or are unwilling to participate, making it difficult to find participants.

Recommendations for Future Research

As many of the respondents commented, a co-teaching partnership takes years to establish and grow. A suggestion for future research would be to study co-teachers in their first year of co-teaching or first year of a co-teaching partnership and research how their co-teaching strategies change or develop, how their perceptions of co-teaching change, and how the challenges of co-teaching change over a few school years. Additionally, it would be beneficial to see those partnerships while they are teaching to see the co-teaching models in use and to compare the effectiveness of the different models with the same group of students. Another suggestion for future research would be to conduct interviews with co-teachers and school administrations. Interviews with co-teachers would provide a more in-depth understanding of the teacher's perceptions of their co-teaching. The interview with school administrators would provide perspectives on integrating co-teaching into their schools and the challenges they encounter about teacher placement, teacher preparation, student placement, concerns from parents, and problems between co-teachers.

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RESEARCH

Math teachers' perceptions, practices, and self-efficacy related to supporting Latinx students with learning disabilities

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Abstract
Latinx students with learning disabilities (LD) possess inherent strengths and bring valuable contributions to math learning, yet teachers often view them through a deficit-oriented lens. These students frequently experience limited opportunities to participate in math learning beyond learning procedures. This limiting exposure to math learning can adversely affect their self-perception as competent math learners. In this study, we administered surveys to general education (GE) middle school math teachers. Subsequently, we interviewed a subset to delve deeper into their perceptions, practices, and confidence in teaching this population. Our research yielded three main insights: (a) While teachers typically endorsed the inclusion of these students in GE math settings and recognized their potential for math achievement, there was also a sentiment that students lacked foundational knowledge and motivation; (b) the teaching methodologies employed reflected these beliefs; and (c) teachers expressed confidence in their ability to instruct Latinx students with disabilities effectively.

Keywords: special education, disability, Latino, Hispanic, teacher education

Latinx students with learning disabilities (LD) possess unique strengths and contribute valuable insights to math learning, a notion that is steadily gaining traction in the field (Bishop et al., 2022; Martínez-Álvarez, 2020). While there exists a growing body of research-based recommendations emphasizing high-quality math instruction (Jacobs & Spangler, 2017) and the significance of wholeheartedly including students as integral members of the math learning community (e.g., Bishop et al., 2022), there is still room to enhance the depth of participation of Latinx students with LD. It is essential to expand their engagement beyond just procedural or fluency tasks. Such comprehensive involvement nurtures a student's identity as a "doer of math"—a term encapsulating students' self-perception as adept and proactive contributors to mathematical thought and problem-solving. This identity is

pivotal, given its influence on students' motivation and resilience in navigating mathematical challenges. By fostering a more inclusive environment, we can provide pathways to advanced math and deter undue tracking to lower-level courses (Kangas & Cook, 2020).

A high-quality math education for students requires thinking beyond the content that teachers are teaching, but how that content is delivered to enable all students to develop a sense of belonging and identification as a doer of math (Boaler & Greeno, 2000) that supports the learning of all students. One component essential for the math success of all students is a teacher who holds all students to high expectations, provides access to rigorous math instruction and relevant mathematical experiences, and supports the meaningful participation of all students. A teacher who meets the criteria mentioned above has the potential to support students as they develop a positive association with math leading them to preserver through challenging mathematics. Knowing that teachers are instrumental in the math classroom, it would be expected that all students be academically performing at high levels and identifying positively with math. However, students who belong to non-dominant groups are often limited in their access to high-quality math as evidenced by low academic achievement, disproportionate representation in lower-track classes, disproportionate underrepresentation in higher math level courses, and lack of identification with math as corroborated in the literature on student disengagement (Cioè-Peña, 2021; Kangas & Cook, 2020). Latinx students with disabilities deserve a math education that empowers them to identify positively as doers of math and achieve their full mathematical potential.

The research on math education points to classroom practices that engage students in deep mathematical thinking and learning (e.g., Jacobs & Spangler, 2017) and provides guidance on how to best support students with diverse learning and linguistic needs such as Latinx students with LD (e.g., Dennis et al., 2016). Although there continues to be a large focus on achievement gaps (Goodrich et al., 2021), counternarratives of Latinx students persevering in math, in which the dominant discourse around math ability is centered on White ableist ideals, have demonstrated that Latinx students can be successful (Oppland-Cordell & Martin, 2015). Further, ethnographic studies in classrooms have demonstrated that Latinx students with LD can be positioned as experts and successful mathematicians who use multiple linguistic and cultural resources (Lambert 2015; Moschkovich & Zahner, 2018). These findings highlight the important role teachers play in the education of students that can open the possibilities for math classrooms as spaces where all students can identify with math.

Teacher Beliefs, Instruction, and Self-Efficacy

Mathematics education thrives when all students can harness their potential and achieve positive outcomes. However, variations in these outcomes do exist among student groups. A combination of societal dynamics, proactive strategies within educational systems, and individual teacher perspectives can craft an environment where every student is recognized for their mathematical ability (Spencer et al., 2016). This is especially vital for marginalized groups. To enhance this equitable educational setting, it is essential to explore and understand the influences of teacher beliefs, instructional methodologies, and self-efficacy in shaping the academic experiences of these students.

Teacher beliefs, which can be defined as the implicit or explicit notions and conceptions that teachers hold about teaching, learning, students, and

the nature of school and education (Fives & Buehl, 2012), play a crucial role in shaping student experiences and outcomes. These beliefs deeply influence students' experiences, guiding teachers' perceptions of student potential and instructional choices. Such beliefs become particularly impactful when considering Latinx students with disabilities. When founded on racial, linguistic, or ableist biases, these beliefs may inadvertently create obstacles to student success (Rubie-Davies, 2010). Often, these underlying biases can lead to a deficit view, setting diminished expectations and restricting the depth of academic content provided (Valencia, 2010).

Mathematics, a field where conceptual understanding is vital, frequently leans on procedural approaches, potentially neglecting depth for the sake of computation (Lambert, 2015). Historically, dominant societal values have favored characteristics typical of White, able-bodied, and English-proficient individuals, often sidelining racial minorities, individuals with disabilities, or emergent bilinguals (Lewis, 2004). While it is not our intention to assume all teachers adhere to these biases, it is pivotal to recognize their potential influence on educational beliefs and practices. Acknowledging these systemic biases aids in understanding the implicit advantages historically accorded to dominant groups, inadvertently shaping our understanding of competence in subjects like mathematics (Leonardo & Broderick, 2011).

Instructional practices adopted by teachers are another important factor in determining students' learning opportunities and outcomes. Teachers' instructional practices are shaped by their beliefs and perceptions of students (Fives & Buehl, 2012). These practices determine the nature and quality of opportunities for students to engage with mathematical concepts and problems. Pedagogical strategies that emphasize student engagement, meaningful discourse, and concept-driven instruction are particularly beneficial for students with LD (Moschkovich, 2007; Celedón-Pattichis & Ramirez, 2012). Teachers who may hold deficit views of students with disabilities often limit the cognitive demand of mathematical tasks presented to these students, focusing on procedural fluency and rote memorization instead of fostering conceptual understanding and problem-solving abilities (Lambert, 2015; Tobon & Hughes, 2024). This narrowed approach can restrict these students' opportunities to grasp deeper and more conceptually intricate facets of mathematics, thereby affecting their overall mathematical development. These practices severely curtail the opportunities for these students to engage in mathematical discourse and learning, restricting their math proficiency development (Wilhelm et al., 2017).

Another crucial facet influencing students' academic outcomes is the teacher's sense of self-efficacy, which refers to their confidence in their ability to handle and succeed in teaching scenarios. Extensive research has shown that teachers with a strong sense of self-efficacy are more likely to employ resilient teaching strategies, leading to improved student performance (Skaalvik & Skaalvik, 2017). Furthermore, teachers with high self-efficacy are often more likely to innovate and experiment with their instructional strategies, continually refining their pedagogical approach to better cater to the diverse learning needs of their students (Tschannen-Moran & McMaster, 2009). Teacher self-efficacy can shape instructional practices, classroom management, and student outcomes. It can also significantly influence their willingness and readiness to incorporate inclusive practices and differentiated instruction tailored to diverse learners' needs (Almog & Shechtman, 2007). For instance, teachers who perceive a high level of

self-efficacy in teaching math are more likely to employ innovative teaching methods, introduce challenging tasks, and hold high expectations for all students (Gibson & Dembo, 1984).

This study aims to contribute to the evolving research on the educational opportunities of Latinx students with disabilities by exploring teachers' beliefs, practices, and self-efficacy related to educating Latinx students with LD in math classrooms. We utilized both quantitative and qualitative data collection and analysis techniques, to provide a more comprehensive and nuanced understanding of these dynamics. The following research questions guided our inquiry: (a) What are general education (GE) middle school math teachers' beliefs and perceptions of Latinx students with LD? (b) What practices do these teachers use to support these students?, and (c) How do these teachers perceive their self-efficacy related to teaching math to this population of students? Through our examination of these areas, we aim to highlight the influences that mold the learning experiences of Latinx students with LD within math classrooms and consider how teachers can be prepared to meet their needs.

Methods

Participants

Teachers for our study were recruited through a comprehensive approach. We leveraged our professional networks, deployed social media outreach, and engaged in direct contact through publicly available email lists. After receiving approval from the University Institutional Research Board (IRB), an initial email was sent to our professional contacts in school districts who could potentially qualify or know potential qualifying teachers. This email contained information about the study, including purpose, participation requirements, and a link to a Qualtrics eligibility questionnaire. Furthermore, the snowball sampling technique was utilized, encouraging the recipients to share the email with their contacts who might be interested and eligible. We further enhanced our recruitment efforts by emailing teachers from school districts with high populations of Latinx students. Parallelly, social media platforms (Facebook, Instagram, and X (formally Twitter)) were also employed to extend our reach. Over two months, weekly posts were made about the study and its aims, encouraging interested teachers to access detailed study information and the eligibility questionnaire. Teachers who believed they met the inclusion criteria based on their responses were invited to participate and were sent a link to the research survey within 48 hours. Of the 113 teachers who met the inclusion criteria, two emails bounced back, 11 teachers did not start the survey, and 40 teachers began but did not complete it, resulting in a 53% participation rate.

Sixty general education middle school math teachers completed the survey, most of whom identified as female (80%, n = 48). The teachers' racial makeup was predominantly White (68.3%, n = 41), with Latinx/Hispanic (16.7%, n = 10), Black (5%, n = 3), and Asian (8.3%, n = 5) teachers also represented. All teachers held a bachelor's degree, and 71.7% (n = 43) also had a master's degree (see Table 1). Many teachers (40%, n = 24) had 11 to 20 years of teaching experience, with a similar proportion (38.3%, n = 23) having taught in an inclusion class for the same duration. Upon completing the survey, teachers were asked about their willingness to participate in an interview. Eighty-five percent of teachers (n = 51) who completed the survey indicated their interest in participating in the interview. A random selection of these consenting teachers was interviewed until we reached 15 completed interviews (25% of the full sample).

Instruments and Procedures

Teacher's Beliefs and Self-Efficacy Survey (TBSES). In this study, we employed the TBSES survey, which is structured into two primary sections. The "Beliefs" section, from the Survey on Teaching Mathematics to Students with Learning Disabilities (TMSLD) (DeSimone & Parmar, 2006), captures teachers' beliefs and perceptions about teaching Latinx students with LD. Meanwhile, the "Self-Efficacy" section draws from the Exceptional Children who are English Learners (EXCEL) Teacher Inventory (Paneque, 2004) to understand teachers' confidence in teaching mathematics.

Table 1

Teaching experience and credentials

Teaching Experience/Certifications	Survey Respondents *n* = 60		Interview Participants *n* = 15 [a]	
	M	*SD*	*M*	*SD*
Years of teaching	13.6	6.9	10.8	8.2
Years of teaching inclusion	12.1	6.5	8.3	5.4
Years of teaching LD	11.2	6.2	7.8	4.9
Certifications/endorsements held [b]	*n*	*%*	*n*	*%*
Middle school math education	48	80	13	87
Middle school education	36	60	8	53
Elementary education	29	43	9	60
English as a second language	20	33	6	40
High school math education	14	23	3	20
Other	9	15	0	0
Special education	7	12	4	27
Bilingual education	7	12	2	13
Degrees in Math [b]				
No math degree	42	70	13	87
Bachelors in Math	17	28	2	13
Masters in Math	3	5	0	0
Proficiency in languages other than English	21	35	2	13
Proficient in Spanish	12	20	1	1.6

Note: [a] = Interviewed participants are a subset of the survey respondents. [b] The percentage is over 100% because some teachers hold multiple certifications or degrees. LD = learning disabilities

The complete TBSES survey has six subsections: three for "Beliefs", one for "Self-Efficacy", a section with open-ended questions, and a demographic portion. It comprises 66 Likert-scale items, four open-ended questions, and demographic items. For teachers proficient in Spanish, nine additional items were provided. The survey required about an hour for completion. Both the original TMSLD and EXCEL instruments have established content and face validity. For the TBSES, face validity was ascertained through expert review and feedback. We carried out a reliability analysis on the TBSES, adopting methods delineated by DeSimone and Parmar (2006) and Paneque (2004). This involved computing Cronbach's α for internal consistency, which revealed reliable results across the various sections.

Interview

We scheduled phone interviews with participating teachers to gain a deeper understanding of teachers' beliefs and perceptions. Utilizing a semi-structured interview protocol allowed us not only to standardize our approach but also to adaptively probe further, ensuring the richness and relevance of the data collected. This format permitted flexibility in asking follow-up questions, thereby uncovering insights directly relevant to our research questions. Our interview protocol was organized around three primary questions that addressed teachers' beliefs about Latinx students with LD, practices they used with them, and their perceived self-efficacy instructing these students. To fortify the credibility and accuracy of our data, we engaged in a member check process. Here, teachers were given an opportunity to review their transcriptions, ensuring the fidelity of their statements. This also allowed them to assess the integrity of our preliminary findings. This approach underscored our commitment to presenting an authentic, credible, and thorough depiction of teachers' beliefs and perceived self-efficacy.

Data Analysis

Descriptive statistics were carried out for demographic questions and Likert scale items on the survey. We employed a thorough and systematic approach to ensure depth and precision in our analysis for the qualitative data derived from the open-ended survey questions and interviews. Our multi-faceted method encompassed stages such as initial coding, thematic analysis, and triangulation, solidifying the credibility and integrity of our conclusions. In the first phase of coding, we immersed ourselves in the teachers' responses, diligently highlighting recurring patterns, terms, and themes. Throughout this phase, we prioritized staying faithful to the teachers' narratives, ensuring that our interpretations were rooted in their perspectives and not colored by our own biases. After the initial coding phase, we delved into a thematic analysis, systematically identifying, and grouping recurring patterns in the data. This deeper examination facilitated a more nuanced understanding, spotlighting salient themes that consistently appeared across various responses. To bolster the reliability and consistency of our analysis, two members of our research team undertook this phase independently. Their findings were later juxtaposed to ensure alignment and reach a unified consensus.

Our qualitative data analysis began with a review of the open-ended survey responses. These were then coded and clustered into broader categories

aligned with the study's research questions. During each interview's preliminary analysis, recordings were listened to both pre and post-transcription, and analytical memos documented emerging ideas pertinent to the research questions. Leveraging these memos and survey-derived codes, we established an initial coding scheme. In the first detailed coding cycle, five randomly selected interview transcripts were carefully analyzed, leading to both the refinement of existing codes and the emergence of new ones (Creswell & Poth, 2017; Saldana, 2016).

In the subsequent cycle, overlapping codes from the initial five interviews were merged into broader categories for clarity, enhancing the subsequent interview coding process and supporting interrater reliability (Creswell & Poth, 2017). As we progressed through the 15 transcripts, we continuously cross-referenced emerging insights with prior codes, refining our codebook when necessary. These codes eventually coalesced into primary categories and themes tethered to our research questions (Saldaña, 2021).

To fortify the reliability of our coding methodology, a graduate student with expertise in qualitative analysis independently coded 30% of the interviews. This step aimed to validate the consistency of our coding approach. After the graduate student coded each transcript, we convened to rectify coding disparities, continuing this iterative process until we achieved a 90% intercoder reliability threshold (Saldaña, 2021).

Understanding the nuanced and subjective nature of qualitative analysis, we remained acutely aware of the potential influence of our personal biases and histories on our interpretations. Embracing reflexivity, we constantly interrogated our positionality – the unique combination of our backgrounds, experiences, and perspectives – ensuring it did not unduly influence our data interpretation. By transparently acknowledging and navigating our positionality, we aimed to provide a clear window into the lens through which our interpretations were crafted (Trainor & Graue, 2014). The first author self-identifies as a Latinx male, a first-generation American who embarked on his educational journey in a bilingual setting. His background includes teaching math in U.S. public schools, catering primarily to Latinx with LD in elementary and middle schools. The second author brings her unique perspective as a foreign-born Hispanic woman with Spanish as her first language. Her teaching experiences revolve around imparting math education to elementary students within English to Speakers of Other Languages programs. Our personal histories inevitably shape our perspectives. Engaging deeply with data, we realized our insights held the imprints of the mainstream U.S. education system – a system we have intimately experienced as students and teachers. This realization underscored the importance of continual reflexivity, pushing us to approach our data with an analytical and self-aware lens throughout the research process.

Triangulation stood as a pivotal component in our analytical journey. We cross-referenced our insights using all the data sources – including survey responses, interview transcripts, and demographic data. This comprehensive validation strategy reinforced the strength and accuracy of our findings, diminishing the possibility of biases and anchoring our conclusions firmly in a diverse array of evidence.

Results

We present the findings across three sections that align with each of the three questions: (a) teachers' beliefs and perceptions, (b) classroom

practices, and (c) teachers' perceived sense of self-efficacy. We organize each section by first providing quantitative findings from the survey and then qualitative results from both the survey and interviews. Since no statistical significance was found for any survey item after conducting Kendall's tau-b (p = <.001 for each item), survey data is report for the group as a whole.

Teachers' Beliefs and Perceptions

Teachers' responses to 11 Likert items on the survey revealed information on teachers' beliefs about teaching this population (see Table 2). Four items with a lower score associated with inclusive beliefs were reverse-coded to facilitate the comparison of items. The mean rating for each item ranged from 2.03 to 4.63 on the 5-point Likert scale. The statements that teachers had the highest mean level of agreement focused on teachers providing opportunities to learn mathematics with GE students, focusing instruction on conceptual understanding, and they, as the GE math teachers, have the major responsibility of ensuring academic success. The items with the lowest ratings pertained to teacher preparedness and beliefs about how students learn.

Table 2

Descriptive Statistics on Teacher Beliefs

How much do you agree that...	*M*	*SD*
1. ___ should be afforded every opportunity to learn mathematics with general education students.	4.63	0.72
2. Instruction for ___ should focus on conceptual understanding as well as procedural math.	4.31	0.78
3. In general education classrooms, general education teachers have the major responsibility of ensuring ___succeed academically.	4.18	1.04
4. ___ who are taught in general education math classrooms will more positively contribute to the outcomes of all students compared to ___ who are taught in special education resource rooms	4.07	0.91
5. ___are best taught mathematics in a general education classrooms.	4.06	0.92
6. I have concerns about behavior issues with _____ in my general education math classroom. *	3.99	1.07
7. In general education classrooms, general education teachers often are the primary ones responsible for making accommodations e.g., giving extended time for assignments, and modifying instruction e.g., creating alternate assignments, for___.	3.97	1.07
8. Math instruction for ___should focus on mastering fact fluency e.g., memorizing multiplication facts.	3.87	1.07
9. Special education resource rooms are most effective in meeting the mathematics learning needs of ___.	3.64	0.99

How much do you agree that...	*M*	*SD*
10. General education teachers are given sufficient time to prepare to teach mathematics for___.*	3.60	1.14
11. My teacher education program supported general education teachers to develop an instructional philosophy related to teaching mathematics to ___.	2.92	1.29
12. My teacher education program offered specific information about the characteristics and needs of ___in mathematics learning.	2.80	1.26
13. My teacher education program offered specific instructional strategies for teaching mathematics to ___.	2.79	1.22
14. __learns best when taught explicitly e.g., structuring the lesson with modeling, think-alouds, and examples, rather than through constructivist/inquiry-based approaches e.g., having students solve a problem that connects to a math concept.*	2.63	1.21
15. In general education classrooms, ___require more time from the teacher than general education students.*	2.03	0.85

Note: 1 = strongly disagree; 5 = strongly agree; * Reverse coded

Based on qualitative analysis, teachers' beliefs and perceptions fell into two main themes with little differentiation in opinion based on the student group being considered: (1) capable of success and (2) lacked knowledge.

Capable of Success

Most teachers surveyed 75% (*n* = 45) including 93% (*n* = 14) of teachers interviewed believed that these students exhibited positive learning traits associated with learning math. The traits teachers discussed included confidence, motivation, a drive to learn, skills/knowledge, persistence, positive family and home life, and problem-solving skills. Kayla describes her current Latinx students in her 8th-grade class who are classified as LD as "both very driven. They work hard in our math class. They're determined." When discussing students' difficulties faced, 45% (*n* = 27) of teachers surveyed and including all teachers interviewed (*n* = 15) believed that students, although capable, struggled because of a lack of educational or instructional opportunities. Teachers believed that students could be engaged if teachers are able to tap

into their interest. For Latinx students in general, teachers describe the opportunity gap because of poor instruction. Tiffany explains how some Latinx students get to middle school performing below grade-level:

> The teachers who are teaching in elementary school, if they don't really have a strong math background then all of those students are maybe at a little bit of a disadvantage by the time they get to 6th grade. They are expected to think deeply about math problems. Maybe they didn't do that in prior years because of the teachers' lack of math understanding.

Lacked Knowledge

Despite most teachers believing that students were capable of mathematical success, many teachers also indicated a belief that students lacked knowledge. About half of teachers surveyed 53% (*n* = 32)

including all teachers interviewed attributed students' difficulty with math to lacking either knowledge, skills, language, and/or cognitive abilities. Teachers' beliefs about students' lack of success in math were often contributed to issues located within individual students. Teachers pointed out deficits in knowledge, academic skills, language, and/or cognitive abilities that made it difficult for these students to be successful in math. The lack of number sense and foundational math knowledge at the conceptual level were cited multiple times as a student deficit contributing to students' math difficulty. Forty-two percent of teachers surveyed (*n* = 25) including 93% (*n* = 14) of teachers interviewed reported that students in general struggled with making sense of math or with specific aspects of math. Lauren describes one of her students' math ability:

> Definitely the foundational skills are missing. For example, today we were doing order of operations, so with multistep. So, being able to quickly do the…pull the 5x2 part, pausing counting on fingers or using a calculator to help with things like that…that you know it's that situation, when it is a multistep problem, and it is all these different parts. Getting bogged down and stressed out about those littler parts can be very discouraging.

However, several teachers (survey *n* = 16, 27%; interview *n* = 14, 93%) described these students as potentially being capable of success with the support of others or when certain conditions are met (e.g., when the lesson is relevant). Under the subtheme capable with supports, it was clear that these teachers viewed students as dependent on supports. Some teachers (survey *n* = 16, 27%; interview *n* = 11, 73%) also believed that the students did not associate with the ways math was done in the classroom. Teachers reported that Latinx students showed fear of being incorrect, embarrassment in utilizing extra supports that other students did not need and that students had low confidence in their math abilities. Teachers explained this lack of association towards mathematics because of years of negative math experiences that included being positioned as not good in math by previous teachers and seeing other students progress and be positioned as competent. Kayla explains why she believes Latinx students with LD do not associate with math, "it makes me think that in previous years somebody has gotten mad at them for not understanding and potentially they've internalized that not understanding things is bad."

Classroom Practices

The second research question focused on understanding teachers' practices with Latinx students with LD. The major themes for the classroom practices teachers reported were practices that primarily (a) engaged students in learning, (b) supported assignment completion, and (c) simplification and grouping. Teachers were not directly asked in the survey to describe instructional practices they utilize; thus, the findings are only from the interviews.

Engaged Students in Learning

Practices that engaged students in grade-level learning and participation was one major theme that emerged from the teachers' responses with 87% (*n* = 13) of interviewed teachers mentioning these practices. The purpose of these strategies was to make the grade-level content taught accessible and engaging to all students. Strategies included making the content relevant to real life and connecting to students' interests and language. For example, although Angela described a Latinx student with LD as low, she provides an example of making grade-level content accessible, "Sometimes when I have kids, especially when they are really low…so I make

pancakes in my class and that's how they learn fraction. You know it's a ratio." Ashley explains an instructional practice she has found helpful is allowing for interdependence through group work instead of emphasizing independence. "Definitely working in groups. I never have students working completely individually unless it's a test."

Eight-seven percent of teachers (*n* = 13) mentioned building relationships with students and creating a welcoming environment, so students feel comfortable and confident engaging in math activities. It was essential for teachers to form relationships with students and to create a classroom climate where everyone felt respected, comfortable enough to participate, and felt like contributing members of the classroom learning. Hannah, explains how she forms relationships students by connecting to their language and immigrant identities:

> I think what I had the most success with is just building relationships with students. I think that goes such a long way because I don't think kids are gonna learn from someone they don't like. I think especially [since] English isn't my first language as well, and I'm also an immigrant, and a lot of students do have that background in common with me. I think sharing that with kids, making that [sic] connections and just being like "yeah, I understand this is hard, but it's ok we're in this together. We can do this.

Fifty-three percent (*n* = 8) of teachers mentioned strategies that supported language learning and allowed students to participate in classroom mathematical discourse, providing space where students can utilize language in a purposeful yet supported way. Christopher's statement was similar to how other teachers approached this:

> I always tell students like 'math is not a spectator sport. So, no one here is a spectator.' That includes the student that doesn't learn no English [sic], I'm still going to call on them but what I might need to do is support them. … I'll talk to them ahead of time to say like, 'Hey, I'll like to call on you about this.'… it's all about practice. … If I'm walking around and checking the warmups, and I see that they've done something special I know I'll actually take the warmup to show it to the class and ask them, 'can you talk about what did you do for this part of this part?'

Supported Assignment Completion.

Practices that supported students in assignment completion is the second major theme and differed from the first theme in that teachers did not necessarily discuss supporting the learning, but rather supporting the completion of the work. These practices included utilizing scaffolds and supports (*n* = 12, 80%) and providing accommodations (*n* = 10, 67%). For example, Michelle explains how posting her slides online on her learning management system is something she does for her Latinx students, "I post those on Google classroom, so that if the kids can't copy down quickly, they have it on Google classroom for them to look at, to refer back to if they want to like when they're taking a quiz or something or if they can't write real well." Just as Michelle provided supports to help with completing a quiz, Madison provided materials to assist students in completing math independently by going through steps, "[I] give [them] a (sic) structured materials to work with that will go through the same kind of steps then help them work from there, to be able to go through the material on their own." Furthermore, Lauren names preferential seating as an accommodation for students with IEPs without naming how it supports grade level learning or

participation in the learning community, "Using preferential seating. Making sure that I know where all my students with IEPs are. Putting them in the front or around the perimeter so that it is easy for me to get to them if they need it."

Simplification and grouping

The final theme, simplification, and grouping, covers a range of practices that, when not thoughtfully employed, could potentially hinder students' math learning of grade-level content, meaningful inclusion, and engagement and identification with math. One example of such practices is targeted small-group instruction (*n* = 10, 67%). It is essential to clarify that targeted small-group instruction is not a problematic strategy. On the contrary, it is a recognized and beneficial practice in special education and inclusive classrooms, and it is frequently utilized in co-taught settings. When employed effectively, this strategy can enable personalized instruction, greater student-teacher interaction, and enhanced peer learning. However, the issue emerges when the use of targeted small-group instruction becomes excessive or is not effectively balanced with opportunities for whole class interaction and learning. Overreliance on small-group instruction could inadvertently create a sense of exclusion and limit the opportunities for students with disabilities to engage with their peers and access grade-level content. Thus, the key is striking the right balance. Teachers need to judiciously use targeted small-group instruction, ensuring it complements, rather than replaces, whole class instruction and promotes an inclusive learning environment where all students can thrive. Few teachers in this study elaborated on how they structured their small groups or whether they did so in an inclusive way to increase student understanding of grade level concepts. Teachers did mention reasons why they perceive small groups to be effective. Some of these reasons were because they can work on "their struggle areas" – Kayla, "what they need to know" – Amanda. Other teachers felt students were more willing to participate because "they know they're all struggling, so there's no smart kid judging them" – Jessica. Teachers who mentioned small groups to support students' conceptual understanding of math and development of math identity were the exception.

Lastly, a considerable proportion of teachers in our study, about 87% (n=13), admitted to simplifying mathematical content. Often, this simplification took the form of procedural memorization, allowing students to solve certain types of mathematical problems without a deep, conceptual understanding of the underlying processes. This approach, although seemingly effective in the short term, might impede a thorough comprehension of the mathematical principles at play. It presents the risk of reducing mathematics to a series of rote tasks, depriving students of the opportunity to understand and appreciate the discipline truly. Thus, while simplification can be an effective tool when used judiciously, its overuse could potentially limit students' holistic mathematical growth.

Teachers Perceived Sense of Self-Efficacy

Teachers' responses to survey items provided insights into how teachers perceived their sense of self-efficacy. Teachers were asked to rate their level of comfort in their ability to adapt instruction in areas students may have difficulty with (see Table 3). The mean rating for each individual item ranged from 3.60 to 4.14. The item with the highest mean rating of teachers' comfort in their ability to adapt instruction is adapting instruction for students with difficulty using a number line. Teachers rated their ability to adapt instruction as the lowest for students with difficulties with written communication in mathematics.

Table 3

Adapting instruction for areas of student difficulty

How comfortable do you feel in your ability to adapt instruction for students who have difficulty…	*M*	*SD*
Using a number line	4.14	0.76
With following a sequence of steps to solution	4.10	0.77
Attending to tasks	3.98	0.81
Recalling math facts	4.08	0.82
Understanding academic vocabulary	3.88	0.88
Correctly identifying symbols or numerals	4.03	0.78
Maintaining attention for the class period	3.97	0.78
Using academic vocabulary correctly	3.83	0.85
Interpreting pictures and diagrams	3.87	0.87
With oral communication in mathematics	3.72	0.85
Keeping place on a page in the text or workbook	3.89	0.76
Interpreting of given information in word problems	3.71	0.96
With written communication in mathematics	3.60	0.89

Note: 1 = strongly disagree; 5 = strongly agree

Teachers were asked to rate their comfort with their ability to adapt instruction for different math topics (see Table 4). The mean rating ranged from 3.28 to 4.34 for each math topic. Teachers rated locating points on a coordinate plane as the topic they felt most comfortable
with their ability to adapt instruction for both groups of students and felt least comfortable with using computer spreadsheets. Teachers were also asked to rate their abilities in various teacher competencies. The Likert scale for this section was from 1 to 9 as developed by the creators of the original measure (Paneque, 2004). Four items asked teachers to rate their abilities in teaching competencies specific to teaching a subgroup Latinx students with LD, those that were also EB. The mean rating for teacher responses to their perceived abilities in areas of teacher competencies ranged from 6.39 to 7.69 (see Table 5). Teachers rated their perceived ability as the highest with being sensitive to and aware of the needs of students. On average, teachers rated themselves the lowest on their perceived ability to get through to even the most difficult or unmotivated students. The mean ratings for four statements about competencies specific to teaching EB ranged from 5.08 to 6.22.

Table 4

Adapting instruction for specific math topics

How comfortable do you feel in your ability to adapt instruction for the following topics…	*M*	*SD*
Locating points on a coordinate plane	4.34	0.75
Solving one- and two-step equations	4.21	0.78
Solving one- and two-step arithmetic word problems	4.02	0.72
Identifying, describing, and creating patterns	4.00	0.81
Performing arithmetic operations on decimals and fractions	3.96	0.82
Measuring size, quantity, and capacity	3.94	0.85
Reading and writing integers, rational and irrational numbers	3.92	0.78
Describing equivalence of fractions, decimals, and percent's	3.92	0.78
Interpreting line and bar graphs	3.91	0.78
Understanding inverse relationships between multiplication and division, roots, and exponents	3.90	0.89
Understanding square and cubic units	3.89	0.85
Constructing scale drawings	3.88	0.97
Using different representations to describe a functional relationship	3.78	0.97
Using estimation as a problem-solving strategy	3.75	0.87
Using compasses, rulers, and protractors	3.75	1.02
Using graphing calculators	3.44	1.10
Using computer spreadsheets	3.28	0.92

Note: 1 = strongly disagree; 5 = strongly agree

Table 5

Self-efficacy of teaching competencies

To what extent can you…	*M*	*SD*
Be sensitive to and aware of the needs of ___?	7.69	1.59
Assess the academic progress of ___?	7.59	1.48
Contribute information in the development of appropriate Individual Educational Plans for ___?	7.53	1.59

To what extent can you…	*M*	*SD*
Recognize and use ___ strengths during instruction?	7.39	1.34
Teach ___?	7.38	1.41
Redirect students who are misbehaving or disruptive?	7.38	1.41
Evaluate the academic performance of ___?	7.13	1.75
Communicate with ___?	7.12	1.88
Improve the academic achievement of ___?	7.03	1.48
Adapt and modify lessons for ___?	6.98	1.47
Determine the needs of ___?	6.88	1.61
Motivate students no matter what their home environments are like?	6.88	1.57
Use traditional and alternative assessment procedures with ___?	6.74	1.72
Identify and utilize school/community resources for ___?	6.73	2.02
Communicate with parents and families of ___?	6.68	2.06
Help ___ develop social skills?	6.65	1.67
Get through to even the most difficult or unmotivated students?	6.39	1.55
Incorporate appropriate content and materials for students who are culturally and linguistically diverse? (EB)	6.22	1.45
Determine appropriate instruction according to the student's language ability and special need? (EB)	6.15	1.38
Support the native language(s) of children who do not speak English fluently? (EB)	5.33	2.27
Distinguish between a language difference and a language disability? (EB)	5.08	1.94

Note: 1 = nothing; 9 = great deal; EB = asked to consider only emergent bilingual students

Teachers discussed the importance of gathering knowledge about the students, including students' skill levels, interest, and cultural background was mentioned by mentioned by several teachers (survey *n* = 13, 22%; interview *n* = 10, 67%*)* impacted their sense of effectiveness. By having this knowledge, teachers were able to target specific skills that students needed to be able to learn grade level content. Also, knowing students' cultural backgrounds and personal interests allowed teachers to plan lessons that engaged students and that were relevant to students lives. Teachers (survey *n* = 13, 22%; interview *n* = 8, 53%*)* also mentioned having language skills in their students' native language as useful in teaching the subgroup of Latinx EB students with LD either because knowing the language facilitated communication or because it allowed teachers to relate to students. Having proficiency in the Spanish language allowed teachers to clarify mathematical concepts in students' native language which facilitated their sense of self-efficacy teaching math. Having some proficiency in the Spanish language, and actively trying to build their Spanish proficiency, was reported to be helpful for teachers whose native language is English. Brandon talks about building his Spanish math vocabulary:

> I took a lot of Spanish classes when I was in school and so I'm able to understand most of the time. I've kind of built up a mathematical

> vocabulary in Spanish because most of my students who've spoken another language speak Spanish. I'm able to allow them to respond in Spanish and I respond to them in English. I think that's a pretty good strategy.

Teaching dispositions, such as having high expectations, a commitment to learning for all students, and a respect for diversity, were also mentioned by teachers (survey *n* = 11, 18%; interview *n* = 10, 67%*)* as important in effectively teaching math to these groups of students. As Christopher noted, "I feel I am successful in the sense that I'm intentional about targeting students and having them talk in math, and having them discuss in math, and having them think in math." Amanda spoke of the importance of teaching dispositions but did so by explaining how she fell short, thus impacting her self-efficacy. Amanda, "I think that everything I said about teachers in general is still true for me. The intent is there to make the curriculum relevant. I've been to trainings…but the implementation is lacking."

Although teachers indicated feeling overall effective in teaching math to these students, several teachers' (survey *n* = 12, 20%; interview *n* = 11, 73%*)* also noted not having or lacking specified knowledge impacted their teaching of math. For example, teachers interviewed explained that they did not know how to reach Latinx students with LD because they did not have the adequate educational background or training. Frustrated, Michelle shared "I think there's a lack of training for learning disabled kids".

The second theme, system level characteristics, were aspects of the teachers' local school, district, or state that they felt were needed to be in place to be effective in teaching math. Teachers (survey *n* = 22, 37%; interview *n* = 11, 73%*)* mentioned having the support of other teachers, the school administration, or support at the district level helps. The specialized knowledge that teachers who specialized in special education (SPED) or English language development was useful for math teachers in meeting the unique needs of these students. Teachers found that having SPED teachers work directly with students during inclusion periods as effective in ensuring that Latinx students with LD were learning the material. As Ashley noted, "I have a teacher to work with who is specifically trained for math SPED. That's very helpful and she doesn't just stay with those students [students with LD]. She moves around." Ashley, as well as others, found that having a SPED teacher in the classroom beneficial for all students, not just students with LD.

Some teachers (survey *n* = 2, 3%; interview *n* = 14, 93%*)* mentioned state, district, or school level policies, or the specific math curriculum adopted by their school or district as posing a challenge to their teaching effectiveness. Mostly, teachers mentioned how certain policies made it difficult for teachers to be effective in teaching math to Latinx students. Teachers also explained how the curriculum adapted by the school either facilitated or hindered their ability to effectively teach these students. For instance, Hannah found that having to adapt a new curriculum every year limited her effectiveness, "For the past, oh man, since I started teaching, I had a new curriculum every year and it's always been a struggle."

Resources, including outside resources and material resources, also affected the teaching effectiveness of teachers (survey *n* = 2, 3%; interview *n* = 12, 80%*).* Time was mentioned as a valuable resource that teachers lack to effectively teach students. Teachers felt pressured to move through the curriculum even though some students

had not mastered the grade level standards. Teachers wanted more time to plan for differentiation and ways to adapt the curriculum to make it more accessible and interesting to students.

Discussion

In this research, our objective was to delve into the perceptions of GE middle school math teachers regarding their instruction of Latinx students with LD. While our findings indicated that these teachers generally possessed constructive perspectives on their students, believing in their potential for success in mathematics, a nuanced examination revealed inconsistencies in these beliefs. Their beliefs were largely informed by their notions of math teaching and student identity often framed around normative ways of teaching. Furthermore, although the data suggested teachers felt competent teaching Latinx students, deeper scrutiny revealed mixed feelings or doubts concerning their self-efficacy in this context.

Beliefs About Students and Influences

In our research, we observed a divergence between the beliefs teachers stated in the quantitative data and the sentiments they expressed in the qualitative data about Latinx students with LD. The quantitative data highlighted teachers' positive inclinations towards these students, with many agreeing with optimistic statements about them. However, the qualitative insights illuminated a broader perspective. While teachers held a genuine belief in the potential of these students, they also noted areas where the students might benefit from further support, such as in knowledge acquisition and motivation. These insights offer a deeper understanding of the intricate tapestry of teacher beliefs and practices. By aligning our findings with existing literature focusing on the crossroads of race, ability, language, and math, we can appreciate the rich historical narratives surrounding marginalized groups and the prevailing philosophies in math education. This alignment offers a comprehensive view of the unique dynamics that resonate in inclusive educational environments.

All teachers in this study believed that Latinx students with LD were capable of math success by attributing difficulties to the learning context and classroom environment or social and structural concerns. In effect, under this type of understanding of students, the challenges students experience in the math classroom are not because of defects within the student or because of the students' background but are due to the learning context. Such beliefs about the source of difficulty can have a positive impact on the opportunities to engage in math learning afforded to students (Wilhelm et., 2017). Although all teachers in this study attributed students' difficulties to the learning context, teachers also framed students as not having the adequate knowledge nor motivation to do well, resulting in a lack of success for Latinx students. The deficits that teachers believed hindered student success also included deficiencies in their families and other explanations that did not relate to learning opportunities or nature of instruction e.g., poverty. This finding is a cause for concern given the literature on the potential negative impacts of framing student difficulty because of student deficiencies or their background on the opportunities afforded to them (Wilhelm et al., 2017).

Teaching Practices

Teaching practices GE middle school math teachers reported using to teach these Latinx students with LD included strategies that support grade-level learning and participation, strategies aimed simply at assisting learning of any kind and assignment completion, and teaching practices that had the potential to constrain student learning and

development of a positive math identity. Practices that supported these students were ones that leveraged students' unique abilities and interests, utilized the power of student-teacher relationships, and provided optimal opportunities for Latinx students with LD in authentic ways (Ruef, 2021). Many of these specific practices provided opportunities for students to engage in mathematical practices such as reasoning and justification, which have been found to increase math learning while also affirming students' identity (Ruef, 2021).

However, the qualitative data indicated some divergence between reported teacher beliefs and the practices they reported using. Despite teachers' reported belief in the potential of their students and their positive attitudes toward inclusion, the specific adaptations to lessons they reported making, as indicated in the data, did not appear to be as effective as they could be in increasing learning and participation. This finding aligns with research by DeSimone and Parmar (2006), who observed a similar discrepancy between teachers who reported positive beliefs about inclusion and the adaptations they implemented in practice. The interviews noted that teachers used practices that could lead to constraining learning, participation, and the development of student math identity (Yakut, 2021). For example, simplifying content, although often recommended for students with disabilities (Wilhelm et al., 2017), can emerge into problematic practice if students are not provided with other opportunities to engage in more challenging content. However, it can also limit students' opportunities to learn by negating their participation in rigorous math content and negatively impacting their efforts in authoring themselves as doers of math (Kangas & Cook, 2020). This type of discrepancy between teachers' expressed beliefs and their actual practices, as well as the varying effectiveness of the teaching strategies reported, underscore the complex and sometimes contradictory nature of teacher beliefs and their manifestation in teaching practices.

Teachers' Sense of Self-Efficacy

Interestingly, most GE middle school math teachers perceived themselves to be efficacious in teaching Latinx students with LD. Survey results showed that GE math teachers felt moderately comfortable teaching these students different math topics. Interview findings provided more insight into teachers' perceived sense of self-efficacy teaching these groups of students. Most math teachers mentioned being effective, while some teachers mentioned feeling both effective and not effective in teaching math to this group of students. The importance of teachers believing that they are efficacious in their teaching efforts has been well documents. This includes being open to new instructional practices, willingness to create learner centered constructivist learning experiences, and influencing students' academic achievement are only a few (Fackler et al., 2021). Teachers mentioned individual characteristics and larger system level characteristics that impacted how effective they are in teaching math. Research shows that teachers who believe they can teach effectively persist through these barriers by engaging in professional learning and putting the learning into practice (Bray-Clark & Bates, 2003).

Limitations

There are some limitations to consider in this study including the sampling method, sample size, and a reliance on self-reported data add to the limitations of this study. A purposeful sampling method was utilized which is a nonprobability method that makes it difficult to generalize the findings to the larger population (Etikan et al., 2016).

Given the small sample size, there were limitations on the statistical analysis that could be conducted to allow more details to be explored since statistical power is a concern when calculating statistics with a small sample (Cohen, 1992). This study collected data that was self-reported which has inherent limitations that would have been enhanced with direct observations (Gaete et al., 2018).

Implication for Practice

This study points to the importance of providing spaces for math teachers to analyze their beliefs and perceptions and to critically reflect on practices and how it may impact students. This could include engaging in a professional learning community with the purpose of examining instructional practices and underlying beliefs (Tan & Thorius, 2019). Another way to facilitate teachers' reflection is by providing them tools to develop ways of understanding each student's strengths based on their different identities and ways to affirm those identities (Boaler & Greeno, 2000), which can have the potential of reshaping teachers' problematic beliefs.

Crucially, districts, schools, and teachers should re-envision mathematics teaching to empower every student to see themselves as active mathematicians. This journey requires celebrating and leveraging the diverse experiences and learning styles of Latinx students with LD who attend these schools (Moschkovich & Zahner, 2018; Ruef, 2021). A potent approach to champion teachers in this transformative journey is by offering continuous professional development aimed at enhancing their capacities to critically evaluate traditional teaching methodologies and explore innovative ways to engage all learners. Building on evidence-based strategies can significantly boost student learning and bolster their mathematical identity. Key strategies include prioritizing the quality of student tasks, fostering environments that encourage student dialogue, and emphasizing collaborative learning to pave the way for a more inclusive and effective mathematics education.

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The lived experiences of teachers working with young students with autism

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Abstract

In the last 5 years, teachers have reported challenging experiences while educating young children with autism spectrum disorder (ASD) as the diagnostic numbers have increased from one in 60 in 2019 to one in 33 in 2021, impacting the classroom ratios and social dynamics (Artigas-Pallarès & Paula, 2020; Maenner et al., 2020; Rosen et al., 2021). The increase in the prevalence of ASD diagnosis is impactful, specifically for teachers educating these students in the classroom. Educational psychology and ASD research highlights the issues students with ASD have during the school day, struggling with social skills, social communication, and social exchanges with their peers and teachers (Baron-Cohen, 1988, 2006, 2017; Silverman, 2015; Simó-Pinatella et al., 2021). This trend made a study regarding teachers' lived experiences (i.e., social interactions) essential for informing professional development content for special education teachers working with students with ASD (Baron-Cohen, 1988, 2001, 2006, 2017; Josilowski, 2019; Silverman, 2015). This transcendental phenomenological study, using constructivist research questions, captured teachers' lived experiences of social activities with students with ASD. Educational psychologists, educators, and professionals in the ASD field will benefit from better understanding of the lived experiences, specific knowledge about teacher-student social interactions to inform training practices, and detailed evidence to enhance professional development.

Keywords: autism spectrum disorder, constructivism, teacher-student relationship, social interaction, special education

In recent years, the number of young children diagnosed with autism spectrum disorder (ASD) has increased from one in 60 in 2019 to one in 33 in 2021; this change has impacted classroom ratios and social dynamics and created challenges for teachers (Artigas-Pallarès & Paula, 2020; Maenner et al., 2020; Rosen et al., 2021). Researchers in educational psychology and ASD have highlighted the challenges students with ASD face with social skills, communication, and social exchanges with their peers and teachers (Baron-Cohen, 1988, 2006, 2017; Silverman, 2015; Simó-Pinatella et al., 2021).

Social skills training in early elementary classrooms has proven to be a critical intervention for children with ASD, particularly in Grades 1 through 3, when peer interaction and cooperative learning become central to academic and social

development. Structured programs such as the skill streaming model and the Superheroes Social Skills program have demonstrated efficacy in teaching core skills like turn-taking, perspective-taking, and emotion recognition in naturalistic classroom settings (Bellini et al., 2007; Gresham et al., 2006). Teachers who embed social skills training into daily routines using visual support, role-playing, and peer-mediated strategies contribute to improved outcomes in both social reciprocity and behavior regulation (Rao et al., 2008). Additionally, early intervention with social skills training is associated with long-term gains in peer acceptance and reduced disruptive behaviors, especially when supported by trained educators and reinforced across environments (Wong et al., 2015). These findings highlight the importance of implementing developmentally appropriate and evidence-based social skills interventions during the early academic years for children with ASD.

Need for the Study

Despite these indications, previous research offers limited understanding of the lived experiences of teachers working with students in first through third grade during periods of socialization. The growing population of children with ASD and the accompanying challenges in the classroom establish a need to describe the lived experiences of special education teachers who work with young students with autism during socialization (i.e., circle time, instructional periods, and during art projects). Such information has the potential to inform professional development content (Baron-Cohen, 1988, 2001, 2006, 2017; Josilowski, 2019; Silverman, 2015).

Educational psychologists and autism researchers have explored some of the challenges faced by people with ASD. Baron-Cohen (1988, 2001, 2006, 2017) described social and neurological differences and advocated for neurodiversity support. Roth et al. (2010) researched ASD equality in *The Autism Spectrum in the 21st Century*, describing educational effectiveness, documenting bullying rates of 65% against persons with ASD, and highlighting the need for social acceptance in educational systems/institutions. Silberman's (2015) book, *Neuro Tribes: The Legacy of Autism and the Future of Neurodiversity*, covered the history of ASD, the historical development of the phenomena in the *Diagnostic and Statistical Manual of Mental Disorders* (3rd, 4th, and 5th editions; American Psychiatric Association, 1980, 1994, 2013), and social stigma related to the disorder. Finally, ASD research includes teachers' and neurotypical students' social acceptance attitudes and their perceptions of inclusion practices for students with ASD, including the need for on-going training (Derguy et al., 2021; Leifler et al., 2022).

Previous researchers in educational psychology, psychology, and ASD focused on teachers and novice teachers' perceptions and inclusion practices in general education classrooms and the home-school collaboration for students with ASD (Derguy et al., 2021; Josilowski, 2019; Leifler et al., 2022). For example, Stites et al. (2021) reviewed the need for researchers to understand teachers' lived experiences of working with students with different abilities by focusing specifically on pre-service teachers' feelings, ideas, and thoughts relating to the inclusion of students with other abilities. Phenomenological findings also illustrated teachers' training outcomes, students' social-emotional status and academic performance, and teachers' self-efficacy and effectiveness, and researchers explored teachers' need for ongoing training and mentorship support (Jones, 2019; Josilowski, 2019; Juarez, 2024; Stites et al., 2021).

Despite this body of knowledge, a gap persists in the educational psychology and ASD research and literature regarding special education teachers' lived experiences during social interactions with their young students with ASD. Specifically, information about early interventions in ASD and teacher-student social experiences in the classroom is missing. Practitioners in the educational psychology, psychology, and ASD fields would benefit from an improved understanding of the need for training to reduce teachers' anxiety, refine inclusion practices, and increase support for teachers.

A qualitative transcendental phenomenological study was appropriate to generate a description of the lived experiences of special education teachers who work with young students with ASD in the classroom during social

periods (Gallagher, 2022). In such a study, participants and the researcher work together to co-discover and co-construct data from the participants' responses to research questions and the researcher's behaviors (e.g., bracketing, transcending) to reveal authentic lived experiences (Percy et al., 2015). Such a study conducted within the social constructivism paradigm will add to the research on ASD teaching practices (Cihon et al., 2019; Markelz et al., 2019; McNeill, 2019; Sutton et al., 2019). Given the developmental capabilities of young students, this type of study is necessary to inform educational psychologists about effective social teaching practices for first through third graders (Myburgh et al., 2020). This transcendental phenomenological study focused on teachers' perceptions, feelings, thoughts, and ideas regarding their social interactions with students with ASD (Juarez, 2024). The findings highlight the need for teacher training to support teachers' knowledge regarding their students' social needs and to suggest ways to leverage school as a social phenomenon.

More specifically, teachers' training in evidence-based socially relevant practices is essential if schools are to meet the needs of young learners with ASD. M. E. Johnson et al. (2020) and Stites et al. (2021) established that all teachers need ongoing training, support, mentorship within the classroom, and collaboration between home and schools to be effective educators for students with ASD. Other ASD research included teachers' and neurotypical students' attitudes and perceptions of inclusion practices for students with ASD (Derguy et al., 2021; Leifler et al., 2022). These researchers explored the need for inclusion policies and social constructivism practices (i.e., scaffolding and zone of proximal development).

Further, Stites et al. (2021) and Josilowski (2019) offered phenomenological studies of teacher perceptions and training outcomes to improve students' social, emotional, and academic performance while increasing teachers' self-efficacy. The influx of students with ASD in the regular education classroom is likely to continue to increase over the next 5 years. Continued teacher training in social pedagogical practices, such as social constructivism, a learning theory based on interactions between teachers and learners, is necessary for teachers working with students with ASD (Delice, 2023).

Literature Review

> "Human beings, who are almost unique in having the ability to learn from the experience of others, are also remarkable for their apparent disclination to do so."
>
> -Douglas Adams, *Last Chance to See*

Previous scholarly literature indicated that educational psychologists are responsible for training special education teachers who work with students with ASD to ensure teachers can meet the needs of their students with evidence- and research-based practices (Bond et al., 2017; A. Johnson et al., 2021; Josilowski, 2019; Stites et al., 2021). People with ASD experience deficits in social skills, such as difficulty in responding to others' bids for social interactions, limited ability to make eye contact, struggles to provide verbal or non-verbal responses, and learning how to socialize in general (Baron-Cohen, 2017; Leaf, 2017). Young students with ASD in Grades 3 through 5, who are five to eight years old, are in a prime developmental period for positive social exchanges between teachers and students (Mason et al., 2021; Myburgh et al., 2020).

To effectively provide training and professional development content for teachers, educational psychologists need to understand the lived experiences of special education teachers, including those who work with young students with ASD during social periods such as circle time, art projects, and instructional time (Bond et al., 2017). Research describing the lived experiences of special education teachers during these early intervention periods, specifically regarding social exchange opportunities with their young students with ASD, may inform educational psychologists as they design professional development content (Mason et al., 2021; Vincent & Ralston, 2019). One area to consider for inclusion is research that explores the biological functions of social processing for people with ASD.

The Social Brain and ASD

According to the current research in biological framework of ASD, the neurological mechanism of eye tracking plays a fundamental role in explaining the phenotypic genetics of ASD. In a comprehensive study to confirm the neurological mechanics of the social brain in persons with ASD, Mason et al. (2021) mapped brain regions to inform the ASD field of social-genetic profiles. Results indicated human brain regions in the amygdala, ordinal frontal cortex, fusiform gyrus posterior, and superior temporal sulcus are responsible for social information processing. Other findings confirmed that human social cognitive processes help people identify kinematics (body movement patterns) of others, leading to the ability to infer others' emotions and intentions and assisting in productive social interactions (Baron-Cohen, 1995; Roth et al., 2010).

Mason et al. (2021) verified that the social brain's typical function is to prefer biological motion, but persons with ASD 6 to 30 years do not show a preference for biological motion. The implications of this study were that people with ASD social profiles do not evolve over time, and they need help and support to develop their social brains. People with ASD may have less neural connectivity in the social brain, causing them to initiate few social interactions, respond to few social bids, and offer few verbal and nonverbal reciprocal interactions. These detailed findings have the potential to inform professional development content.

Other topics of research include genetic characteristics and psychological features that impact social differences across the autism spectrum, and results point to neurological social features that limit high destiny transmission for social cues and biomotion markers (Baron-Cohen, 2017; Botha et al., 2022; Mason et al., 2021). Young students with ASD have many opportunities to have productive social exchanges with their teachers, which may increase the students' neurological branching in that social area of the brain and improve the quality of life for persons with ASD. Teachers need training and education to understand these features and to design lessons that work for the children with ASD.

Teaching Methodologies for Students With ASD

One approach to teaching children with ASD is positive behavioral support (PBS) programs in the classroom; teachers who use this technique aim to reduce interfering behaviors caused by social and emotional problems. One mixed-methods study included data from observations of students in the classroom and teachers' responses to open-ended questions about their perceptions of applying PBS and students' responses to that approach (Alwahbi, 2022). PBS is a three-tiered model; the first tier features whole-group teaching strategies. The second tier is a more intensive level at which educators apply PBS strategies across smaller groups, and the third tier involves using one-on-one individualized PBS teaching strategies to decrease interfering behaviors. The teaching procedures include rewards (with tokens) and verbal praise when students stay on task, pay attention to academic tasks, and respond to teachers' instructions.

Alwahbi (2022) focused on students with autism in Saudi Arabia; the children's diagnoses ranged from moderate to high functioning. The researcher divided students into seven to nine groups based on their grade level and individual needs. Then the children completed six 40-minute lessons in reading, writing, mathematics, social studies, visual arts, and physical education. Teachers implemented the PBS strategy with three to four students in one virtual classroom, and students attended this school twice a week for two hours for individualized instruction. The age range for the participants was eight to 13 years, and the sample included 32 students and nine special education teachers specializing in autism.

Further, to establish fidelity of the findings, the researcher collected baseline data before the implementation of PBS teaching strategies (Alwahbi, 2022). Although this comprehensive study addressed the effects of PBS to mitigate interfering behaviors, leading to more access to the curriculum, it did not feature a specific teaching strategy focused on teaching social skills behaviors. This study focused on students' reactions to teachers' questions (e.g., raising their hand) and whether students responded to instructions within 5 seconds. Because teachers provided or withheld positive praise and

awarded or took back tokens depending on students' behavior, this model aligned with a behaviorist teaching strategy.

The results showed a mild decrease in the frequency of interfering behaviors across three classrooms in various age groups and levels (Alwahbi, 2022). Again, this study was aimed at understanding the impact of PBS on students' interfering behaviors, not on creating social identities, which would benefit them long-term. Also, the mild decrease in interfering behaviors may be attributed to smaller class sizes, and teachers reported the interfering behaviors occurred during unstructured time when the PBS teaching strategies were not applied.

Previous research also reflects the role of emotional intelligence (EI) in mitigating social and emotional difficulties in students with autism. Trevisan et al. (2021) expounded on the specific social-emotional difficulties common among students with autism, including challenges in perceiving, using, understanding, and managing emotions. The researchers reviewed literature on teaching strategies to mitigate difficulties in EI for persons with autism in the areas of picking up on nonverbal emotional cues, emotional regulation deficits, authentic versus deceptive facial expressions, and deciphering emotions in music (Baron-Cohen, 2017).

Researchers also reviewed the implementation of EI in school settings. The EI teaching strategies for students with autism were peer mediated instructions, naturalistic interventions, structured play groups, and adult-directed social skills training. Trevisan et al. (2021) did not suggest EI teaching models should be exclusively used; instead, EI methods should be incorporated with other interventions such as social emotional learning (SEL).

Trevisan et al. (2021) recognized behavioral and biophysiological interventions (teaching strategies) might be more useful in producing EI skill sets in persons with autism. Singh et al. (2019) suggested meditation-based stress reduction (MBSR) strategies and mindfulness-based cognitive therapy (MBCT), which are already a part of SEL curricula for students with ASD. Although these findings highlighted the emotional symptoms of autism and the usefulness of EI teaching methodologies, the results clarified differences and variations in cognitive ability among children with autism, which means only the moderate- to high-functioning persons with ASD were positively impacted by EI teaching strategies. Therefore, EI teaching strategies are not a comprehensive way to increase the social skills or social identities of students with autism.

Written by an advocate for SEL, *Conscious Discipline* (Bailey, 2021) offered a workshop in SEL to assist students in navigating the classroom multidimensional dynamics, academic presentations, and social emotional skills. Reports suggested SEL can help students with autism connect with others appropriately, develop social skills, and regulate their emotions as they learn to solve problems and thrive socially and academically. This two-day workshop focused on the conscious discipline teaching approach, which is a trauma-informed, adult-first methodology, integrating SEL and school culture procedures for students with autism.

Results indicated the conscious discipline methodology decreased aggression, impulsiveness, and symptoms of hyperactivity and reduced discipline referrals for students with autism. These outcomes highlighted the negative aspects of autism but did not depict the co-construction of knowledge between teachers and their students with ASD. Unlike socially mediated learning strategies, conscious discipline approaches are teacher-led, leaving the students with autism to merely comply with instructions.

To explore a more student-centered approach, Abu-Nowar et al. (2024) reported on technology-focused social emotional nurturing and skill enhancement system (SNSES) for persons with autism. This teaching methodology features technology that displays facial emotional expressions to teach persons with ASD to understand nonverbal social cues. Abu-Nowar et al. (2024) researched augmented reality social skills, training specifically for high functioning autistic adults with cognitive and sensory differences. Findings indicated that persons with autism have deficits in responding to paralinguistic cues, and the use of technologies other than augmented reality (AR) and virtual reality (VR) can simulate appropriate social interactions. Computer vision assisted

technology (CVAT) combines deep learning modalities and machine learning applications. These types of AI might be applicable in teaching social emotional skills, emotion recognition, and facial recognitions in persons with autism (Abu-Nowar et al., 2024). In fact, this teaching strategy uses facial expression recognition algorithms based on the facial action coding system or FACS, to help persons with autism understand and define more nuanced facial expressions and give them a name.

Similarly, Mason et al. (2021), who studied the social brain and persons with autism from 6 to 18 years old, found people with autism have a lower propensity to focus on the biomechanics of a body or a character in a scene they are watching. Again, this method appears to be a one-sided teaching methodology which is not necessarily applicable in real life and certainly not geared to creating an individualized social identity as social constructivism can. The results for this study revealed persons with autism who had more severe symptomology did not have improved outcomes (Mason et al., 2021).

However, Mason et al.'s (2021) results indicated persons with higher functioning autism were better at interpreting emotional states in speech and facial expressions after 10 to 20 hours of training over 10 to 15 weeks. Finally, the algorithm captured the data of persons with autism correctly classifying emotions (e.g., neutral, fear, sad) as they viewed the technology. This strengths-based approach for emotional training has potential benefits for persons with autism. Conversely, the AI teaching model did not account for maintaining social connections and interactions with real people in real time to increase social skills in persons with ASD.

Educational Psychologists, Teacher Training, and Students With ASD

In addition to exploring the social brain and a variety of educational approaches, previous researchers have examined how training and professional development impact the performance of special education teachers. Educational psychologists are responsible for developing ongoing training for special education teachers who assist students with ASD (Bond et al., 2017; Josilowski, 2019). Bond et al. (2017) researched whether educational psychologists train teachers for communities of practices and provide consistent support across school personnel to advance the development of engagement skills for students with ASD. Further, Vignato et al. (2021) identified that special education teachers need more awareness of how to identify effective strategies and how best to implement those strategies to enhance the development of social skills, and educational psychologists have the knowledge to train teachers. Bond et al. (2017) and Josilowski (2019) studied teachers and students with ASD and concluded the teachers benefitted from support and training personally, in the home, and with school collaboration.

Teacher training is essential to give teachers the strategies needed to help young students with ASD increase social skills and engage in productive social interactions with their teachers and peers. In fact, developing teacher training specifically for students with ASD and increasing productive social exchanges with their teachers and peers is necessary because these students experience high rates of bullying and isolation (Mason et al., 2021; Myburgh et al., 2020; Roth et al., 2010). Students with ASD have difficulty interpreting emotions; responding to social-emotional cues; and developing, maintaining, and understanding relations, and these social skills are not consistently addressed in K-12 educational institutions; therefore, teacher professional development can demonstrate how to help young students with ASD develop these skills (Myburgh et al., 2020).

Also, Hall (2020) and Bond et al. (2017) clarified professional teacher training is a multilayered, complex process that includes development of teachers' skills, knowledge, and educator characteristics. Mason et al. (2021) added that insufficiently trained teachers may experience confusion and a lack of knowledge of the characteristics of students with ASD. These deficits inhibit teachers' ability to modify curricula and engage with their students effectively (Myburgh et al., 2020). Some teachers attempt to create their own programs for students with ASD, but their lack of training and knowledge in the field limits their success in these efforts (Myburgh et al., 2020).

Well-designed training and professional development improve teachers' ability to help students with ASD bridge the gaps in social skills and increase engagement with their teachers, peers, and others (Baron-Cohen, 2001; Roth et al., 2010; Silverman, 2015). Teachers who work with students with ASD are concerned specialists, and their position requires a range of knowledge of interventions, the ability to translate research results to practical applications, and the skills to work with other professionals and the students' parents (Bond et al., 2017; Josilowski, 2019). Also, educational psychologists are responsible for updating training for special education teachers with young students with ASD as the ASD research is always evolving to better align with necessary supports and teaching strategies (Josilowski, 2019; Myburgh et al., 2020).

Bond et al. (2017) examined how educational psychologists support and train teachers to educate students with ASD in social communities of practice, highlighting the benefits of consistency of care (Hall, 2020). Additionally, Bond et al. (2017) researched the effects of communities of practices on students with ASD development and the responsibility of educational psychologists to tailor teacher training to benefit students with ASD (Myburgh et al., 2020). Specifically, researchers assessed teacher efficacy before and after training with the following questions:

1. Do you have the skills to instruct a child with ASD?
2. If further training was available, how likely would you be to attend?

Results of the study indicated high internal consistency (Cronbach's alpha = 0.995) and therefore trustworthiness, and teachers reported increased teacher efficacy after training.

Previous researchers advocated determining who is responsible for training teachers, who will benefit from healthy teacher-student interactions, and the long-term impact of such teachers upon their students with ASD. Bond et al. (2017) documented a statistically significant increase in efficacy in 30 teachers who trained in collective learning practices and the emergence of a successful autism-friendly environment to meet the needs of students with ASD. Stites et al. (2021) reviewed the need for researchers to understand teachers' lived experiences of working with students with different abilities. Analysis of preservice teachers' feelings, ideas, and thoughts about the inclusion of students with other abilities revealed the teachers felt benefits from their training and enthusiasm for working with students with ASD.

This study was an attempt to capture the lived experience of first through third grade teachers of children with ASD. Including their perceptions, experiences, and suggestions for improvement had the potential to fill in the gaps in scholarly knowledge about how interactions with well-trained teachers during school activities could support and benefit students with ASD who may struggle to develop social identities and social skills they would use for the rest of their lives.

Methods

The purpose of this transcendental phenomenological study was to capture teachers' lived experiences of interacting with students with ASD during social activities. Detailed descriptions of the experiences of special education teachers who work with young students with autism in Grades 1 through 3 may increase understanding of the challenges students face and inform professional development content for teachers. Educational psychologists, educators, and professionals in the ASD field may gain specific knowledge about teacher-student social interactions and use that information to enhance training practices to improve circumstances for this population of children. This methodological approach allowed for the use of qualitative research questions with the goal of representing the essence of the lived experiences of participants. The research question, "What are the lived experiences of special education teachers working with students with autism during social periods?" guided this effort to depict the lived experiences of special education teachers working with young students with ASD.

Research Design

The theoretical framework for this study was constructivism, and Vygotsky's concepts of scaffolding and zones of proximal development (ZPD) provided structure

for the research question (Gauvain, 2019; Volkmar, 2021). Transcendental phenomenological research includes theory development through data matching and analysis (Chun Tie et al., 2019; Golafshani, 2003; Salamon, 2018; Wallace & Kuo, 2020). A study conducted within a social constructivist framework may help explain the lived experiences of respondents (Grant & Osanloo, 2014; Josilowski, 2019; Stites et al., 2021). This study included sociocultural research questions focused on teachers' ideas, thoughts, and feelings about their young students during social activities (Moustakas, 1994; Neubauer et al., 2019; Salamon, 2018):

Participants

This research study included eight special education teachers who worked in classrooms that were not exclusively autism classrooms, although most of the students had ASD. Typically, special education teachers teach in general education or special education classrooms with students with ASD or/and a mixed-ability classroom in the United States (Bond et al., 2017). The participants were all members of a special education teachers' Facebook group. Participants responded to a recruitment flyer I posted in the Facebook group (one of several groups in which I posted) describing the study and requesting teacher participants (Juarez, 2024). All the participants volunteered as a group in a carry-over effect. All participants were women working in the same school district in a rural area of a Western state.

The participants were all special education teachers working with young students with ASD or undiagnosed students with ASD ages 5 through 8 years in classrooms alongside typically developing students. All of the participants self-identified as Native American, and seven of them had been working in the school district for between 2 and 5 years; one participant had worked at the district for 10 years. This outlier's lived experiences with their young students with ASD paralleled the other teachers' lived experiences.

Data Collection

The first steps for this study were to collect data through Zoom interviews, while I focused on bracketing and listened without bias to capture the essence of this phenomenon. Participants answered open-ended questions in one-on-one interviews (audio- and video-recorded with their consent) to describe their lived experiences of working with their students with ASD (Josilowski, 2019). The interview questions were (a) What are your lived experiences working with your young students with ASD during social periods? (b) What are the difficult lived experiences of teachers educating young students with ASD in the classroom during social interactions? and (c) What are the positive lived experiences of teachers educating young students with ASD in the classroom during social interactions?

I did not prompt or guide the teachers as they explained their lived experiences. Instead, I made reflective comments such as "Let me share what I hear you saying" to clarify the meaning while they explained their lived experiences (Neubauer et al., 2019). I recorded the interviews on video and then transcribed from video to print-out and cleaned up the transcripts only to distinguish between mine and the participants' words. Once all transcripts had clear speaker attributions, I began thematic coding by looking for reoccurring phrases or words across participants.

As the investigator, I assumed phenomenological perspectives and practices and developed an attitude of transcending my own beliefs, ideas, and thoughts regarding special education teaching practices, teachers' attitudes, and teachers' perceptions of young students with ASD, to reveal the true essence of a phenomena (Wei, 2020). I remained open to the lived experiences of special education teachers in pure truth while checking my own bias about teachers' positive or negative perceptions of their young students with ASD and their social skill differences, throughout the research process (Hoffding & Martiny, 2016; Neubauer et al., 2019). This qualitative research model with transcendental phenomenology methodology was best suited to accurately depicting the lived experiences of special education teachers working with students with ASD during socialization periods.

Data saturation is an essential concern in any qualitative methodological approach. Data saturation can be found in inductive or deductive logic as it relates to data

collection, data analysis, and theorizing (Saunders et al., 2017). For my research study, I ensured data saturation was met by interviewing the 8 to 10 participants typical in transcendental phenomenological studies to ensure viability and reliability of data collected. Data saturation was also likely because the research questions, theoretical position, and analytical framework were consistent with features that ensure coherence and potency of data (Saunders et al., 2017).

Finally, I performed member checking, and participants were able to review and confirm that the transcripts were accurate to ensure the integrity of the study (Chun Tie et al., 2019; Hoffding & Martiny, 2016; Josilowski, 2019; Moustakas, 1994). Phenomenological methods are renowned for their ability to foster trustworthiness in data collection and analysis procedures, and member checking serves as a cornerstone in ensuring the credibility and validity of the findings. Through member checking, participants are actively engaged in the research process by reviewing and confirming the accuracy and interpretation of their own experiences as captured by the researcher.

This iterative dialogue between researcher and participant not only enhances the authenticity and richness of the data but also mitigates potential biases or misinterpretations by providing an opportunity for participants to offer corrections or clarifications. By involving participants in the validation of findings, phenomenological researchers prioritize transparency and accountability, ultimately bolstering the trustworthiness and credibility of the research outcomes (Chun Tie et al., 2019; Hoffding & Martiny, 2016; Josilowski, 2019; Moustakas, 1994; Roberts, 2020; Rose & Johnson, 2020). *Data Analysis*

Data analysis processes began with assigning codes and themes to words and phrases that recurred in participants' responses and placing those into transcendental phenomenological software to be analyzed (Roberts, 2020; Rose & Johnson, 2020). I read the entire transcript to achieve a sense of the whole lived experiences of special education teachers in first through third grades and then began the process of reductionism (sorting and shortening sentences and phrases to words) to render data in psychological terms (Stites et al., 2021). I completed memoing (quality sampling checks), coding (theoretical propositions), and initial coding (fracturing the data) to create a theory and report the findings, limitations, and assumptions (Chun Tie et al., 2019). The transcendental phenomenological processes, such as theming and coding, had occurred with six and then eight teacher participants as the carry-over effect occurred over a few months (Chun Tie et al., 2019; Hoffding & Martiny, 2016; Josilowski, 2019; Moustakas, 1994; Roberts, 2020; Rose & Johnson, 2020).

Results and Discussion

Data analysis revealed the lived experiences of special education teachers who worked with young students with ASD. Teachers described challenges such as the lack of diagnosis for students coming into the classrooms; stressful social interactions in the classroom compounded by a lack of administrative support; and shortages of knowledge, training, and professional development. Students with ASD have varying learning and socialization profiles, and as educators, participants wanted students with ASD to be accepted at school and in the community. The participants also expressed their desire for improvements to the education system to support healthy social interactions for students with ASD.

Lack of Diagnoses and Administrative Support

Participants shared that students arrived at their classrooms with no identifying paperwork, diagnostic paperwork, or psychological reports of learning differences. Participant 4 (P4) shared, "So when I get them [students with ASD], I am starting at zero information." This initial deficit of information caused teachers to experience the psychological state of diagnostic knowledge stress, and participants reported symptoms consistent with the psychological state of emotional impact recognition, which is a process through which individuals, particularly teachers in an educational context, consciously acknowledge and express the emotional consequences of insufficient information about students' diagnoses or learning differences. P1 shared,

> I was scared and did not feel informed about autism. I did not understand what I could do to have better experiences with my students with autism. I was scared when I was unsure of what the student would do.

Stressful Social Interactions

Students' behaviors played a role in the challenges arising from social interactions in the classroom, as well. Participants described incidents of anti-social, maladaptive, or inappropriate exchanges between students. P1 related complex social dynamics between students with ASD and their peers: "The peers would tease him. He did not understand what the students [were saying or what] general education students were discussing and could not follow their humor."

Social experiences between the teachers and students were difficult at times. P3 stated, "Before last year, the student was shy and kept to himself." The teachers shared their passion and desire to help improve the social interactions skills of their students. P7 said, "I would have moved mountains to help them."

Teachers' distressed responses to these interactions suggested they experienced the psychological state of affective disquietude. This term encapsulates the teachers' psychological discomfort and emotional turbulence resulting from daily social challenges in the educational setting. P1 attributed her distress to the fact that she received no professional training or ongoing support for challenging social behaviors. P2 portrayed her stress and desire for more support and training: "The problematic experience was when I had no help and no aid, and the child was undiagnosed, so the student had no social skills to play with same-aged peers, no verbal responses to questions, and limited speech."

Lack of Knowledge, Resources, and Training

Along with administrative support and training, participants revealed they needed classroom materials, sensory items, picture exchange communication systems, visual communications devices, and resources to help their students with ASD socialize and learn more effectively. The shortage of knowledge, resources, training, and administrative support limited the extent to which they could help their students. P2 described a student who "had hand flopping during socialization periods and was very physical, hitting other students when he was supposed to be taking turns with the talking stick [an object passed around during circle time to signify the student's turn to answer the teacher's question or share]."

The teachers wanted school administrators to acknowledge that a lack of continuous training equals a lack of knowledge; similarly, a lack professional development and administrative support leads to feelings of inadequacy among teachers. They were unsure or unequipped to help, manage, assist, or teach students with ASD when the students had not met developmental milestones such as how to wipe their nose, refrain from touching genitals, or cope with changes in schedule. P5 reported, "I just did not know" when confronted with new, limited behavior and social skills. P8 expressed the distress of not having ongoing support and training: "Okay, I know being comfortable with anything that comes through, and then to get a different classroom, I must work everything differently, and so I feel like I'm starting over all this."

Teachers who reported an inability to help their students with ASD experienced the psychological conflict of cognitive and experiential dissonance. This conflict arises from the disparity between the teachers' theoretical knowledge (gained through reading, learning, or professional development) and the actual experiences they encountered in a specific context, such as during social interactions with their students. This dissonance can lead teachers to feel overwhelmed, under-prepared, and physically exhausted. P5 shared, "I did not know how to help her, and it was distressing." In contrast, P7 expressed relief when she discovered viable strategies and resources that helped her student: "When I gave [sensory toys, chair bands, bracelets, and necklaces] to my two little guys, oh man, I have never, I have never seen them sit still."

Teachers sought their own solutions to the extent they were able. Following harmful psychological lived experiences based on a lack of knowledge and experiential dissonance, teachers undertook a practical pedagogy quest to relieve their stress. Such a quest is the psychological drive for practical tools and guidance in

teaching practices for young students with ASD. P1 shared, "I took the classes, behavioral analysis, [teaching] practices, and coursework and learned a lot. After training, I also learned to help students with autism adapt to changes or unexpected changes in routines and use visuals."

The teachers also tried to find ways to save time, create opportunities, and maximize instructional time while eliminating the use of hit-and-miss methods. Some participants wanted tools to help their students with ASD succeed in daily tasks. P3 described her frustration: "After my students with autism returned to school [after the COVID shutdown], we had to teach them how to get in line, listen, and sit at the table all over again." Teachers conveyed their belief that professional development and practical pedagogical training could decrease their distress and improve relations and results in the classroom.

Need for Community Neurodiversity Awareness

Along with their desire for students with ASD to be accepted and respected at school, the teachers described their desire for community neurodiversity awareness (CNDA), which encompasses the psychological and social dynamics of acknowledging and embracing neurodiversity as an integral part of the community fabric. The teachers indicated that ASD acceptance would help them effectively teach and avoid feelings of psychological distress that occur when they do not know how to attend to their students' needs and when they want to emphasize their potential to others in the classroom and the wider community and do not have the support to do so. P3 explained that her lived experiences would be less stressful with more CNDA:

> In school, pre-K, early K, and general education integration, kids should be asked questions about peers with autism, and they should be supported to play with him or her. The teacher should be saying, It's okay to play with her or him.

Teachers explained that CNDA is a viable way to develop a positive social acceptance community, inside and outside the classroom, for all its members. P6 stated, "I do not like isolating [students with ASD]. I feel like they should be a part of the group."

Parents, teachers, students, and community members can unite to dispel misconceptions about ASD, according to participants. P2 communicated that students with ASD have the capacity for growth and cognitive connection: "There are misconceptions about autism that they should live up to what we want and that they do not have the potential. We do not give them enough credit, and they are stigmatized as handicapped." P7 described the need to model empathy and promote understanding as a way of reducing stigmatization of young students with ASD:

> We are just, you know, we are all different, we are all unique in our ways. It makes a big difference for kids on the spectrum for us as a community to have a learning environment, making it a positive instead of looking at difference as a negative.

Participants asserted that improvements in the educational system could not only support teachers in addressing the diverse needs of students but also serve as a model environment of CNDA. Teachers expressed the need for improvements in the processes of admissions, assessment, and identification of students with special needs. Accommodations might include provision of pre-packaged teaching materials (visuals, PECS), sensory toys (rubber bracelets, necklaces, weight vests, rubber bands for chairs, chair wages), aprons, and materials for teaching hygiene routines P2 shared,

> I want them, the students with autism, to be comfortable, and I think that they are going to catch on. I do not want them to feel like they must move at their other students' pace but at their own pace. I do not want them to feel like they're in a forced situation. I want them to be comfortable with this. I want them to think, I am going to get it.

Another way to create an atmosphere of acceptance is through social constructivist interactions, as described by participants. P2 shared her experience of viewing students with ASD as active learners, co-creating knowledge via social interactions, and supporting them in meaning-making: "Because of the [one student's] emotional outbursts, I changed how I distributed crayons." Another participant described the process of learning to communicate with a student who had ASD and was

nonverbal; the student stood against the wall, crying and looking at the teacher. The teacher responded to the social cues of the student, engaged her with a toy, and praised her for that engagement. These social exchanges made the teachers and students feel connected. In addition to building rapport, these interchanges helped students develop cognitive skills and begin to form a social identity. P5 explained, "I had to learn to talk positively to her to avoid massive meltdowns and recognize that she was susceptible to "no." She … would run in response to being told no." These examples clarified the power of the teacher-student relationship and the potential to co-create knowledge through social interactions.

Assumptions and Limitations

General Methodological Assumptions

The general methodological assumptions of a qualitative transcendental phenomenological study are that the participants will tell the truth as they see it; in this way, the common lived experience can emerge collectively from the descriptions of participants (Sebele-Mpofu & Serpa, 2020). Another assumption is that participants have a sincere interest in participating in the research study with no ulterior motive to compromise the integrity of the research process and this study's outcomes (Sebele-Mpofu, 2020). Another assumption of transcendental phenomenological study is that the researcher will complete bracketing and work to disregard their own biases throughout the study (Gallagher, 2022; Neubauer et al., 2019). With the first two assumptions in mind, I endeavored to trust and believe the participants and worked to set aside my own preconceptions and beliefs and engage in authentic interactions with them.

Theoretical Assumptions

The theoretical assumptions of constructivism include that knowledge is constructed between the teacher and the learner. The social constructivist model of teaching and learning also holds that learning is a social phenomenon because learners do not merely passively receive information; instead, the knowledge derives from the interactions and exchanges between students and teachers (Gauvain, 2019; Hall, 2020; Volkmar, 2021). Additionally, Vygotsky's learning theory explains that zones of proximal development (ZPD) and scaffolding (teaching only what students need, meeting them where they are) are the foundations of social engagement between teachers and students to create new knowledge (Gauvain, 2019; Hall, 2020). Research questions created under the theory of social constructivism supported exploration of the lived experiences of special education teachers working with young students with autism during social periods (Gallagher, 2022; Gauvain, 2019; Hall, 2020).

Limitations

Limitations of this study included having a small sample of participants. The restricted sample size might compromise the generalizability of findings, as the experiences and perspectives of a few participants may not adequately represent the diversity within the broader population of special education educators (Delice, 2023). This limitation can constrain the applicability of research findings to a wider context, potentially limiting the utility of the study's conclusions for informing practice or policy beyond the specific group studied. To mitigate this effect, I employed member checking, a method wherein participants review and validate the researcher's interpretations of their experiences, enhancing the validity and trustworthiness of the study's findings.

Limitations also included the potential for researcher bias, as personal beliefs are difficult to negate entirely for data analysis procedures (Wallace & Kuo, 2020). Phenomenological researchers are required to apply bracketing (suspending judgment) and to mitigate the influence of personal biases and to remain open to the lived experiences of others. This is an imperfect process as researchers' opinions, ideas, and thoughts may taint their interpretations of the data and therefore shape the depiction of the lived experiences of special education teachers working with young students with ASD during social periods. Additionally, I made efforts to minimize researcher biases through reflexivity, acknowledging and critically reflecting on my own assumptions and perspectives throughout the research process (Juarez, 2024).

Another limitation associated with interview data was accuracy of recall. Participants may not have been able to

recall events, situations, and feelings exactly as they occurred. Despite these limitations, the study offered valuable insights into the lived experiences of special education teachers, providing a nuanced understanding of their challenges, successes, and unique perspectives within the educational landscape.

Delimitations

Certain delimitations impacted the design of this study. Restrictions on the specialty focus of the teachers who could participate, the grade level of teachers and therefore their students, and the level of severity of ASD in participants' students established the scope of the study and produced relevant and detailed data to answer the research questions. This study featured a narrow population of special education teachers of first through third graders with moderate to high-functioning ASD.

The decision to exclusively include special education teachers, rather than general education teachers, in the study stemmed from the specific focus on understanding the unique challenges and experiences faced by educators working with students with diverse learning needs. Special education teachers are often at the forefront of supporting students with disabilities, including those with autism spectrum disorder, and thus possess specialized knowledge and experiences that are particularly relevant to the research objectives. Narrowing the participant pool to special education teachers supported the goal of delving deeply into the nuanced practices and perspectives specific to this population and accessing participants who could provide insights that might not be fully captured by including general education teachers.

Focusing on first through third grade teachers was deliberate as well; children in these grades are in a developmental stage that marks a critical period in their social and emotional development. During these years, children are beginning to navigate social interactions, develop social skills, and establish foundational understandings of social identities. Special education teachers at this level are uniquely positioned to observe and support students' social and emotional growth. Therefore, these teachers' insights were invaluable to the study's exploration of inclusive educational practices and interventions (Hall, 2020).

Finally, only teachers of students with moderate to high functioning ASD were eligible to participate in this study. This decision was a deliberate effort to stay within the specific research focus on understanding social interactions within inclusive classroom settings. While interviews with teachers whose students had severe or moderate ASD could have offered valuable insights into the challenges and dynamics of supporting individuals with varying levels of functioning, focusing on teachers of moderate to high-functioning students aligned best with the scope of this study.

Teachers of moderate to high functioning ASD students are often tasked with facilitating social exchanges and supporting the development of social skills within their classrooms. By focusing on this subgroup of teachers, I aimed to explore the strategies, successes, and challenges specific to fostering social interactions among students who possess greater communicative and social potential. Furthermore, teachers who work with moderate to high-functioning ASD students have the experience to highlight effective practices and interventions that could offer tangible successes in the classroom, thereby providing valuable support and encouragement to less seasoned teachers who may be navigating the complexities of inclusive education (Koegel et al., 2014).

Conclusion

Educational psychologists are primarily responsible for teacher training, teacher support, teacher development, and professional development, so they need to understand special education teachers' lived experiences to improve students' socialization outcomes through informed practices (Cihon et al., 2019; Markelz et al., 2019; McNeill, 2019; Sutton et al., 2019). Young students with autism suffer from social, communication, and attention deficits, and the classroom is the setting for many social interactions between the teachers and their students (Baron-Cohen, 1988, 2001, 2006, 2017; Josilowski, 2019; Roth et al., 2010; Silverman, 2015; Stites et al., 2021). This transcendental phenomenological study was an exploration of the lived experiences of special education

teachers conducted with the goal of generating a depiction of their experience that will inform educational practice, policy, training, and professional development content.

Data analysis revealed the ways special education teachers' experiences impacted them psychologically. Participants described experiencing symptoms of diagnostic knowledge stress, emotional impact regulation, affective disquietude, and cognitive-experiential dissonance. The teachers embarked on their own practical pedagogy quests, depicted the social obligation to challenge misconceptions about ASD, and extolled the needs for educational improvements and training to nurture ASD acceptance. Teachers described their desire for systematic educational changes, ASD acceptance in the community, and ongoing training in ASD pedagogy. They provided examples of social constructivist interactions with their students with ASD, which can serve as models and goals of discovery, acceptance, and equity for educators, administrators, and educational psychologists.

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RESEARCH

Understanding preservice special education teachers' culturally responsive self-efficacy: A mixed methods study

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Abstract

There have been increases in the culturally and linguistically diverse (CLD) student population over the last two decades; however, these changes have not been realized in the diversification of educators in the field. This sequential explanatory mixed methods study examined preservice special education teachers' (N = 54) culturally responsive self-efficacy beliefs and the factors and experiences that influenced their self-efficacy through semi-structured interviews (n = 8). This study sought to extend the work of Siwatu (2011a) by administering the culturally responsive teaching self-efficacy (CRTSE) scale and modifying it to include the language of disability (Chu & Garcia, 2014). Results indicate special education preservice teachers have moderately high CRTSE for teaching CLD learners with disabilities. Differences and commonalities between high and low self-efficacy groups are discussed.

Keywords: preservice teachers, special education, culturally responsive, culturally and linguistically diverse, self-efficacy, teacher education programs, mixed methods

Increasing cultural diversity in our nation's schools has highlighted the need to prepare teacher candidates to work with culturally and linguistically diverse (CLD) learners. Hussar and Bailey (2020) project that by 2028, the percentage of White students will decrease an additional 7% while populations will continue to increase for students who are Black (1%), Hispanic (8%), Asian/Pacific Islanders (20%), and those from two or more racial/ethnic groups (51%).

Although the racial and ethnic composition of our nation and our schools are changing, teacher demographics have not kept pace. In 1988, 87% of the teaching workforce was White; three decades later, 82% percent of teachers in our schools are White, with 18% being from CLD backgrounds (U.S. DOE, 2016). Preservice and inservice teachers continue to be predominantly White females from suburban or rural settings who may have

little knowledge of learners with CLD backgrounds (Imler, 2009; Kahn et al., 2014; Taylor, 2010; Trent et al., 2008).

DeCastro-Ambrosetti and Cho (2011) posit that educators bring their values and experiences into the classroom. If a preservice teacher lacks cultural awareness and if their values and experiences differ from their learners, there is a probability for cultural dissonance (e.g., Kahn et al., 2014;), which can lead to inconsistent experiences for CLD learners. For this reason, including culturally responsive pedagogy (CRP) as part of the core curriculum in teacher education programs (TEPs) is fundamental for all preservice teachers. CRP provides a framework for teachers to understand and acknowledge their cultural backgrounds and those of their students and families. Irvine (2012) asserts that CRP should be fundamental to the curriculum for all educators, and Gay (1995) posits that no teacher candidate should graduate from a TEP without understanding the impact that culture has on teaching and learning.

A growing body of research has found that when teachers employ culturally responsive pedagogies, students have higher levels of engagement, improved academic performance, and better relationships with teachers (i.e., Allen et al., 2017; Brown-Jeffy & Cooper, 2011; Cruz et al., 2020; Ladson-Billings, 2014). Conversely, when educators lack cultural competence and are unfamiliar with linguistic needs outside of the dominant language or culture this may unintentionally influence their educational decision-making and potentially lead to special education referrals of CLD learners. Learners from CLD backgrounds are disproportionality represented in special education and this referral may have been avoidable if educators understood the differences between disability and cultural and linguistic differences (Skiba et al., 2008; Taylor, 2010).

Some TEPs have transformed their courses and programs to prepare preservice teachers to use evidence-based practices with CLD learners (Scott et al., 2014). Others have enhanced dialogue around curriculum, field experiences, research methodology, pedagogy, and assessments (Irvine, 2012). Few have equipped teacher candidates with transformative pedagogies that move beyond surface-level celebrations and cultural symbols (Brown-Jeffy & Cooper, 2011). Additionally, recent literature reviews on special education TEPs and their inclusion of CRP (Author, 2021; Trent et al., 2008) indicate that programs that have redesigned their curriculums to include cultural competencies seldom include any outcome data to understand if their changes have resulted in better preparing preservice special educators for the CLD learners that they will instruct. Evaluation measures are needed to understand the factors influencing teachers' capacity to include CRP in their professional practice (Cruz et al., 2020). One possibility is for TEPs to explore using self-efficacy measures to determine how teacher candidates perceive their ability to teach learners with disabilities from CLD backgrounds.

Over the last forty years, educators have examined teachers' beliefs about their abilities to teach effectively. Bandura (1977) posits that teacher efficacy beliefs are causal and that specific behaviors will produce certain outcomes. Teacher self-efficacy is a teacher's belief in their ability to influence student learning and achievement. Teacher self-efficacy in culturally responsive practices focused on the role of culture and ethnicity in teaching and learning (Chu & Garcia, 2014). A student's cultural and linguistic identity is integral to learning, and it is crucial to determine whether teacher candidates are equipped for this responsibility. As TEPs continue to put effort into preparing culturally responsive teachers, it is necessary to understand if preservice teachers are efficacious in their ability to employ CRP (Siwatu, 2007).

Purpose of the Study

Siwatu (2007) developed an instrument called the culturally responsive teaching self-efficacy (CRTSE) scale to assess the culturally responsive self-efficacy of teachers. This scale has been used by various researchers (e.g., Chu & Garcia, 2014; Cruz et al., 2020; Malo-Juvera et al., 2018; Siwatu, 2007, 2011) either in its entirety or by modifying the scale or number of items included to study. Siwatu (2007) developed the CRTSE scale based on culturally responsive teaching competencies and utilized Bandura's (1977) self-efficacy construct. The purpose of the CRTSE scale was to glean information from preservice

teachers to understand their efficacy better as it relates to specific culturally responsive teaching practices. The scale consisted of 40 Likert-type questions where participants rated their perceived confidence level to be culturally responsive in their future classrooms. A higher total score equated to higher self-efficacy. Chu and Garcia (2014) adapted the original CRTSE scale by reducing the number of items on the survey and including language around disability for each question. Internal consistency reliability was measured using Cronbach's Alpha and met the minimum criteria of .70 (Chu & Garcia, 2014). Researchers administered the survey to inservice special education teachers teaching for less than a year and up to 15 years. As part of their work, Chu and Garcia (2014) also sought to understand collective self-efficacy versus individual self-efficacy scores.

We replicated and extended previous studies on the CRTSE scale (Siwatu, 2007; & Chu and Garcia, 2014) within the context of a large special education teacher preparation program in the Midwest. The university graduates approximately 150 undergraduate special educators each year and is considered one of the largest producers of special education teachers in the country. To expand the body of literature, we conducted a mixed methods study to explore the overall CRTSE of preservice special educators (quantitative) as well as the factors and experiences (mixed) that preservice special educators attribute to their CRTSE self-efficacy. To date, this is the first mixed methods CRTSE study that focuses solely on preservice special educators and understanding why they rank themselves the way they do regarding their culturally responsive teaching self-efficacy of learners with disabilities.

The objective of this mixed methods study was to understand the culturally responsive teaching self-efficacy beliefs of special education preservice teachers. To accomplish this, we administered an adapted CRTSE to preservice special educators, including language-encompassing disabilities. We also identified the types of experiences (coursework or personal) through semi-structured interviews that preservice teachers have encountered (or lack thereof) during their teacher preparation program and how those experiences have influenced their culturally responsive self-efficacy beliefs.

We addressed the following research questions:

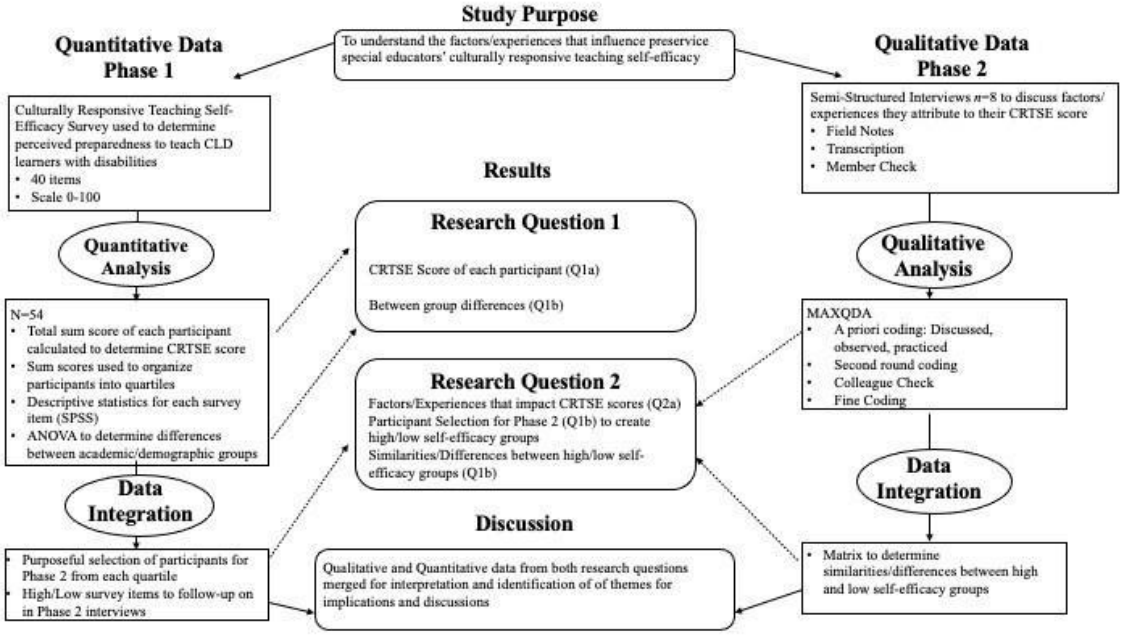
1. What are preservice special educators' culturally responsive self-efficacy beliefs? To what extent do these beliefs differ based on academic and/or demographic backgrounds?
2. What factors and/or experiences do preservice special educators describe as impacting their CRT self-efficacy? (b) How do these factors and/or experiences differ among those with high/low CRT self-efficacy scores?

Method

We utilized a mixed methods design (Tashakkori & Teddlie, 2003) which is a procedure for collecting, analyzing, and integrating or "mixing" the characteristics of qualitative and quantitative data analysis at specified points throughout the research process. Mixed methods typologies draw from the strengths of quantitative and qualitative paradigms, which are intended to reduce the weaknesses attributed to both (Johnson & Onwuegbuzie, 2004). The purpose of this two-phase, sequential mixed methods study was to obtain statistical, quantitative results from special education preservice teachers on their culturally responsive teaching self-efficacy beliefs and to determine if there was a relationship between academic and/or demographic factors that influenced the self-efficacy beliefs of preservice special educators enrolled in clinical experiences.

In the second phase, we used the qualitative interviews to explore the factors and/or experiences that preservice teachers attribute as impacting their CRT self-efficacy and then follow up with two participants from each quartile to gain perspective on the factors and experiences of those who scored at the low, low-middle, high-middle, and high ranges of the CRTSE survey. See Figure 1 for a visual of the implementation and integration process.

Figure 1



Priority and Data Integration

We utilized a pragmatic framework (Johnson & Onwuegbuzie, 2004) which is often associated with mixed methods research because it allows researchers to engage in a plurality of methods best suited to answering their research questions (Creswell & Plano Clark, 2011; Johnson & Onwuegbuzie, 2004). To investigate the self-efficacy of CRTSE, the research team drew from a synthesis of conceptual and theoretical frameworks, including social learning theory (Bandura, 1977) and tenets of seminal CRP frameworks that influenced both the design and interpretation of both phases. These constructs integrated quantitative data collection to gain logical, reliable, objective, and replicable data, which informed the selection of participants for qualitative interviews. The qualitative interviews were framed in sociopolitical constructs, CRP frameworks, and constructivism to understand individual perspectives of special education preservice teachers and the experiences and factors that they attributed to their overall CRTSE. Figure 1 illustrates how research designs were integrated to answer the research questions.

The priority of paradigms in a sequential explanatory design is typically given to the quantitative strand since it is administered first (Creswell, 2003, p. 215). However, there is a variant of the sequential explanatory method known as the participant-selection variant (Creswell & Plano Clark, 2011, p. 86). This approach connected the two phases by using the quantitative results of the CRTSE survey to shape the qualitative sampling and data collection for follow-up interviews, where we examined the factors and experiences that participants described as having influenced their CRTSE scores. Greene (2007) stated that integrating paradigms is the most critical decision when designing a mixed methods study. The first opportunity for integration occurred during the analysis of the quantitative CRTSE survey data, which was divided into quartiles based on sum scores of each participant. The first author selected two participants from each quartile and conducted semi-structured interviews, which provided a deeper understanding of the phenomenon that would not be possible with either method in isolation (Creswell, 2008).

Another opportunity for integration occurred when calculating the mean score for each of the survey items during qualitative analysis. The first author coded and analyzed the responses to the five highest and lowest survey items to understand similarities and differences in their responses. Quantitative and qualitative results were integrated into a matrix to compare results within and across low and high self-efficacy groups.

Participants

A total of 54 preservice teachers participated in Phase 1 of the study. Recruitment efforts focused on teacher candidates from one of three special education programs: Deaf and Hard of Hearing (DHH), Learning and Behavior Specialist (LBS1), and Low Vision Blindness (LVB) who were also enrolled in a clinical experience. The first author explained the purpose of the study to students across all strands and invited them to participate. A link to an electronic survey was then shared with 130 students, which resulted in a 41% response rate. Participant demographic information can be found in Table 1.

Table 1

Summary of Academic and Demographic Background Data

Variable	Phase 1 Participants N=54	%
Race		
White	41	76
Black	2	4
Asian	1	2
Hispanic/Latino	10	18
I'd rather not disclose	0	
Gender		
Female	48	89
Male	4	7
I'd rather not disclose	2	4
Academic Level		
Practicum	7	13
Field-based	20	37
Student Teaching	26	48
Did not answer	1	2
Sequence		
Deaf and Hard of Hearing	5	9
Learning Behavior Specialist	48	89
Low Vision and Blindness	1	2
English Language Endorsement		
No	46	85
Yes	8	15
Urban Redesigned Courses Taken		
0	9	17
1-2	32	59
3 or more	13	24

Nineteen participants from Phase 1 agreed to be contacted for Phase 2. Researchers compiled survey scores into a total score and then ranked them into quartiles. To determine which of the eight participants were selected from the 19 who consented, researchers looked at individuals from different program sequences

and demographic characteristics. This purposeful selection of participants allowed for comparing high and low self-efficacy responses to determine any similarities or differences in their responses. Participants in Phase 2 were majority female (*n*=7) and White (*n*=5). The sample also included participants who identified as LatinX (*n*=2) and Asian (*n*=1). Most participants were enrolled in their student teaching semester (*n*=5). Seven participants were from the LBS1 program sequence, and one was in the DHH sequence. We contacted participants to confirm their willingness to participate and conducted interviews via teleconferencing software.

Survey Instrument

Section one of the survey consisted of demographic questions regarding the participants' background, academic level, credential program (LBS1, DHH, or LVB) within special education, and specialized coursework that would lead toward an English Language Endorsement or courses that focused on teaching in urban environments. Quantitative data was collected using a modified version of Siwatu's (2007) CRTSE survey. Previous studies utilizing the CRTSE survey instrument have reported reliability with ranges from 0.94 to 0.96 (Siwatu, 2007, 2011) and the Chu & Garcia (2014) adapted survey reported reliability of .95. The survey comprised 40 Likert-type items. Participants were asked to rate their confidence level for engaging in culturally responsive teaching behaviors by indicating their comfort level on a scale of 0-100. This scale is designed to develop a confidence rating from 0 (no confidence at all) to 100 (completely confident). Chu and Garcia (2014) included the language of disability within each survey item (e.g., the original item, "assess student learning using various types of assessments" was modified to "use various types of assessments that are matched to English language learners' language proficiency and special needs"). Participants' scores were summed and divided by 40 to generate a total score ranging from 0-100. Participants with higher scores on the survey are more confident in their ability to implement CRT than those with lower scores.

Procedure

Before participant recruitment in Phase 1, approval was sought and given by the university-based institutional review board. All participants were over the age of 18 and had informed consent. A Qualtrics survey link was shared with 130 students and remained open for one month. At the close of the survey, a random generator was used to select a participant for a gift card incentive. Fifty-four students completed the survey, and 29 participants consented to be included in the raffle and listed their email addresses.

At the start of Phase 2, an email with a link to join a teleconference was sent to each participant, along with their numerical responses to the survey, to use as a reference during the interview. Researchers read a script asking participants for their consent to record the interview and informed them they could turn off their cameras or end the interview at any point.

A script was used to ensure all participants were given the same information. Questions were semi-structured and open-ended, which allowed the participant to elaborate on their experiences. Each participant was asked to open the document sent to them with their survey responses. The interviewer also had a printed copy of their rankings to write down anecdotal information as participants responded to questions. The same a priori deductive codes of discussed, observed, and practiced that were used by Siwatu (2011) were also decided upon before we began interviewing participants. During the interview, responses were color-coded if the participant mentioned that they had discussed the item in coursework, observed in practice, or practiced in a class or during their clinical experiences.

Merriam and Tisdell (2016, p.196) speak to the importance of analyzing data at a rudimentary level during data collection; therefore, detailed notes were also collected as participants responded to questions. Bogdan and Biklen (2011) offered suggestions for analyzing data as they are being collected, including taking field notes and writing memos about what is being learned. Researchers reviewed field notes immediately after the interview and emailed transcriptions to the participant as a member check for accuracy.

Analysis and Results

Due to the sequential and integrative process of this

mixed methods study, analysis and results for each phase will be presented to illustrate how the analysis and results from Phase 1 of the study inform the purposeful selection of interview participants for Phase 2.

Analysis for Phase 1

Survey responses were exported from Qualtrics to the Statistical Package for Social Sciences (SPSS), a statistical software program for analyzing quantitative data. The sum scores of each participant were computed to generate a total score. Total scores could range from 0 to 4000. Participants with higher scores on the CRTSE scale were identified as having higher competence than those with lower scores. Sum scores were then converted into a strengths-index score, the total score divided by the number of survey items. For example, if a participant had an overall sum score of 3495 on the CRTSE scale, it was divided by 40, resulting in a strength index score of 87.38. Strength index scores are similar to standard scores and could range from 0-100. Having a score out of 100

Table 2

Descriptive Statistics for Each Survey Item

Measure	*M*	*MD*	*SD*	Range
CRTSE 1	74.29	74.00	13.77	40-100
CRTSE 2*	68.70	70.00	18.59	20-100
CRTSE 3	81.33	83.50	15.48	40-100
CRTSE 4	78.57	80.00	14.54	45-100
CRTSE 5	78.13	81.00	15.79	30-100
CRTSE 6*	72.09	72.00	19.42	22-100
CRTSE 7	76.44	79.50	17.61	40-100
CRTSE 8	81.59	85.50	17.94	21-100
CRTSE 9	84.00	85.50	14.98	38-100
CRTSE 10	76.44	80.00	19.75	10-100
CRTSE 11	79.79	80.50	15.69	10-100
CRTSE 12*	72.35	75.00	19.52	8-100
CRTSE 13	75.83	79.50	16.69	25-100
CRTSE 14**	93.12	97.50	8.68	68-100
CRTSE 15*	72.42	79.50	20.64	3-100
CRTSE 16	82.09	82.00	15.60	29-100
CRTSE 17	84.98	89.00	16.73	10-100
CRTSE 18	87.98	91.00	15.46	32-100
CRTSE 19**	90.98	97.00	12.50	53-100
CRTSE 20	87.29	91.50	15.78	34-100
CRTSE 21	86.51	91.00	15.41	44-100
CRTSE 22**	93.03	97.00	9.92	53-100
CRTSE 23	87.72	92.00	14.37	32-100
CRTSE 24	86.33	90.00	14.31	40-100
CRTSE 25	86.96	92.00	15.46	36-100
CRTSE 26	78.22	85.50	23.65	9-100
CRTSE 27	76.87	90.00	26.94	2-100
CRTSE 28	86.70	90.50	15.21	41-100
CRTSE 29	76.09	87.50	27.95	5-100
CRTSE 30	90.09	91.50	10.89	48-100
CRTSE 31	81.81	85.50	18.09	21-100
CRTSE 32	82.33	86.00	17.89	17-100
CRTSE 33*	73.03	77.00	24.24	17-100
CRTSE 34**	94.09	97.00	8.20	62.00
CRTSE 35	87.35	92.00	14.22	44-100
CRTSE 36	85.94	86.50	13.13	47-100
CRTSE 37**	92.62	93.50	8.22	62-100
CRTSE 38	84.53	90.00	17.02	30-100
CRTSE 39	86.40	89.00	13.68	46-100
CRTSE 40	86.20	90.00	16.13	13-100

Note. *five lowest mean scores; ** five highest mean scores

Results for Phase 1

was a quantitative indicator of the strength of each participant's overall CRTSE score and beliefs. The sum scores were used to order participants numerically from lowest to highest scores to find the median (Mdn = 3,387) and then were separated into quartiles based on their overall scores. Scores ranged from 1,997-4,000, and individual quartile (Q) scores were as follows: Q1 consisted of CRTSE scores from 1,997-3137, Q2 was 3,199-3.387, Q3 was 3,400-3,551, and Q4 was 3,569-4,000.

Data were analyzed in SPSS using non-parametric

tests to examine if there were any statistical differences between the independent variables of academic levels, race/ethnicity, course sequence, or the number of urban-focused courses that a participant took. Our first phase examined each participant's item-specific means and overall CRTSE score to determine the areas in which preservice special educators felt prepared and less prepared to deliver CRT to learners with disabilities. Item-specific-mean scores are displayed in Table 2. The overall CRTSE mean score for all participants was 82.53, with a *SD* of 11.08. Most participants (n=28) had an overall CRTSE range of 80-89.99.

Similarly, to other CRTSE studies (Chu & Garcia, 2014; Siwatu, 2007), participants ranked themselves highest on indicators related to building relationships and trust with their learners. The survey item that scored the highest included, "I can help students feel like important members of the classroom" (*M*=94.09, *SD*= 8.20), as well as helping learners build relationships. The competencies in which participants rated themselves lower were about incorporating native language into assessments, instruction, and intervention. The survey item with the lowest mean score, "I can design appropriate instruction matched to English language learners' language proficiency and special needs" (*M* = 68.70, *S D*= 18.59). See Table 3 for the indicators with the highest and lowest mean scores. Another focus of Phase 1 of the study was determining if demographic variables impacted overall participant CRTSE scores. The data did not meet the normality assumption therefore the Kruskal-Wallis test was used, as it does not assume normality. Results indicated that demographic variables did not significantly impact the independent variable of CRTSE scores.

Table 3

Survey Items with the Lowest and Highest Mean Scores

Item Number and Description	Rank	Overall *M* *N* = 54	*M* for Low CRTSE Group *n* = 4	*M* for High CRTSE Group *n* = 4
Low Self-Efficacy Survey Items				
2. **Design appropriate instruction** that is matched to English language learners' *language proficiency and special needs*.	40	68.70	56.75	78
6. **Use various types of assessments** that are matched to English language learners' *language proficiency of special needs.*	39	72.09	55.25	84.75
12**. Implement interventions** that *minimize the effects of cultural* mismatch between home and school.	38	72.35	65	83.25
15. Assist my students to be successful by *supporting the native language of my students with disabilities* who have limited English proficiency.	37	72.42	65	70.75
33. **Design a lesson** that shows how other cultural groups have made use of mathematics.	36	73.03	65.25	71.5
High Self-Efficacy Survey Items				
19. Help my students develop positive interactions	5	90.98	94	99.75

with each other.				
37. Use the *interests of my students* to make learning meaningful for them.	4	92.62	92	97.5
22. *Build a sense of trust* in my students.	3	93.03	93.5	100
14. Create a *caring, supportive, and warm learning environment* for my students from CLD backgrounds.	2	93.12	98.5	94.5
34. Help students *feel like important members* of the classroom.	1	94.09	85	96

Note.*Italicized phrases indicate language proficiency needs **Bolded phrases relate to pedagogical knowledge ** Italicized words in the high self-efficacy group relate to respect and rapport

Analysis for Phase 2

Data analysis for Phase 2, the qualitative phase, consisted of three distinct rounds of coding, a shorthand designation that captures the essence of data and allows for ease of retrieval (Merriam & Tisdell, 2016, p. 199). The first coding round took place during interviews and was both deductive and inductive. A priori codes of discussed, observed, or practiced were identified in Siwatu's (2011) study due to how these factors influence self-efficacy development (Bandura, 1977). Recorded interviews and transcripts were uploaded to MAXQDA, a qualitative data analysis software program. Researchers listened to transcripts multiple times, leading to a second coding round developed outside of the a priori codes. We evaluated the highest and lowest mean scores of survey items during this coding round to determine any differences between groups.

The research team met after each round of coding to confirm codes and began the third round of coding with a validity check, which resulted in developing additional codes, and a round of fine coding. After fine coding, a matrix was created to compile the responses for each section. The combined responses from participants across the first and second quartiles were synthesized, and the responses from participants in the third and fourth quartiles were also. This process generated a low (Q1/Q2) and high (Q3/Q4) self-efficacy group.

Results for Phase 2

In Phase 2, we sought to understand the differences between the responses of those with high/low CRTSE scores. The total number of items that were discussed, observed, or practiced are shown in Table 4. As indicated in the table, those in the high self-efficacy group offered more examples of survey items that were discussed and practiced in their special education program. Both high and lower self-efficacy groups reported similar opportunities to observe items in practice.

Table 4

Average Number of CRTSE Practices that were Discussed, Observed, Practiced

	Participants with low self-efficacy beliefs					Participants with high self-efficacy beliefs				
Variable	Piper	Travis	Ciana	Julie	Group Avg.	Callie	Kelly	Jillian	Amanda	Group Avg.
Number of CRTSE practices	17	2	22	23	16	22	15	38	35	27.5
Discussed										
Number of	11	1	13	7	8	4	1	6	20	7.75

CRTSE practices										
Observed										
Number of CRTSE practices	10	6	13	11	10	9	9	16	22	14
Practiced										

In addition to the a priori codes utilized during the interview process, additional codes were formed as a result of participant responses. Through analysis of interview transcription, four major themes emerged: (a) acquiring knowledge of CRT, (b) professor impact on CRT, (c) application and practice of CRT, and (d) experiences with CRT. Table 5 presents the themes and their subthemes and the differences among responses from the low and high self-efficacy groups.

Acquiring Knowledge of CRT

Participants from both high and low self-efficacy groups identified coursework as a primary source of their CRT knowledge. Within this theme, subthemes emerged as participants discussed the differences between courses taught in their special education programming at the foundations, methods level, and coursework taken in other departments. All eight participants mentioned how CRT was threaded throughout their coursework. One participant from the high self-efficacy group shared, “Honestly, every single class that I had that was a 300-level course very focused on culturally responsive teaching; it was at the center of everything we learned.” Table 5 identifies topics that participants attribute to their acquisition of CRT knowledge.

Professor Impact

Another theme identified throughout the interview analysis was professors' impact on their overall CRTSE. In coding the interview data, it was necessary to delineate the difference between a participant mentioning a professor’s name to identify the course they were discussing versus how a participant discussed how a professor delivered content that stood out to them and deemed as influential on their own CRT development. Within this theme, there were similarities across both high and low self-efficacy groups where they noted professors' passion for culturally responsive practices and personal connections with their students, see Table 5.

Application and Practice of CRT

A third theme established after analysis of interviews was related to the opportunity to apply CRT during clinical experiences. Participants in both high and low self-efficacy groups discussed their experiences of observing and learning from their cooperating teachers as they practiced CRT. Participants discussed the opportunities they engaged in where they felt they had opportunities to include CRT in their instruction. Both groups centered their examples on creating trusting relationships with their learners and creating warm, supportive learning environments. Those in the high self-efficacy group also discussed opportunities to communicate information related to Individualized Education Plans (IEP) with families as an opportunity that they were able to observe and participate in, which helped to increase their CRTSE. See Table 5 for differences amongst groups. Those in the low self-efficacy group spoke of having more opportunities to observe CRT practices at their clinical site (M = 8) than those in the high self-efficacy group (M= 7.75), however, those in the high self-efficacy group reported having more opportunities to practice CRT in their clinical sites (M = 14) versus those in the low self-efficacy group (M = 10).

Experiences with CRT

A recurring theme across participant interviews was personal experience attributed to their overall CRTSE. Across both self-efficacy groups, participants discussed personal growth throughout their teacher preparation program. Both groups spoke to their increased confidence in applying what they learned in coursework to their clinical settings. In addition to personal growth, participants were transparent about the areas where they felt they lacked experience. Those in the low self-efficacy group highlighted fewer examples of personal growth but identified more examples where they were not yet comfortable with their ability to implement CRT. Across both groups, participants indicated that they felt less efficacious in their ability to develop an IEP for learners from CLD backgrounds. They also shared that they felt unsure if it was appropriate to greet students in their native language as they have heard conflicting information on whether this is welcoming or presumptive. Communicating with students and families whose native language was not English was another area where participants from both groups felt they lacked exposure and experience. Table 5 highlights the personal growth and areas where they lacked experience for low and high self-efficacy groups.

Table 5

Low and High Self-Efficacy responses grouped by theme

Theme	Low Self-Efficacy Group	High Self-Efficacy Group
Acquiring Knowledge of CRT	Special Education courses at the foundational and methods level were threaded throughout the coursework. • Identity work/bias • Strengths-based language • Family Interviews • Trauma-informed instruction	All from Low self-efficacy group and: • How to critically examine curriculum for bias/single-story • Understanding various dialects and registers of language • Incorporate native language in literacy instruction
Professor Impact	• Shared Personal Experiences • Challenged Deeper Thinking/Connections • Professor's Passion on the Content Going out of their way to Share Resources	• Passionate about subject matter • Personal Connections • They were models of CRP • Available for Support & Clarification

Application & Practice with CRT	**Observing:**
	• Role of the cooperating teacher
	  • Families/Staff
	  • Modifying Materials
	Practicing:
	• Warm/inviting Learning Environments
		Observing:
		• Communication with families
		Practicing:
		• Relationship Building
		• Assessments to Inform Curricular Decisions
		• Differentiated Instruction/Assessment

Experiences with CRT	**Personal Growth:** • Strengths-based perspective **Lack of Experience:** • Have knowledge but have not had an opportunity to practice	**Personal Growth:** • Teacher Leader/Advocacy on CRT • Knows where to locate resources **Lack of Experience:**

- Native Language Use Assessments
- Developing IEPs for CLD learners

Native Language Use

Discussion

The current study represents the CRTSE beliefs of 54 special education preservice teachers from a TEP in the Midwest. This is the most extensive investigation of special education preservice teachers' culturally responsive teaching self-efficacy to date. One existing study (i.e., Cruz et al., 2020) included preservice special educators in their study; however, it is unknown how many participants were included. We examined special education preservice teachers' culturally responsive teaching self-efficacy and sought to understand the factors and experiences that impacted their ranking. Item-specific means were examined to determine targeted areas where preservice special educators felt most and least self-efficacious in their ability to implement culturally responsive teaching practices. Preservice teacher candidates had higher self-efficacy scores for indicators based on developing positive, supportive, and caring relationships with their CLD learners and making learning meaningful by incorporating learner interests. These results coincided with previous research that found that participants had higher self-efficacy on indicators that related to the classroom environment and showing student care (e.g., Chu & Garcia, 2014; Cruz et al., 2020; Siwatu, 2007, 2011).

Teacher care and establishing a supportive learning environment may be viewed as indicators requiring little skill (Siwatu, 2011); however, it is essential to note that teacher attitudes, beliefs, and perceptions play a significant role in becoming a culturally responsive educator. When teachers manifest affirming attitudes about their learners, the result is greater student achievement (Ladson-Billings, 1995). Villegas and Lucas (2002) also posit that teachers' attitudes regarding their learners significantly impact what students learn. While teacher care may be a less complex skill, it is encouraging that the data reflects that most participants surveyed have high self-efficacy regarding creating warm and welcoming learning environments for learners from CLD backgrounds. The highest survey indicators had a mean range of 90-94 out of a possible 100.

Preservice special educators felt less self-efficacious when designing and assessing instruction or implementing interventions aligned with the language proficiency needs of their CLD students with special education needs. Previous studies, one of which included special education preservice teachers, had similar findings (e.g., Chu & Garcia, 2014; Cruz et al., 2020; Siwatu, 2007, 2011). As teacher educators consider ways to target support for these complex skills, they may consider the curricular changes two programs made within their TEP to include more robust EL instruction. Pappamihiel et al. (2010) and Prater et al. (2008) combined their undergraduate and master's level special education programs to include additional EL coursework. This type of collaboration between disciplines can provide further understanding of the ways that disability and language proficiency needs may intersect versus viewing them as two separate entities with autonomous characteristics. Preservice teachers in one program (Prater et al., 2008) graduated with an EL minor. Neither of these programs used the CRTSE to evaluate self-efficacy, but they did use survey data that indicated positive outcomes. However, combining programs and earning a graduate degree may only be ideal for some TEPs and their students. Altering the current path to licensure by adding additional years of coursework may be a deterrent to some.

Acquisition of CRT

The acquisition of CRT knowledge through coursework was a significant theme identified during

participant interviews. Gay (1995) asserted that all graduates from TEPs should have a strong foundation in understanding culture's role in teaching and learning. Irvine (2012) and Moore et al. (2021) stated that culturally responsive pedagogy should be a foundational part of the curriculum for all educators. Many TEPs have included diversity courses; however, Hayes and Juarez (2012) advised TEPs to move beyond the one-stop diversity courses that covered CRT superficially and perpetuate implicit bias. Rueda and Stillman (2012) caution against teaching CRT in silos, where preservice teachers may think of culture as a fixed set of traits.

The participants, from both high and low self-efficacy groups, expressed how cultural competencies were thread throughout their coursework. Coursework experiences were broken into sub-themes, including foundational, methods, and clinical coursework. Results from the current study indicate that participants in Phase 2 identified their foundational level courses as having a significant impact on their overall CRP acquisition. To ensure that CRP is being integrated into foundations-level courses, teacher educators may consider conducting a syllabus review (Dykes et al., 2012) to ensure that CRP is introduced in early coursework experiences.

These results of CRT discussion across coursework differ from Siwatu (2011) as he noted a need for CRT instruction within methods courses according to the participants he interviewed. Siwatu (2011) asserted that by including CRT in methods courses, preservice teachers would have furthered their knowledge and development of their CRTSE. Results from the current study indicate that TEPs are moving beyond a one-stop-shop approach to diversity training (Hayes & Juarez, 2012), including discussion in foundations, methods, and clinical courses.

Professor Impact

A factor that candidates in both high and low self-efficacy groups discussed was their professors' overall impact on their CRT knowledge. They further discussed that it was not only the content that they taught but how their professors made them feel. Participants referenced many of the salient features of CRP frameworks that their professors embodied, such as viewing students from an asset-based perspective and examining their attitudes, beliefs, and perceptions. Participants shared how each of these factors impacted their understanding of CRT. Conversely, this contrasts findings from Siwatu (2011), where he examined participants' perceptions of their professor's qualifications and mentioned that participants noted missed opportunities for professors to expand their knowledge on CRT.

A participant from the lower self-efficacy group discussed how he had a professor who noticed he was complacent and, rather than allowing him to remain there, encouraged him to have a depth of thinking as it related to families and cultural competence. Having high expectations of students is one of the core tenets of CRP (Ladson-Billings, 1995).

A difference that emerged from the high self-efficacy group was how participants viewed their professors as co-contributors of knowledge construction. They did not feel like there were power constructs between the professor and students but instead viewed them as collaborators in learning. This aligns with the work of Villegas and Lucas (2002), where educators and students construct new knowledge together versus previous notions that students are empty vessels that educators pour knowledge. Participants identified several qualities as significant attributes of their professors, including how they shared personal experiences and provided additional resources that aligned with their interests. Additionally, they explained that professors with high impact were approachable and that they learned from observing them. Observing professors and seeing successful models of CRT in action reinforces Bandura's (1977) assertion that vicarious experiences are a source of information that develops self-efficacy. Participants in the high self-efficacy group indicate that the passion and knowledge of their professors have encouraged them to be that kind of teacher for their future students. These examples further evidence that when teachers manifest a positive and affirming attitude, it has shown an increase in student achievement (Ladson-Billings, 1995). Teacher educators may want to examine that they are not only including CRP in their

curriculum but also reflect on the seminal CRP frameworks (e.g., Ladson-Billings, 1995, 2014; Villegas & Lucas, 2002) to consider how they are exhibiting these qualities or if self-reflection illuminates gaps, consider ways to grow knowledge by reaching out to colleagues who hold expertise in that area (Pappamihiel et al., 2010; Prater et al., 2008).

CRT in Action

Moore and colleagues (2021) posit that novice educators lack opportunities to discern and celebrate cultural differences that are present in their classrooms. Nor do they understand how to affirm these differences through pedagogical decision-making. Participants in the low self-efficacy group spoke more about the influence of their cooperating teachers on their understanding of CRT than those in the high self-efficacy group. This is in contrast to Siwatu (2011), where participants in the high self-efficacy group had, on average, seven more mentions of the impact that observations during clinical experiences had on their overall CRTSE. In this study, participants observed that their cooperating teachers interacted positively with families and their educational team. Participants also indicated that they had the opportunity to observe how they navigated challenging topics and conversations. Learning to modify instruction was another critical factor influencing the CRTSE of those in the low self-efficacy group.

Participants from the high self-efficacy group discussed how their cooperating teachers communicated with families regarding upcoming IEP meetings. Perhaps those in the low self-efficacy group were influenced more by their cooperating teachers because these vicarious experiences allowed those with low self-efficacy to see a task successfully performed and then believe they could do it themselves (Bandura, 1977). Seeking out high-quality mentors for special education teacher candidates is an integral part of the process of including CRP in field experiences (Ellerbrock et al., 2016; Sleeter, 2008). Teacher educators may want to explore the process of selecting cooperating teachers who have had positive experiences teaching learners from CLD backgrounds to ensure they have strong models for their clinical students.

Regarding opportunities to practice CRT, participants shared their experiences of being in the classroom. Those in the high self-efficacy group discussed having more opportunities to practice CRT in their clinical settings than those in the low self-efficacy group. This aligns with Siwatu (2011), who also found that those with high self-efficacy identified more than three times the number of opportunities to practice CRT in their clinical settings than those in the low self-efficacy group. The responses from participants in the low self-efficacy group mentioned how they were able to practice building relationships with their learners and create a warm and supportive learning environment. This qualitative data aligns with the survey data as the indicators with the highest scores related to teacher care and supportive learning environments.

Participants from the high self-efficacy group discussed ways in which they were able to incorporate learner interest into the lessons they were teaching. All of the participants in the high self-efficacy group discussed sending home interest inventories or surveys that served as a source to understand the interests and backgrounds of their learners and use this for instructional purposes. Specifically, participants mentioned making curricular adaptations to include items familiar to the learners they work with and ways to differentiate assessments to meet learner needs. Having high self-efficacy in including learner interests into instruction aligns with the quantitative data, where indicators related to student interest were high (M = 92.62).

A more complex skill discussed was how participants differentiated assessments based on learner strengths and needs. In Phase 1 of the study, this was an indicator with the second-lowest mean score (M = 72.09), however those in the higher self-efficacy group had a higher mean score (M = 84.75) which indicated they were progressing towards some of the more challenging skills identified on the CRTSE survey. It could be that those with higher self-efficacy have had more opportunities to practice teaching CRT, as Bandura (1977) indicates that mastery experiences are the most influential factor in increased self-efficacy. These experiences also help preservice teachers evaluate their

effectiveness. One consideration that TEPs could make regarding field experiences is to create structured experiences at the beginning, middle, and end of their program (Ellerbrock et al., 2016; McCadden & Rose, 2008; Sleeter, 2008). Ellerbrock et al. (2016) assert that having structured clinical experiences with guided inquiry provides an opportunity for preservice teachers to build their cultural knowledge while being guided to engage in critical self-reflection that focuses on biases and assumptions.

Limitations

There are limitations within both phases of the study that should be considered before making generalizations regarding the outcomes of this study. The first limitation is the small number of CRTSE studies that include special education preservice teachers. Therefore, much of the comparative data comes from in-service or general education teachers. Another limitation of the study is the small sample of preservice teachers from the same special education teacher education program. Within Phase 1, the mean scores distributed within quartiles are close in range, which could be considered a limitation, as three-fourths of the participants had a mean score of 80 or above. This could indicate that preservice teachers may have an inflated sense of efficacy due to the level of support they receive from their cooperating teacher and entering into a learning environment that has already been established (Knobloch, 2006). Within Phase 2, It is also essential to consider that although participants were chosen for Phase 2 based on quartile rankings, the factors and experience shared by these participants may not represent those not interviewed. Additionally, the quantitative and qualitative results are based on participant perceptions which may be limiting as it does not consider other sources to corroborate.

Future Directions

There are several recommendations for practice and future research. Including the current study, three CRTSE studies to date include special education participants as part of the population; it would benefit the field to continue this investigation to determine if preservice special educators are more self-efficacious in teaching CLD learners. Future researchers may want to consider expanding this study beyond one special education program and include participants from several universities to see if the results are similar. Additionally, some demographic groups were too small to be compared. It will be meaningful to determine if demographic and academic factors correlate to higher CRTSE when there is a larger participant pool. There are a limited number of studies with empirical data to determine the cultural responsiveness of future teachers; therefore, researchers may want to administer the CRTSE as a pre-and post-test measure at the beginning and end of their clinical experiences (e.g., Fitchett et al., 2012; Whitaker & Valtierra, 2018) to determine individual growth throughout a program. One limitation of the current study was that self-efficacy scores could be skewed due to overconfidence. To solve for this, future research could include observations and artifacts in addition to survey data. Including observations conducted by either university staff or cooperating teachers could provide additional qualitative data to either support CRTSE scores or offer examples that conflict with self-reported scores. Including artifacts that evidence culturally responsive practices would allow participants to share what they have done versus considering what they would do in culturally diverse classrooms. Selecting artifacts may encourage participants to reflect more on their self-evaluation as they complete the CRTSE survey.

Implications for teacher educators signal the need for their programs to systematically infuse CRP across their coursework and ensure they are starting this work early in their foundational level courses. Reviewing syllabi and ensuring that CRP standards are being included across the program, beginning at the foundational level or identifying potential gaps where standards are not being included (Dykes et al., 2012). When embarking on this inquiry process, teacher educators may also begin to explore the survey items that have consistently earned low self-efficacy ratings across several research studies (e.g., Chu & Garcia, 2014; Cruz et al., 2020; Siwatu, 2007, 2011). While most of those studies have been with general education populations, it would be prudent for special education TEPs to consider how they plan to

solve this. One recommendation would be for teacher educators in special education departments to collaborate with colleagues in bilingual or English Language programs to understand the types of assessments or interventions appropriate for learners from CLD backgrounds.

Additionally, the commonality amongst several indicators with the lowest overall mean score related to instructional design or implementation for learners from CLD backgrounds. When teacher educators model ways to differentiate instruction for learners with disabilities, they may include learners from diverse cultural backgrounds and explain how they considered culture in their design and delivery. We know that vicarious experiences (Bandura, 1977) are a meaningful way to increase self-efficacy, and results from this study indicate the powerful impact that professors have on the CRTSE of the preservice teachers they instruct.

The impact of the professor and their influence on a preservice teacher's culturally responsive self-efficacy was an unexpected result of this study. Teacher educators should continue to strengthen their understanding of CRP and examine their biases by participating in professional development or beginning their own investigation into identity and cultural awareness. When embarking on a redesign, researchers who engaged in this process outlined the extensive professional development they undertook (Pappamihiel et al., 2010; Prater et al., 2008) to grow their knowledge. They also noted the collaboration with professionals from other departments that benefited their process.

Professors may want to investigate the seminal frameworks, including the work of Ladson-Billings (1995, 2014) or Villegas and Lucas (2002). Faculty are also encouraged to seek readings related to combatting color-blindness, moving beyond race neutrality, and challenging the normative standards in education that have created systems of oppression and inequity (Allen et al., 2017; Brown-Jeffy & Cooper, 2011). Another source of professional development that faculty may want to access is through CREDE; they have a set of five standards that represent the commonalities found in the literature and offer recommendations across cultural, racial, and linguistic groups (Prater et al., 2008). Finally, it would be valuable to investigate partnerships with school districts that have established meaningful field experiences to understand the qualities and characteristics that result in sustained employment in CLD settings (Moore et al., 2021).

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RESEARCH

Perceptions of creative self-efficacy of students with Learning Disabilities

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Abstract

Creative self-efficacy, a subcomponent of creativity, is the belief in one's ability to be creative. It is a necessary construct for a well-developed sense of creativity. With creativity being a vital skill cited by employers for employees to be prepared for 21st century careers, it is necessary to research creative self-efficacy early on and with all students. Limited research regarding students with learning disabilities and creativity, creative thinking, and creative self-efficacy exists. Because higher creativity is necessary for greater positive post-secondary outcomes, research in creative self-efficacy is needed. This study examined the perceptions of creative self-efficacy of students in the third, fourth, and fifth grades (n=495). A comparison between students with learning disabilities and their peers in general education and peers with gifts and talents was made. Results indicate similar perceptions of creative self-efficacy amongst students with learning disabilities and students in general education. However, a significant difference was indicated between students with learning disabilities and students with gifts and talents.

Keywords: creative self-efficacy, learning disabilities, creativity, 21st century, creative thinking

Creativity is a term with no singular definition, but it is most often thought of as something that is both novel and appropriate (Kaufman & Baer, 2012; Mayer, 1999; Schaefer, 1975). Categorizing the areas of creativity further, Guilford (1950; 1968) identified four areas of necessary components for creative thinking, which include fluency, flexibility, elaboration, and originality. Fluency is the ability to produce a large number of ideas. Flexibility is the ability to adapt or change ideas. Elaboration is the ability to extend upon an idea. Originality is the ability to produce something unusual.

Creativity is cited as a 21st century skill that will prepare students to be college and career ready (Gothberg et al., 2015; Lombardi et al., 2015). Yet, within curricula for both general education and special education, creativity is generally not included (Kleiman, 2008). Creativity

is often more of an afterthought or an add-on when there is time to include it in the curriculum

(Plucker et al., 2004). However, as progress continues to change, this skill is becoming more valued, especially by employers (Abbott, 2010; Amabile et al., 2005; Capron Puozzo & Audrin, 2021; Huang et al., 2016; Tierney & Farmer, 2002), and research indicates that creativity is a skill that can be developed (Byrge & Tang, 2015; Tierney & Farmer, 2011).

Because creativity may provide greater opportunities for employment and economic stability, creativity has been cited as an essential skill for employees to have in the 21st century (Abbott, 2010; Amabile et al., 2005; Huang et al., 2016; Tierney & Farmer, 2002). Employers are looking for employees who will help their companies be innovative and move the company to the top of the field. However, training or development in creativity is often expected before employees join the workforce, as companies largely expect new employees to come prepared to be creative (Capron Puozzo & Audrin, 2021; Pazey et al., 2016). This means educators must consider how early intervention of this skill might be included and developed across a student's K-12 educational career to ensure students are well-prepared.

For students with a learning disability (LD), who are at greater risk for underemployment (NCES, 2021), ensuring thorough preparation for post-secondary life before leaving K-12 is vital. This means consideration must be given for all students to have educators who ensure they have the opportunities to develop all necessary skills, including creativity, before leaving high school (Author, 2019). To develop creativity, it is important for creativity instruction to begin as early as possible as part of the transition process for students with disabilities (Author, 2021). However, the literature surrounding creativity and students with LD is limited and often focuses on students who are twice-exceptional (i.e., students identified as having both a disability and identified with gifts and talents; Author, 2019; Baldwin et al., 2015).

Creative self-efficacy, a term that combines creativity with Bandura's (1986) self-efficacy, is the belief in one's ability to be creative (Tierney & Farmer, 2002). Because it has been linked as a predictor with overall creative ability and production (Beghetto, 2007; Tierney & Farmer, 2002), it is important that consideration be given regarding a person's creative self-efficacy. Within creative self-efficacy research, focus in terms of the four areas of creativity (i.e., fluency, flexibility, elaboration, originality; Guilford, 1950; 1968) is minimal, leaving a gap in our understanding of how each of these areas of creative thinking impact a student's perceived creative self-efficacy (Author, 2019). Further, research regarding creative self-efficacy and students with LD is almost non-existent (Author, 2019). Because children with higher creative self-efficacy may be more likely to explore more complex activities with persistence and motivation (Richter, et al., 2012; Tierney & Farmer, 2002), understanding the perception of a student's creative self-efficacy in order to consider ways to develop creative self-efficacy is necessary (Author, 2019). To further understand how this construct (i.e., creative self-efficacy) may be developed for students with LD, research to determine what a student perceives their creative self-efficacy to be is needed. Thus, this study aimed to examine the perceptions of personal creative self-efficacy of students with LD.

Literature Review

Creativity and Students with Learning Disabilities

Students with specific learning disabilities have "a disorder in one or more of the basic psychological processes involved in understandings or in using language, spoken or written, that may manifest itself in the imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations" (IDEA, 2004). Their learning difficulties are not the result of intellectual disability.

The creative potential of students with LD has been shown to be similar to that of general education students, yet students' specific area(s) of disability may impact specific types of creativity. For example, Eisen (1989) compared the verbal and figurative creativity of students

with LD and students in general education. Students with LD scored significantly higher than general education students in originality and remoteness as related to figural creativity. These students also scored significantly lower than general education students in verbal creativity, a possible outcome associated with verbal deficits due to their disability.

More recently, Hong and Milgram (2010) analyzed the relationship between general creativity and domain-specific academic creativity amongst students with LD and their peers without LD. Students with LD scored significantly lower in creative thinking in academic problem solving; yet there were no statistically significant differences in their scores in general creative thinking when compared to their typical peers.

Research points not only to the creative potential of students with disabilities but to the promise of instruction in creativity. Jaben et al., (1982) examined the effects of the Purdue Creative Thinking Program (Feldhusen et al., 1970) on the creative thinking ability of students with LD. Students with LD were placed in either the intervention group or the control group, which did not receive intervention. Those who participated in the intervention scored significantly higher in overall verbal creativity and in the areas of fluency, flexibility, and originality than their peers in the control group. Building on this research, Shondrick et al. (1992) compared the creativity of students with and without LD through two creativity measurements, the *Alternate Uses Test* (Wallach & Kogan, 1965) and *Eisen's Test of Remoteness* (Eisen, 1989). No significant difference was indicated between students with LD and students without LD on either of the creativity measurements. These results allude to the likely potential for students with LD to increase their creativity similarly to students without LD.

Creative Self-Efficacy

Creative self-efficacy, coined by Tierney and Farmer (2002), is a construct that combines the term creativity with Bandura's (1986) self-efficacy. It is the belief in one's ability to produce something or be creative, (Tierney & Farmer, 2002). Bandura (1986) explained that self-efficacy is a vital component of being able to do something. If a person is confident in their ability to complete a particular task, they are more likely to be successful (Alabbasi et al., 2022; Haase et al., 2018). Thus, promotion of self-efficacy development will likely lead to greater and continued success in future endeavors.

While there is some literature in the field of education, most of the literature surrounding creative self-efficacy is housed within the field of business (Author; 2021; Capron Puozzo & Audrin, 2021). Research has demonstrated that creative self-efficacy has a significant positive relationship with an employee's innovative abilities (Javed et al., 2021), and developing creative self-efficacy is necessary for an employee to produce creative products and solutions (Bandura, 1997; Beghetto, 2007, Tierney & Farmer, 2002) Specifically, within the K-12 context, and perhaps due to the lack of research within the K-12 educational context, research surrounding student perception of their personal creative self-efficacy is somewhat unclear.

Creative Self-Efficacy in the Context of Education

The existing, albeit minimal, creative self-efficacy research conducted in educational contexts has primarily occurred in general education settings. A well-developed sense of creative self-efficacy has been linked as a predictor for positive outcomes for creativity (Beghetto, 2007; Karwowski & Beghetto, 2018). Links have been found between a well-developed sense of creative self-efficacy and the areas of creative performance, the ability to produce creatively, and personal competence (Beghetto, 2007; Tierney & Farmer, 2002).

Creative self-efficacy contributes to the ability to generate, develop, and communicate new ideas. Recently, Liu et al., (2017) found that creative self-efficacy was significantly correlated with creative ideation in undergraduate university students. Students with higher creative self-efficacy demonstrated higher creative ideation.

The ability to produce more and higher quality ideas due to higher levels of creative self-efficacy may also lead to better educational outcomes. Putwain et al. (2012) examined the relationship between students' self-beliefs of

their creativity (i.e., fluency, flexibility, elaboration, originality), their academic motivation, fluid intelligence, and achievement of 120 eighth graders in general education. Fluency, flexibility, and originality were positively correlated with fluid intelligence and academic achievement (i.e., literacy achievement). Thus, students with higher creativity self-beliefs were more likely to have better educational outcomes through the production of more ideas with greater depth and originality (Putwain et al., 2012).

Research appears to indicate that students with LD demonstrate similar creative potential to their peers without LD. To provide opportunities for developing creative self-efficacy for students with LD, research is needed to address the gaps in the literature and to examine creative self-efficacy perceptions of these students.

The Present Study

For students with LD, who comprise 33% of the population of persons with disabilities (NCES, 2021), a marked underemployment is seen within the workforce. Approximately 77% of persons without a disability are a part of the workforce compared to approximately 27% of persons identified with a disability (NCES, 2016). This vast disparity demonstrates a necessary change in the preparation provided to persons with disabilities. With this disparity in mind, for students with LD, for whom a transition plan is developed by age 16 or earlier as part of their Individualized Education Program (IEP) stating how the student will transition beyond K-12 schooling into the workforce or higher education, development of creative self-efficacy as an essential transition skill must be considered to ensure greater chances of positive post-secondary outcomes (Author, 2021).

With creativity being an essential skill for 21st century employees, it is vital that research regarding creative self-efficacy begin early on in a student's educational career (Author, 2021) so that the development of creative self-efficacy has time to continually improve over a student's K-12 education. While creative self-efficacy for students with LD has largely been unstudied, based upon previous research indicating that students with LD generally show lower levels of overall self-efficacy, this study sought to examine if this result also potentially translated to the context of creative self-efficacy. In order to first gather an understanding of current student perceptions of creative self-efficacy, this study examined the self-perceptions of creative self-efficacy in terms of the four areas of creative thinking of students with LD. A comparison was made between students in general education and students with gifts and talents. The research question addressed in this study was: *Is there a significant difference in the perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality among students with learning disabilities in third, fourth, and fifth grades and their peers in general education, and in gifted education?*

Method

Participants

Students in the third, fourth, and fifth grades in a large, urban school district in the southwestern United States from three elementary schools, each representing a low, middle, and high economic identification, were recruited for participation in this study. Due to gifted education only provided in grades three, four, and five in the school district, only students from these three grade levels were recruited for this study. The three schools represented a culturally, linguistically, and ethnically diverse population of students. Participants were between 8 and 11 years of age. Assent from the students, along with consent from their parents, were collected from 495 students. Students identified with a learning disability (n=35), identified with gifts and talents (n=90), or in general education (n=370) were analyzed for this study. These numbers (i.e., n=35) demonstrate consistency with national averages for students identified with a learning disability. No participant was included in more than one educational subtype. Students identified as twice-exceptional (i.e., identified with a disability along with identified with gifts and talents) were excluded from the analysis due to the low number of students identified as such.

Table 1

Student Demographic Information

Characteristics	Learning Disabilities	General Education	Gifted and Talented	Total
School Level				
Third Grade	14	129	22	165
Fourth Grade	10	116	37	163
Fifth Grade	11	125	31	167

Instrument

For this study, a questionnaire was adapted, with permission, from Abbott's (2010) *Creative Thinking Self-Efficacy* (CTSE) survey for use at the elementary level. A Fry's (1968) readability assessment was conducted to ensure the questionnaire was at a third-grade readability level, the grade level of the youngest participants in the study. The instrument consisted of 16 items, four for each of Guilford's (1950; 1968) four domains of creative thinking (i.e., fluency, flexibility, elaboration, originality), rated on a 5-point Likert scale, ranging from 1 (never) to 5 (always). See Table 1 for an example item for each domain. Each participant was provided a hard copy of the adapted CTSE, and each question was read aloud one by one for students to complete, to ensure reading fluency did not hinder student ability to understand the questionnaire. Demographic information (i.e., grade, age, gender, ethnicity, and educational subtype) also were included.

Table 2

Questionnaire Examples for Each Creativity Domain

Creativity Domain	Example Item on the Questionnaire
Fluency	I can think of a large number of ideas or answers.
Flexibility	I can think of many types of ideas while thinking about a problem.
Elaboration	I can link new ideas to things I have learned before.
Originality	I can think of ideas no one else has.

Analysis

All data were entered into the Statistical Package for the Social Sciences (SPSS) for analysis. Statistical and inferential statistical analyses were conducted. A two-way multivariate analysis of variance (MANOVA) was conducted to determine differences in student perceptions of creative self-efficacy for each domain of creative thinking for students in the third, fourth, and fifth grades with an identified learning disability, in general education, and identified with gifts and talents. The two-way MANOVA was selected to allow for the analysis of the interactions between multiple independent variables on the dependent variables (Laerd Statistics, 2016). A 3 x 3 x 4 analysis (i.e., the 3 educational subtypes x 3 grade levels x 4 domains of creative thinking) was conducted, with an alpha level set at .05. The independent variables were educational subtypes (i.e., students with LD, students in general education, and students identified with gifts and talents), grade level (i.e., third, fourth, and fifth grades.). The dependent variables were scores on the four domains of creative thinking: fluency, flexibility, elaboration, originality.

A test of assumptions was conducted before analysis to ensure that data did not violate study assumptions and that a MANOVA analysis would yield accurate results. Each cell was found to have more cases than the number of dependent variables (i.e., n > 4; Laerd Statistics, 2016) and a linear relationship between variables as assessed by a scatterplot. No evidence of multicollinearity was found by Pearson correlation (r < .09) and no univariate outliers in the data were found. One multivariate outlier was found as assessed by Mahalanobis distance (p > .001) but given that the case was within the largest cell size, the case was still included (Laerd Statistics, 2016). While all four areas of creative thinking were found to not be normally distributed by the Komogorov-Smirnov test of normality (at p > .05), the analysis was moved forward due to consensus that a MANOVA is robust to normality and the large sample size of the study (Laerd Statistics, 2016). Finally, the homogeneity of the covariance was assessed by Box's M test. Homogeneity of covariance was found from this test (p = .214; p = .034; p =.217). Given the results of all test of assumptions, a MANOVA was determined to be appropriate for data analysis in this study.

Following the two-way MANOVA, a univariate analysis of variance (ANOVA) was conducted to determine which areas of creative thinking had a significant difference for educational subtypes. Once the ANOVA was completed, Tukey pairwise comparisons were run to determine the differences in mean for each domain of creativity between educational subtypes.

Results

The study aimed to examine the perceptions of personal creative self-efficacy of students with LD and compare them to their peers in general education and peers identified with gifts and talents. For students in third, fourth, and fifth grades with gifts and talents, the descriptive analysis indicated higher self-reported mean scores of perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students in general education and students with LD. For students in third, fourth, and fifth grades in general education, the descriptive analysis also indicated higher self-report mean scores of perceptions of creative self-efficacy in terms of fluency, flexibility, elaboration, and originality than students with LD.

Creative self-efficacy scores did not yield a statistically significant interaction effect between grade level and educational subtype $F(11, 483) = 1.239$, $p < .196$, Wilks' $\Lambda = .940$, partial $n^2 = .015$. There was also not a statistically significant main effect for grade level,

F(11, 483) = 1.018, p < .420, Wilks' Λ =.983, partial n² = .008, however, a statistically significant main effect was found for educational subtype, F(11, 483) = 2.092, p < .001, Wilks' Λ =.931, partial n² = .024. See Table 2 for results.

A follow up univariate ANOVA was conducted for educational subtype to examine whether there were significant differences among the four areas of creative thinking. Results indicate statistically significant differences in all four areas of creative thinking in relation to educational subtype, fluency score, F(3, 483) = 7.793, p < .001 partial n² = .046, flexibility score, F(3,483) = 4.908, p < .002, partial n² = .030, elaboration score, F(3, 483) = 3.063, p < .028, partial n² = .019, and originality score, F(3, 483) = 7.959, p < .001 partial n² = .047. See Table 3 for results.

To determine where the differences took place, Tukey pairwise comparisons were conducted. A statistically significant difference was found between students with LD and students with gifts and talents in each of the four domains of creative thinking (i.e., fluency 2.27 (95% CI, .73 to 3.81), p < .001, flexibility 1.85 (95% CI, .32 to 3.38), p < .010, elaboration 2.02 (95% CI, .36 to 3.67) , p < .010, originality 2.96 (95% CI, 1.19 to 4.74), p < .001). There was no statistically significant difference between students with LD and students in general education in any of the four domains. See Table 5 for results.

Table 3

Two-Way MANOVA of Grade Level and Educational Subtype

Effect		F	df	Error df	*p*	Partial Eta Squared
Grade	Wilks' Lambda	1.018	8	960	.420	.008
Educational Subtype	Wilks' Lambda	2.902	12	1270	.001*	.024
Grade*Educational Subtype	Wilks' Lambda	1.239	24	1676	.196	.015

*Note. * represents significance at the p<.05 level.*

Table 4

Two-Way ANOVA of Educational Subtype

Effect	Dependent Variable	F	df	Error df	*p*	Partial Eta Squared
Educational Subtype	Fluency	7.793	3	483	.001*	.046
	Flexibility	4.908	3	483	.002*	.030
	Elaboration	3.063	3	483	.028*	.019
	Originality	7.959	3	483	.001*	.047

*Note. * represents significance at the p<.05 level.*

Table 5

Tukey HSD Peer Comparison of Perceived Creative Self-Efficacy of Students with LD

Creativity Domain	Educational Subtype Comparison	Mean Difference	Std. Error	*p*
Fluency	General Education	-.60	.531	.675
	Gifts and Talents	-2.27	.597	.001*
Flexibility	General Education	-.57	.528	.698
	Gifts and Talents	-1.85	.594	.010*
Elaboration	General Education	-1.22	.572	.143

	Gifts and Talents	-2.02	.643	.010*
Originality	General Education	-1.25	.612	.174
	Gifts and Talents	-2.96	.688	.001*

*Note. * represents significance at the p<.05 level.*

Discussion

This study aimed to examine the perceptions of personal creative self-efficacy of students with LD and compare them to their peers in general education and peers identified with gifts and talents. The results of this study demonstrate that students with LD have similar perceptions of their creative self-efficacy as their peers in general education in all four areas of creative thinking (i.e., fluency, flexibility, elaboration, originality). This indicates that students with LD perceive their creative self-efficacy similar to their general education peers. These results could be attributed to the fact that most students with LD have average or above-average intelligence (Horowitz et al, 2017), and thus, having LD likely does not affect their perception of their ability to be creative. Though different instruments were used, these results corroborate previous research in creativity demonstrating a lack of significant difference in creative thinking between students with LD and students in general education (Hong & Milgram, 2010; Shondrick et al., 1992).

However, lower perceptions of creative self-efficacy for students with LD were indicated when compared to their peers identified with gifts and talents in all four areas of creative thinking. This indicates that students with LD perceive their creative self-efficacy to be lower than students identified with gifts and talents. While these results are based upon self-perceptions, the results add to previous research indicating students with gifts and talents have higher creativity than their peers (Kettler & Bower, 2017).

These results may be attributed to variances in programming. Students with gifts and talents are often provided curricula that includes participation in creative activities. Differentiated thinking is also often fostered in gifted and talented programs. However, for students with LD and their general education peers, these creative activities and the fostering of differentiated thinking are often not included in their curricula. If this is the case, then it is vital that considerations regarding student programming be made. Schools and teachers should consider what curricula are being offered and implemented in gifted and talented programs and then determine how that curricula might also be included in programming provided to students with learning disabilities.

If the goal of K-12 education is to set all students, including those with LD, up for future success, a movement to work towards ensuring they are provided equitable opportunities to develop the creative skills necessary to be successful in the 21st century is necessary. In view of the findings from this study, along with the literature indicating that a well-developed sense of creativity is necessary to prepare students with LD for post-secondary success (Pazey et al., 2016; Author, 2021), further exploration to determine what differences may be found for the difference between students with learning disabilities and students without learning disabilities is needed. Future research on curricula variances for these populations of students is suggested.

In addition, with creative self-efficacy being a relatively new construct, further research is also needed to determine how it may affect student creativity. This is especially true for students with LD as they move on from K-12 learning. An investigation of how including creative self-efficacy development within transition planning may assist students with LD as they transition to post-secondary life is also suggested.

The results and implications of this study should consider the limitations of the study. Participants were selected based on convenience sampling, so it may not truly represent the community. In addition, this study only examined perceptions of students in the third, fourth, and fifth grades, so results may not generalize to other ages. These limitations should be considered for future investigation of the construct of creative self-efficacy.

Additional studies that include a mixed-method study with continued collection of quantitative data using the *Creative Thinking Self-Efficacy* (CTSE) survey and with qualitative questioning may enhance further understanding of student perceptions of their creative self-efficacy.

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RESEARCH

Special education and AAC devices: Teachers' perspectives on training needs and support

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Abstract

This study investigates special education teachers' perceptions of the effectiveness of support and training received while working with Augmentative and Alternative Communication (AAC) device users. The research evaluates important components of AAC implementation, such as the range of support available, quality of training programs, degrees of adaptation, and levels of inter-professional support from a teacher's perspective. The conclusions drawn from this study indicate a need for continuous professional development, which necessitates personalized, individual training approaches and interdisciplinary collaboration to enhance the use of AAC devices. The study also confirms that individualized training is crucial in meeting the unique requirements of AAC users and special education teachers. These findings are meaningful in understanding AAC device use in special education classes, leading to appropriate interventions and improved communication outcomes among individuals using low- and high-tech devices.

Keywords: augmentative and alternative communication, functional communication, special education, teacher training

Introduction

AAC devices are vital in supporting special education and serve as a lifeline to people with communication impairments. They provide them with the means of expression, relating with others and becoming independent. AAC devices include simple picture boards to advanced speech-generating technology; these tools enable learners with different requirements to access education and participate in social activities (Beukelman & Light, 2020).

Teachers learn the use of devices that match his or her students' distinct communicative needs within their academic environment (Locke & Mirenda, 1992). Moreover, they need to continually assess instruction and model effective incorporation (Blackstone et al., 2007). The teacher serves as an advocate who makes sure all students have everything they need to

participate and engage in the curriculum and other classroom activities.

Training Needs for Special Education Teachers

Initial teacher training typically offers an overview of different AAC types, basic operational principles and ways to effectively use them in class. Educators often have a thorough review on technology, and this is done through hands-on experience with devices as well as being given case studies that illustrate successful implementations (Walker & Chung, 2022). Nonetheless, there still exists a major gap concerning AAC in teacher training programs. Many teachers are not well prepared to assess or even implement AAC solutions in their classrooms when entering the field of special education (Andzik et al., 2017). This is because the AAC training programs do not keep pace with technological advancements and therefore it lacks comprehensive hands-on training with many types of AAC devices that cater for diverse needs of students who have complex communication requirements.

In order to address this gap, educators must embrace continuous professional development. The importance of ongoing learning cannot be overstated; it helps professionals stay proficient in the use of AAC tools and keeps them updated about developments in the area (Walker & Chung, 2022). The result is that such continuing education enables teachers to make informed choices regarding suitable devices for the student's individual requirements so that they can adapt how they communicate. It also reinforces best practices for integrating AAC use into the classroom thereby improving overall learning experiences of children with communication disorders.

Various effective strategies exist in successful professional development programs related to AAC. Such initiatives may include workshops where practical experience on assistive technologies may be gained while others provide tailored training opportunities on specific systems by partnering with manufacturers involved in making such products. In addition, these programs promote collaboration amongst educators by encouraging them to learn from each other as well as experts in the field (Leatherman & Wegner, 2022). Furthermore, online courses and webinars offer flexible options to improve skills and knowledge among teachers. These platforms usually feature troubleshooting modules, customization of classroom devices, and new developments within AAC fields (Boster, 2023). By emphasizing initial training and ongoing professional development, the educational system can provide comprehensive support to special education teachers, equipping them with the necessary skills to support the full potential of AAC devices for their students.

Challenges Faced by Teachers in AAC Implementation

There are several problems that can arise and hinder the smooth integration of AAC devices in classrooms. These obstacles include technological barriers that may be significant (Andzik et al., 2017; McNaughton et al., 2008). AAC devices, given their various attributes and functionalities, could be somewhat complex and even unreliable. Issues such as software updates, hardware breakdowns, and compatibility issues with already existing classroom technology have to be addressed with some level of expertise that is not provided during teacher training programs.

Additionally, integrating AAC into the curriculum also poses its own challenges. Inadequacy in the standard curriculum's attention to the needs of users of AAC would then require educators to adjust their lesson plans so that they integrate appropriately the AAC devices (McNaughton et al., 2008). It can take a lot of time and effort since it involves finding a fine line between educational standards while accommodating communication abilities for individuals using AAC.

There is also insufficient time and resources for comprehensive training on AAC (Andzik et al., 2017). Many educators may feel they have more responsibilities than they can handle, in addition, there are limited professional development programs specifically dedicated to dealing with these conditions. Failure to receive enough training makes teachers rely on self-learning which may not prepare them well enough for the complexities of using AAC technology (McNaughton et al., 2008). It is common for teachers' opinions about how successful their students will be when using an AAC device depends on how

competent they feel when operating these devices themselves (Soto, 2009). This explains why special education teachers may often lack confidence in whether an individual student will use an AAC device effectively in the classroom.

The specific needs of students using AAC create additional challenges for teachers. The need for individually tailored strategies increases if each student requires a unique approach. When educators must assess and personalize AAC solutions for more than one student, this may be a complex task (Walker & Chung, 2022). Because of this, a single approach cannot work and the task of customizing technology for each student can be considerable, especially if the school district does not have a strong support system.

Despite their potential to change the lives of students with language impairments, teachers face various difficulties in using AAC devices. Overcoming these obstacles requires systematic support, comprehensive training, and adequate resources. It is crucial that avenues for communication are provided to all students within their educational settings.

Support Frameworks for AAC in Education

School districts need a strong support system for AAC devices to be effectively integrated and maintained in the classrooms. Among the key starting points are school policies and administration that constitute institutional support for this process (Burnham et al., 2023). It's important for administrators to recognize the importance of AAC in education and advocate for it through creating policies as well as the allocation of resources. Schools can promote an environment where both teachers and students learn to value diverse communication (Leatherman & Wegner, 2022). In addition, administrative support is necessary to provide training opportunities and purchase current AAC technologies.

AAC specialists and speech-language pathologists (SLPs) would be beneficial in creating an interdisciplinary level of support. The educators benefit from having SLPs involved in the evaluation of the student's needs, choosing appropriate AAC devices, and developing communication strategies (Bird & Kusior, 2016). On their part, SLPs work collaboratively with educational programs to devise personalized plans that integrate AAC into the curriculum of students with complex communication needs.

Beyond the interdisciplinary level of support, teachers with peer support emerge as important aspects of implementing effective AAC services. Collaborative teaching practices among teachers encourage knowledge sharing about what works best in terms of using AAC more effectively as well as engaging and encouraging others who may be implementing them. These groups can be either formal or informal communities depending on whether they have been created by the school system or simply exist due to common challenges facing teachers (Leatherman & Wegner, 2022). They act as a resource of materials and information between teachers for mutual support.

The introduction of mentoring programs holds potential value to the implementation of AACs. Pairing seasoned educators experienced in AAC with those new to the profession will ease the learning curve by providing guidance and reassurance. This sort of mentorship is critical since it is not possible to completely build on all the knowledge the teachers have learned that is not written but learned outside of formal training. Information such as this from real-world experiences can be valuable to other teachers in the classroom.

Supportive frameworks, whether institutionally based or peer-based, are essential in developing a school culture that accepts AAC as a powerful tool for empowering students' communication, participation, and learning. It is through these support systems that teachers feel reassured from peers in their community and not as if they are left alone to find their own way.

Efficacy of Training Programs

AAC training research for educators is characterized by the strong relationship between teacher preparation programs and their readiness to implement AAC. There have been several studies that demonstrated improved confidence and proficiency in AAC devices when educators receive practical and ongoing training (Alexandra da Fonte et al., 2022). The best training approaches include practical elements such as interaction with the device directly and

collaborative problem solving with peers. In addition, follow-up support and advanced training analyzing intricacies of using AAC in various educational settings can make these efforts more effective (Senner, 2018).

There are several methods which have been devised through research leading to effective ways of training on how to use AAC. These include interactive workshops where participants actively engage, case-based learning for hands-on application, and opportunity for participants' reflection and discussion (Norrie et al., 2021). Successful trainings entail understanding theory about AAC devices as well as personalizing communication systems to meet unique needs of each learner, weaving it into education activities, handling common problems.

Teacher feedback on AAC training programs consistently highlights the significance of practical experience and the chance to learn from and collaborate with peers (Sanders et al., 2021). Educators frequently express a need for continuous professional development, recognizing that while initial training sessions are beneficial, they are inadequate to address the long-term requirements of AAC implementation (McNaughton et al., 2008). They advocate for ongoing access to resources and support networks that empower them to adapt their practices following advancements in AAC technology and educational methodologies.

The impact of quality training on student outcomes cannot be overstated. Training teachers who are competent in assessing students' needs so they can effectively implement an AAC system increases students' engagement level (McNaughton et al., 2008). Teachers who are prepared help facilitate smooth transitions for students into the use of AAC devices, increasing inclusivity where every child is accommodated. That way, communication skills of the students and their academic performance are greatly improved thus underlining why there is a need for comprehensive training on AAC for educators (Soto, 2012). In essence, high-quality AAC training for teachers is about being able to deliver effective instruction as well as ensuring that students with complex communication needs succeed academically and socially.

Teachers' Perspectives on AAC Device Use and Training

Future educational strategies can be shaped by teachers' views regarding the effectiveness of AAC devices and training programs. Most educators argue that AAC training is important, but it does not fit in classroom realities as they are dynamic and multifaceted (Alexandra da Fonte et al., 2022). They share experiences of being trained in using AAC devices, which although informative, do not prepare them well enough for the subtle challenges inherent in adapting and implementing AAC devices for diverse students (McNaughton et al., 2008). This issue of teacher's narratives emphasizes a discrepancy between theoretical knowledge and practical application.

We know that AAC use is often difficult for many teachers. Some common barriers include lack of on-going technical support, limited time to learn and customize an AAC device, and difficulty integrating AAC into an already existing curriculum (McNaughton et al., 2008). Additionally, educators may express dissatisfaction with certain training programs that do not account for different student abilities, availability of various devices or the differences in classrooms and teaching styles.

Educators often argue for personalized or interactive learning approaches when it comes to enhancing the effectiveness of AAC training programs. They actively seek out scenarios that closely resemble their classroom settings and opportunities to practice using AAC devices in real time under the guidance of AAC experts (Rackensperger, 2012). Furthermore, teachers emphasize the importance of robust post-training support systems, such as on-call technical assistance, online forums for knowledge sharing and resource exchange, and in-school coaching provided by AAC specialists (Alexandra da Fonte et al., 2022). Furthermore, there has been an increasing demand for AAC training to be included in regular professional development schedules. This allows educators to continually refine their skills, while keeping pace with new technological advancements and methodologies applied in this field.

Teachers want comprehensive training programs that are not limited to one-time events but rather offer continued support. These programs will have to be flexible as the

nature of AAC is continuously evolving with a learning process characterized by constant changes (Lilienfeld & Alant, 2005). The teachers are aware of how AAC devices can change the lives of their students and thus seek training opportunities that enable them to use this technology in their teaching practices.

AAC Research Gaps

Several areas of AAC training research with gaps need further study. One of these areas is the lasting impact of AAC training on teacher practices and student outcomes. Based on existing studies, teachers improve immediately after training interventions, but research is needed to monitor sustained changes in teaching strategies, teacher confidence, and student progress over time (Sanders et al., 2021). Also, the research does not often depict the experiences of special education teachers in rural or economically challenged schools as much as it does in an urban setting.

Research is needed to reveal special education teachers' experiences regarding support and training on AAC devices. These teachers generally work with children who have severe communication needs (Alexandra da Fonte et al., 2022). However, academic research lacks a thorough examination of educators' successes and challenges. As such, understanding their ongoing professional growth requirements, supportive mechanisms and institutional barriers can enhance the effectiveness of specific improvements in AAC training and support programs.

Additional AAC research could address these gaps, leading to more informed decisions. For instance, continuous, context-specific teacher training that is informed by research may enhance retention rates and competencies within special education teaching workforce. Additionally, if we knew how effective AAC device use is across different socio-economic backgrounds or cultures, it would be possible to provide equal services based on equality for all students while improving communication for many. Furthermore, exploring family engagement across various populations may provide specific information on approaches that could support families engaged in the AAC process.

By addressing these gaps through further research, we can develop more advanced inclusive training programs, improve support systems for educators at all levels, and develop evidence-based policies. These advancements may significantly improve academic and social achievements for students who rely on AAC (Klassen et al., 2010). They also emphasize the crucial role of evidence-based research in promoting inclusive educational practices. The objective of this study is to explore the following research questions from the perspective of special education teachers: 1) How effective are current support and training programs in enhancing special education teachers' skills and device proficiency working with AAC device users, 2) What level of satisfaction do special education teachers report regarding the support and training they receive for working with AAC device users, 3) Which improvements do special education teachers suggest for AAC device support and training programs, and 3) How does collaboration among professionals, families, and communication partners influence the success of AAC device users, and what role does communication play in establishing effective support systems?

Methods

Participants

Educators who were directly involved with AAC devices in special education settings were recruited for this study. The study team reached out to 147 special education directors in a southeastern state of the United States, who facilitated the distribution of the survey to their special education teachers who work with students using both low- and high-tech AAC devices. This approach ensured that responses authentically reflected the experiences and insights of educators actively engaged in teaching and supporting students who use AAC devices. The initial survey response included 44 special education teachers who began the survey. Six teachers did not complete the survey and were excluded from the study. The final sample size included 38 special education teachers (36 female, 2 male) who answered all questions on the survey. For this study, the term "special education teacher" will be called "teacher."

Data Collection and Materials

A convergent parallel design mixed-methods approach was used for this study. A 35-item Qualtrics survey was developed by the authors that included (a) Likert scale questions that facilitated the collection of quantitative data and enabled an analysis of trends and patterns, (b) multiple choice items, and (c) open-ended questions that allowed participants to freely express their experiences and viewpoints freely, yielding more comprehensive information.

Although the survey covered various aspects of AAC device usage, the current study focuses on a subset of questions that directly align with our specific research objectives. Out of the 35-item survey, only 14 questions (refer to Table 1) directly addressing teachers' support and training needs were selected for this study. This focused approach allows for a more targeted analysis and discussion that aligns with the research objectives. The decision to concentrate on specific questions was also driven by the desire to provide comprehensive insights into specific areas of interest within the broader survey scope.

Table 1

AAC Survey Questions: Training and Support

Focus	Question number	Question	Response choices
Usability and technical issues	1	Please rate the extent to which you or the AAC device user have faced challenges related to the usability and technical functionality of the AAC device. (Select one)	Not a challenge Mild challenge Moderate challenge Significant challenge Extremely challenging
Lack of ongoing support/training	2	Please rate the extent to which you or the AAC device user have faced challenges due to the lack of ongoing support or training for the device. (Select one)	Not a challenge Mild challenge Moderate challenge Significant challenge Extremely challenging
Ongoing professional support	3	Please rate the effectiveness of ongoing professional support (e.g., speech-language pathologist, AAC specialist) in addressing challenges related to AAC device usage. (Select one)	Not effective Somewhat effective Moderately effective Very effective Extremely effective
Training for communication partners	4	Please rate the effectiveness of training communication partners (family, educators) in helping overcome challenges related to AAC device usage. (Select one)	Not effective Somewhat effective Moderately effective Very effective Extremely effective

Customization of device settings	5	Please rate the effectiveness of customizing the AAC device's settings to suit the individual's communication needs in addressing challenges. (Select one)	Not effective Somewhat effective Moderately effective Very effective Extremely effective
Peer support and community engagement	6	Please rate the effectiveness of peer support groups and community engagement in assisting with overcoming challenges related to AAC device usage. (Select one)	Not effective Somewhat effective Moderately effective Very effective Extremely effective
Online resources and forums	7	Please rate the effectiveness of online resources (e.g., tutorials, forums) in helping you address challenges related to AAC device usage. (Select one)	Not effective Somewhat effective Moderately effective Very effective Extremely effective
Extent of Training and Education	8	Please indicate the extent of training you or the AAC device user have received on using the AAC device for effective communication. (Select one)	Minimal training (less than 1 hour) Basic training (1-3 hours) Moderate training (3-6 hours) Extensive training (more than 6 hours)
Satisfaction of training	9	How satisfied are you with the level of training received in addressing challenges related to AAC device usage? (Select one)	Very dissatisfied Somewhat dissatisfied Neutral Somewhat satisfied Very satisfied
Suggestions for improving training and support	10	Please provide any suggestions or recommendations for improving the training and support provided for AAC device users and their communication partners.	
Collaboration between professionals and families	11	Rate the level of collaboration between professionals (speech-language pathologists, educators) and families in addressing challenges related to AAC device usage. (Select one)	Very low collaboration Low collaboration Moderate collaboration High collaboration Very high collaboration

Open communication about challenges	12	Indicate the extent to which open communication exists about challenges and concerns related to AAC device usage among communication partners. (Select one)	Very limited communication Limited communication Moderate communication Frequent communication Very frequent communication
Anticipated future device use	13	Do you anticipate that the individual will continue using the AAC device for communication in the future? (Select one)	Yes, definitely Yes, with adjustments Unsure No
Training satisfaction	14	How satisfied are you with the following components of the training and support you've received?	Understanding of AAC device functions Skills developed for troubleshooting common problems Knowledge gained about customizing the device Interaction and support from professionals during training
Training effectiveness	15	Rate the effectiveness of the following training modules you've experienced or aware of (1 = Extremely ineffective and 10 = Extremely effective).	Hands on training Online tutorials and webinars One-on-one training with a professional Group workshops and seminars Peer-led training sessions

Procedure

After receiving approval from the university's Institutional Review Board (IRB), an email was sent to special education directors. This email detailed the survey and requested that directors forward it to their teachers. The survey was accessible via a Qualtrics link. Upon clicking the link, participants encountered a digital informed consent form. This form offered them the choice to either proceed with the survey or decline participation. Those who consented were then directed to the survey items, while those opting out were taken to a page that acknowledged their decision and facilitated their exit from the study.

The data collection phase lasted approximately one

month, with a follow-up email sent at the two-week point and a final reminder at the beginning of the fourth week. To encourage participation and acknowledge respondents' time and effort, the study offered a chance to win a $100 Amazon gift card. Teachers who completed the survey could enter a drawing for the gift card.

Results

Effectiveness of Professional Support

The survey data on the efficacy of current support and training programs for teachers who work with AAC device users unveiled a multifaceted perspective. The effectiveness of ongoing professional support (e.g., speech and language pathologists, AAC specialists) in addressing challenges related to AAC device usage was rated on a scale from 1 (Not effective) to 5 (Extremely effective). About 3% of participants rated current support and training as ineffective, with an additional 21.05% endorsing ongoing training efforts as *somewhat effective*. Nearly 55% of teachers found that ongoing professional support was *very* (34.21%) to *extremely effective* (21.05%). Taken together, the results suggest that ongoing training and support efforts are generally perceived as effective in addressing challenges related to AAC device usage.

Effectiveness of Training Communication Partners

Teacher's perceptions of the survey item on the effectiveness of training communication partners (e.g., family, educators) in helping overcome challenges related to AAC device usage. Just over 10.53% of teachers reported that it was *ineffective, about 26.32% of respondents endorsed it somewhat effective,* and approximately 21.05% of teachers endorsed *moderately effective*. The remaining responses included 31.58% of teachers indicating *very effective* to 10.53% *extremely effective*. This pattern of results suggests that most teachers found training communication partners valuable, albeit to varying degrees.

Effectiveness of Customizing Device Settings

The survey item on customization of AAC device settings demonstrated mostly positive responses. Only about 5% of teachers rated customization as *not effective.* The remainder of respondents (about 95%) found customization *somewhat effective (21.05%)*, *moderately effective (21.05%)*, very effective (21.05%), or *extremely effective* (31.58%) in addressing AAC challenges.

Effectiveness of Peer Support in Addressing Challenges

The survey yielded an array of responses on the perceived efficacy of peer support groups and community engagement in addressing challenges related to AAC devices. Approximately 21% of teachers perceived these support mechanisms as *not effective*, while another 21% perceived them as *somewhat effective*. In contrast, about 23% indicated a moderate level of benefit from these support systems (e.g., *moderately effective*), and about 34% rated them as *very* (23.68%) or *extremely effective* (10.53%).

Effectiveness of Online Support

On evaluating the efficacy of online resources, such as tutorials and forums, in addressing challenges associated with AAC device usage, teacher responses indicated a diverse range of experiences. Only about 5% of teachers rated online resources as *not effective*. In contrast, approximately 34% of teachers rated them *somewhat effective,* while nearly 29% found them *moderately effective*. Approximately 32% of teachers deemed these resources *very* (21.05%) or *extremely effective* (10.53%). This wide range of responses suggests that although many teachers found online resources helpful in addressing challenges related to AAC device usage, the level of effectiveness varied significantly among individuals.

Extent of Training Completed

When asked about the extent of training received, teachers endorsed a range of readiness to use AAC devices effectively. Nearly 26% reported *minimal training* (less than 1 hour), 32% reported *basic training* (1-3 hours), 32% reported *moderate training* (3-6 hours), and nearly 11% reported *extensive training*

(more than 6 hours). These responses suggest room for improvement to address the diverse needs of AAC device users and their communication partners.

Level of Satisfaction for Support and Training

When teachers were asked about satisfaction with levels of support and training for AAC users and their families, the results were mixed. Approximately 26% of teachers were *very* (10.53%) or *somewhat dissatisfied* (15.79%) with training levels, while a similar number of teachers were *somewhat* (26.32%) or *very satisfied* (13.16%) with training levels. The remaining 34.21% of teachers were *neither satisfied* nor *dissatisfied*.

Levels of Satisfaction with Specific Components of Training

The survey examined the satisfaction levels regarding specific aspects of training and support. The results, measured on a scale of 0 to 10, where 0 represents very dissatisfied and 10 represents very satisfied, unveiled a range of responses.

1. *Understanding of AAC Device Functionalities*: On average, teachers rated their understanding of AAC device functionalities at 6.49. This score indicates a moderate level of satisfaction with their comprehension of how these devices operate.
2. *Skills Developed for Troubleshooting Common Problems*: The satisfaction level concerning skills for troubleshooting common problems with AAC devices was lower, with an average rating of 4.97.
3. *Knowledge Gained About Customizing the Device*: Teachers reported an average satisfaction score of 5.16 for the knowledge gained about customizing AAC devices.
4. *Interaction and Support from Professionals During Training*: Interaction and support from professionals during the training process received an average rating of 5.97.

These findings suggest that while there is a reasonable level of satisfaction with some aspects of the training and support for AAC devices, there are also notable areas for improvement, particularly in developing troubleshooting skills and deepening knowledge about device customization. The variation in satisfaction levels across different training components also emphasizes the need for more tailored and comprehensive training approaches to address the diverse needs of teachers working with AAC devices.

Challenges in Usability and Technical Functionality

Teachers were asked to rate the challenges they or the AAC device users they represent faced regarding the usability and technical functionality of the AAC device. The responses were divided into five categories, ranging from 'Not a challenge' to 'Extremely challenging.' Approximately 18% of participants indicated that usability and technical functionality were *not a challenge*. Most teachers (42.11%) reported these issues as *mildly challenging*. Just over 21% of participants endorsed *moderately challenging*. Approximately 18% of teachers found these aspects to be *significant* (10.53%) or *extremely challenging* (7.89%).

Challenges Due to Lack of Ongoing Support

Teachers were asked to rate their challenges due to a lack of ongoing support or training for AAC devices. Nearly 29% reported that the lack of ongoing support or training was *not a challenge*, while the same amount endorsed it as a *mild challenge*. About 13% of teachers reported the lack of ongoing support as a *moderate challenge*, with another 18% and 11% endorsing *significantly* (18.42%) or *extremely challenging* (10.53%), respectively.

Effectiveness of Training Modules

The survey questions on the effectiveness of various AAC device training modules, rated on a scale from 1 (Extremely ineffective) to 10 (Extremely effective), provided insightful results. Among the training modules evaluated, hands-on training received the highest average effectiveness score of 7.14, suggesting that this approach is the most effective for teachers. One-on-one training with a professional was also well-regarded, with an average score of 6.65, indicating its perceived effectiveness. Group

workshops and seminars scored an average of 6.17, suggesting a generally positive reception, although with some variability in effectiveness. Peer-led training sessions received a slightly lower average score of 5.94, indicating that while they are generally effective, experiences varied among teachers. Online tutorials and webinars, with an average score of 5.12, were rated as moderately effective, pointing towards the need for improvement in this area to meet the participants' needs better.

Importance of Collaboration

Teachers were asked to assess the level of collaboration amongst professionals, such as SLPs, educators, and families, in addressing challenges associated with AAC device usage. The rating scale ranged from 1 (indicating very low collaboration) to 5 (indicating very high collaboration). The findings indicated that a moderate level of collaboration was the most frequently chosen response (42.11%). Approximately a quarter of the teachers (26.32%) rated the collaboration as high, while 13.16% (5 participants) perceived it as very high. Fewer teachers reported that collaboration was *low* or very *low* (approximately 13% and 5%, respectively).

Expectations of Future Use of AAC Device for Communication

Teachers were asked about their expectations regarding the individual's future use of the AAC device for communication. The response options ranged from "Yes, definitely" to "No." Nearly half of the teachers (44.74%) expressed confidence that the individual would definitely continue using the AAC device. About 16% of teachers believed the individual would continue using the device with some adjustments. Nearly 29% of teachers expressed uncertainty regarding the future use of the AAC device, which reflects the intricacies and diverse circumstances surrounding AAC device usage. Finally, approximately 11% of teachers indicated that they do not anticipate the individual will continue using the AAC device.

Teachers Suggestions and Recommendations for Improving Training and Support

When developing AAC device training programs, valuable insights can be gained from feedback provided by special education teachers who work closely with AAC device users and their communication partners. A recurring theme in their suggestions highlights the importance of comprehensive, practical, and accessible training for educators and caregivers alike.

Several teachers have emphasized the need for a deeper understanding of AAC devices before introducing them to students. This includes acknowledging the ongoing need for the device and refraining from treating it as an inconvenience. Some have also suggested that training should emphasize the benefits of incorporating AAC devices into instruction, not only for AAC users but for all students, to promote language development and foster inclusivity.

Hands-on training emerged as a significant recommendation, emphasizing the need for sufficient time dedicated to effective teaching. Some educators pointed out that online-only support from AAC company representatives may not be as practical in certain situations. There is a call for comprehensive training at the school or district level to address this, going beyond reliance solely on speech-language pathologists (SLPs) or AAC specialists.

Furthermore, integrating training across different environments, such as transitioning from home to school use, was also highlighted. It is recommended to involve all educational staff, including principals, classroom teachers, and support personnel, to ensure widespread understanding and successful implementation.

Some educators emphasized the significance of regular and easily accessible training, including increased opportunities to participate in training sessions. Additionally, when students receive a new device, they often lack accompanying training, which requires speech-language pathologists (SLPs) and

students to collaborate in finding solutions, potentially hindering effective communication.

To showcase the practical use of specific devices, it was suggested to conduct training sessions both at home and in school, providing guidance to parents and teachers. Furthermore, the availability of ongoing support from representatives after the initial training sessions was perceived as advantageous. Various recommendations were put forth to support teachers, including providing loaner devices for practice and offering multiple training opportunities, both prior to and during the child's use of an AAC device. The importance of emphasizing language instruction, consistent usage, and creating a rewarding experience for the child was also underscored.

Certain teachers expressed a need for additional time with the device to enhance familiarity and a preference for more hands-on training. The significance of online training for educators and standardized training for all individuals involved with the student was also highlighted. Ensuring the child's physical ability to interact with the device, such as through touch and pointing, was an essential aspect of the testing process. Furthermore, teachers expressed a need for comprehensive training on integrating AAC devices in the classroom and additional support within the learning environment.

These suggestions emphasize the necessity for comprehensive and widespread training programs in AAC device usage. These programs should be tailored to address the specific requirements of educators, caregivers, and students, covering both practical and theoretical aspects of AAC device utilization.

Discussion

Survey results have yielded valuable information about the complexity of AAC support and training programs for special educators that reiterate or reflect foundational frameworks highlighted in the literature. The positive regard for professional support among our respondents highlights the significance of ongoing collaboration with SLPs and AAC specialists. It reflects insights provided by Burnham et al. (2023) and Bird & Kusior (2016), who stressed that strong institutional support and interdisciplinary teamwork are vital in effectively using AAC technologies throughout the whole education system beyond the classroom. They suggest that a partnership is necessary for broader integration and efficiency of AAC systems into education environments. In terms of the efficiency of professional support and training, many teachers' opinions were generally positive, indicating its significance as an essential component for successful AAC implementation. This view aligns with the literature that advocates for practical, comprehensive programs and emphasizes collaborative problem-solving techniques such as those suggested by Alexandra da Fonte et al. (2022) and Senner (2018). However, these varied ratings on the effectiveness of training suggest that as technology advances and education landscapes change, there needs to be adaptation in these training programs.

Our findings present the perceived importance of training both teachers and families in AAC practices. This means we can see how success within an AAC environment hinges on more than just one user-supporter within a broader environment for all users (Leatherman & Wegner, 2022). Teachers' high approval ratings for device customization and peer assistance highlight a key realization: personalization and communal support are increasingly vital in addressing AAC-related issues. The trend towards personalized approaches and tapping into collective wisdom in educational settings is a frequent topic in AAC literature. This indicates that effective changes in children's education systems require tailored strategies to meet diverse user needs. By tapping into the knowledge of educational communities, we can better address specific user requirements. According to Norrie et al. (2021), this method not only enables personalized support for AAC users but also empowers students with special needs to advocate for themselves.

The challenges teachers expressed and how they could be resolved regarding AAC training show that inclusive hands-on and ongoing training sessions are necessary. These insights correspond to the literature that focuses on the essentiality of mentorship programs and peer support in effective AAC implementation, thus highlighting that mentorship and peer learning are under-tapped resources in today's training models (Leatherman & Wegner, 2022). Our findings agree with the current literature about AAC support and instructions and point out areas that can be investigated further for future research.

Implications

The findings of the current study have several implications on increasing AAC instruction and support. One notable area is a change in the way AAC training programs are presented, which should be comprehensive and continuous, which entails blending theoretical knowledge and practical experience with AAC tools. This approach ensures that teachers are equipped with the skills to easily integrate AAC tools into classroom interactions. The need for inclusive training that can be tailored to fit specific educational contexts such as under-resourced or rural settings. To achieve equal access to AAC between different populations, we can develop flexible training approaches and construct custom-made support structures that target specific challenges.

Successful implementation of AAC device use cannot be achieved without interdisciplinary collaboration. This study promotes a unified approach towards the development of individual communication strategies by encouraging a collaborative environment between speech language pathologists, educators, school psychologists, and other stakeholders. Moreover, it supports policy reforms in education by advocating for policies prioritizing provision of resources and training on AAC which supports an inclusive educational environment where all students can benefit.

Families play a crucial role in ensuring the effective use of AAC strategies beyond the classroom. We advocate for workshops and home materials to promote a consistent AAC approach across school and home environments. Furthermore, establishing online resources, lending libraries for devices like iPads, PECS binders, and integrating AAC training into teacher certification programs are suggested steps to implement these recommendations. By following these suggestions, educational institutions can enhance the integration of AAC and promote inclusivity.

Practical Initiatives

We suggest four practical initiatives to further enhance the implementation of AAC devices in educational settings. First, we suggest the creation of comprehensive online resource hubs to provide educators with access to up-to-date training materials, instructional videos, and AAC strategy discussion forums. Second, we suggest the establishment of AAC device lending libraries in school districts to enable educators and families to experiment with different devices and facilitate informed selection and customization decisions. Third, we recommend implementing regular feedback sessions that include educators, families, and students, as these interactions can offer critical insights for the continuous enhancement of AAC usage and training. Additionally, fostering collaboration with AAC device manufacturers would enable access to specialized training and updates on emerging technologies... Fourth, we suggest integrating AAC training into standard teacher certification and professional development programs to ensure that educators possess the necessary skills and knowledge to enhance the effectiveness and practicality of AAC implementation in educational environments.

Conclusion

This research provided valuable insights into educator perceptions of using and integrating AAC devices in special education classrooms. Our findings highlight the critical need for comprehensive and ongoing training programs encompassing practical and

hands-on AAC experiences. We identified specific challenges and noted the importance of collaboration among special education teachers, SLPs, school psychologists, and families. We documented the critical role of educational policy in supporting AAC implementation and emphasized the need for increased funding and equitable resource allocation. This research stresses the significance of adopting a tailored approach to AAC implementation and considering the multifaceted needs of special education teachers.

Limitations

This study contributes important insights into the utilization of AAC devices in special education; however, there are some methodological limitations to mention. Due to time and resource constraints, the survey instrument was developed without being piloted. We believe that although this would have improved the accuracy of the survey, we still received useful findings. Our research team is composed of educators, licensed psychologists, school psychologists, and board-certified behavior analysts, all of whom have extensive experience with the use of AAC devices by special education students and their communication needs. Although our specialty is not limited to AAC devices only, the broad-based perspectives offered by these diverse backgrounds have contributed to our study.

We believe our participants have a professional background as special education teachers, providing them with a shared understanding of the survey. Although individuals may interpret survey questions differently, these varied interpretations illustrate professionals' differing experiences in the field which further enhances comprehension of this study's results. It should be noted that our research did not use Cronbach's Alpha to examine internal consistency between items of the survey. The absence of such data implies caution when interpreting response uniformity; nevertheless, this data can still be helpful for understanding how AAC devices are applied within educational settings. Despite certain limitations, the results contribute to the literature and understanding of AAC device use in the special education classroom.

Future Research

Further research is needed in this area to improve our understanding of AAC implementation and its long-term impacts. Key areas for future investigation should examine the long-term effects of AAC training on educators' practices and students' communication outcomes. Additionally, it is important to explore the efficacy of AAC in diverse socio-economic and cultural contexts. This exploration would provide insights into how different settings influence the implementation and success of AAC strategies, potentially leading to more tailored and inclusive approaches. Research focused in these areas can aid in developing effective AAC training and support programs that cater to diverse communities, ensuring equitable access and use of AAC technologies.

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