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REVIEW ARTICLE

Cultivating Inclusive Math Classrooms: A Reflective Journey of Teaching Students with Special Needs

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ABSTRACT

This reflective article explores the evolving journey of a mathematics teacher committed to fostering inclusive practices for students with special needs. Initially grounded in a standardized teaching model, the author's experiences with diverse learners, particularly those with dyscalculia, ADHD, and processing disorders, prompted a significant pedagogical shift toward differentiated, student-centered instruction. The paper outlines key strategies adopted over time, including Universal Design for Learning (UDL), explicit instruction, formative assessment, and mindful use of assistive technology. Emphasis is placed on building strong relationships, leveraging student strengths, and promoting a growth mindset to create a safe and empowering classroom environment. Collaborative partnerships with families and specialists, as well as ongoing reflective practice, are highlighted as essential elements in supporting student success. The narrative underscores the importance of patience, creativity, and adaptability in teaching mathematics effectively to all learners. Concluding reflections affirm the educator's dedication to equity, continuous professional growth, and the belief that every student can thrive when given appropriate support and opportunity.

Keywords*: Differential Teaching, Inclusive Education, Mathematics Instruction, Special Needs, Growth Mindset*

1. INTRODUCTION

My journey as a mathematics (or math in short) teacher, particularly in supporting students with special needs, has been one of continuous learning, deep reflection, and adaptation. Initially, I approached teaching with a standardized, curriculum-driven mindset, assuming that a "one-size-fits-all" approach would meet the needs of most learners. However, this assumption was quickly challenged as I encountered students with a wide range of learning differences, including dyscalculia, processing

disorders, and attention-deficit/hyperactivity disorder (ADHD). These early experiences revealed the limitations of a uniform method and inspired a commitment to more inclusive, responsive practices (Amjad et al., 2023; Kamarudin et al., 2022; Onyishi & Sefotho, 2021; Padmore & Ali, 2024).

One of the most transformative lessons I have acquired as a math teacher is the importance of understanding each student's unique strengths, needs, and learning profiles. While formal assessments, e.g, Test of Mathematical Abilities-3rd Edition (Brown, Cronin, & Bryant, 2012), Test of Early Mathematics Abilities-3rd Edition (Ginsburg & Baroody, 2004), and Classroom Mathematics Inventory for Grades K-6 (Guillaume, 2006), provide a useful starting point, truly understanding a student requires consistent observation, informal dialogue, and collaboration with parents, learning specialists, and classroom support staff. For example, I once taught a student who struggled significantly with number sense but exhibited excellent spatial reasoning skills. Leveraging this strength, I incorporated visual aids, such as number lines and geometric manipulatives, which helped build foundational mathematical understanding through alternative modalities (Lacaba, 2025; Boaler, 2016).

Equally critical has been my growing appreciation for the emotional and social dimensions of learning. Many students with learning difficulties face heightened anxiety, fear of failure, and decreased self-efficacy. These emotional barriers can impede academic progress even more than cognitive challenges. Therefore, I make it a priority to cultivate a safe and supportive classroom environment. I integrate strategies to promote a growth mindset, celebrate student effort, and provide consistent encouragement to empower students to take academic risks and learn from mistakes (Shulman, 1987; Dweck, 2006).

As my teaching philosophy has evolved, I have embedded several evidence-based strategies into my daily practice (see Clements et al., 2023, for details). Differentiation allows me to design tasks with varying levels of challenge, using flexible groupings and tailored materials to meet diverse needs (Kamarudin et al., 2022; Onyishi & Sefotho, 2021; Padmore & Ali, 2024)). Universal Design for Learning (UDL; Kee, Chia, & Cai, 2012) guides me in creating accessible lessons through multiple forms of representation, expression, and engagement (Rose & Meyer, 2007). I use explicit instruction to break complex tasks into manageable steps, offer clear explanations, and provide opportunities for repeated practice and feedback (Sousa, 2016; Archer & Hughes, 2011). Assistive technologies, including digital media (Chia, 2025) as well as speech-to-text software (Wei, 2024), digital manipulatives (Resnick et al., 1998), and interactive whiteboards (De Vita, Verschaffel, & Elen, 2018), enable students to overcome specific barriers. Most importantly, I rely on strong collaboration with special education teachers, school counselors, and families to develop a coordinated support network for every learner.

Witnessing the growth of my students has been the most rewarding part of this journey. Observing a child who once struggled with arithmetic develop the confidence to tackle multi-step problems reaffirms my belief that, with the right support, every student is capable of succeeding in mathematics.

2. CORE VALUES & PRINCIPLES TO GUIDE TEACHING PRACTICE

Beyond teaching strategies, my pedagogic approach is anchored in core values that shape every interaction and instructional decision I make. Chief among these is relationship-building with math teaching and learning (Mendez & van Es, 2024). Establishing strong, positive connections with students through math teaching is essential to fostering trust, engagement, and willingness to participate in math learning. Taking time to learn about student interests' personalities, and learning preferences creates a sense of belonging that encourages risk-taking in the classroom (Noddings, 2005).

Another fundamental principle is strength-based teaching in mathematics (Burt-Davies & Andersson, 2025). While addressing learning gaps is necessary, I intentionally seek and build upon each student's strengths. A student who struggles with abstract symbols, for example, may excel in hands-on or visual tasks. By recognizing and amplifying these talents, I offer students alternative pathways to

understanding key mathematical concepts (Attard & Holmes, 2022; Gardner, 2011). This approach not only builds confidence but also reinforces the idea that there are many ways to be “mathematically smart.”

Patience and perseverance are indispensable in working with students with special needs (Ebrahimzade et al., 2023). Progress is often nonlinear, and setbacks are common. Yet, I have learned that maintaining optimism, celebrating incremental growth, and staying flexible are essential for sustaining both student motivation and my own resilience. Teaching also requires a willingness to advocate on behalf of students. This includes participating actively in Individualized Education Program (IEP) meetings, working with specialists to secure accommodations, and pushing for necessary changes to ensure equity in learning opportunities (Friend & Bursuck, 2018).

Reflective practice is another cornerstone of my professional growth. I regularly gather feedback from students, colleagues, and parents and use this input to refine my methods. Staying current with research in mathematics education and special education ensures that my strategies remain relevant and effective (Özdemir & Kılıç, 2023). Finally, creativity and flexibility allow me to adapt my instruction dynamically. No single method works for every learner, so I continually experiment with innovative approaches to meet evolving student needs. Hence, my pedagogy has changed over time through my experience working with different types of early math learners (Clements et al., 2023).

Ultimately, my goal is to help all students become confident, capable mathematicians, not only by teaching content and skills but also by nurturing curiosity, resilience, and a belief in their own potential.

3. REFINING PRACTICE FOR INCLUSIVE CLASSROOMS

Over time, I have integrated additional practices that have enriched my inclusive approach. Chief among these is a commitment to meaningful collaboration. Parents are vital partners in understanding a student’s home life, emotional well-being, and long-term learning needs. Regular communication, through meetings, emails, and phone calls, helps ensure consistency across home and school environments. Similarly, collaboration with counselors, therapists, and special educators enhances the support available to each child and contributes to a shared sense of accountability (Nayyar & Kashyap, 2024).

Another important shift in my teaching has been the way I use assessment. I no longer view assessments purely as grading tools; instead, I treat them as opportunities to guide instruction. Through formative assessments such as exit tickets, quick quizzes, and student reflections, I can pinpoint misunderstandings and adjust my teaching accordingly. I also incorporate self-assessment and peer feedback to promote metacognition and student ownership of learning (Mudi, 2024; Black & Wiliam, 2009).

Differentiation in math teaching (or differentiated math teaching; see Herner-Patnode & Lee, 2021) has also expanded my pedagogic scope. I now differentiate not only the content I teach but also how students engage with it, especially those who become easily anxious when come to math learning (Klee, Buehl, & Miller, 2021) and how they demonstrate their understanding. For instance, while one student may complete a traditional written response, another may submit a video explanation or a hands-on project. These varied formats provide multiple avenues for success and reduce anxiety for students who struggle with conventional assessments (Kamarudin et al., 2022; Onyishi & Sefotho, 2021; Padmore & Ali, 2024).

Creating a growth mindset culture remains central to my inclusive classroom. I work to normalize mistakes, emphasizing that errors are part of learning (Luzano, 2024; Sapire et al., 2016). This shift is particularly important for students with special needs, who may internalize repeated academic struggles

as personal failures. By reframing challenges as opportunities for growth, I aim to build student resilience and self-worth (Fernández-Castillo et al., 2022).

Technology, when applied thoughtfully, also enhances my inclusive teaching (Gowri et al., 2016). Whether using speech-to-text tools, graphing calculators, or interactive learning platforms, I strive to ensure that technology supplements rather than substitutes strong pedagogy (Alo, 2025; Gurukkal, 2021). Finally, I make it a point to celebrate every success, whether large or small. Recognizing progress builds student confidence and reinforces a classroom climate where everyone feels valued and capable.

4. CONCLUDING REMARK

Reflecting on my journey as a mathematics teacher, I am struck by how much I have grown through my work with students with special needs. These students have taught me that effective teaching requires empathy, adaptability, and a deep commitment to equity. Each challenge I have encountered has been an opportunity to refine my approach and strengthen my resolve to create classrooms where all learners feel seen, supported, and capable.

Looking ahead, I remain committed to ongoing professional development and collaboration with colleagues, families, and specialists. As educational practices and technologies continue to evolve, so too must my methods. I plan to engage more deeply with current research, participate in professional learning communities, and seek out resources that enhance inclusive pedagogy. My focus will continue to be on student-centered learning, on designing environments where students feel empowered to explore mathematics at their own pace and in ways that reflect their individuality.

Above all, I am inspired by the belief that every student can succeed in mathematics when given the right tools, support, and encouragement. My mission is not only to teach mathematics but also to advocate for inclusive education that honors diversity, promotes equity, and fosters a lifelong love of learning. The journey is ongoing, and I am grateful for every step that brings me closer to the educator I aspire to be.

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6. COMPETING INTERESTS

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