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RESEARCH ARTICLE

MATHEMATICS TEACHERS' PERSPECTIVES ON INCLUSIVE PRACTICES FOR STUDENTS WITH SPECIAL NEEDS: INSTRUCTIONAL APPROACHES

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ABSTRACT

This study explored mathematics teachers' perspectives on inclusive practices for students with special needs, focusing on their assessment practices, instructional approaches, preparedness, perceived effectiveness, and challenges in implementing inclusive mathematics education. Specifically, it examined how teachers assess mathematical learning, adapt instructional strategies, and provide appropriate support to address the diverse needs of learners in inclusive classrooms. The study employed a qualitative descriptive research design grounded in the interpretivist perspective to understand teachers' experiences, practices, and interpretations of inclusive instruction. The findings revealed that mathematics teachers utilize differentiated and flexible instructional approaches, multiple assessment strategies, individualized accommodations, scaffolding, visual aids, guided practice, repeated exercises, and flexible pacing to facilitate mathematical understanding. However, teachers encountered challenges, including large class sizes, diverse learner needs, behavioral concerns, limited instructional time, insufficient resources, increased workload, and inadequate access to specialized personnel. Despite these challenges, teachers demonstrated adaptability through reflective practices, instructional modifications, reteaching, structured classroom routines,

and professional collaboration. Based on the findings, the study proposed the I-CARE Mathematics Instructional Framework, which integrates Inclusive Assessment, Collaborative Support, Adaptive Instruction, Responsive Engagement, and Equitable Learning. The framework aims to strengthen inclusive mathematics instruction by promoting responsive teaching, meaningful student participation, continuous assessment, and equitable learning opportunities. The study underscores the importance of sustained professional development, institutional support, and collaborative practices in creating accessible and supportive mathematics learning environments for students with special needs.

Keywords: *inclusive education, mathematics instruction, students with special needs, differentiated instruction, I-CARE mathematics instructional framework*

INTRODUCTION

Inclusive education serves as a fundamental component of international educational reform, propelled by Sustainable Development Goal 4 (SDG 4), which promotes equitable and high-quality learning opportunities for all individuals. International organizations like United Nations International Children's Emergency Fund (UNICEF) and United Nations Educational, Scientific and Cultural Organization (UNESCO) highlight the significance of inclusive systems that cater to diverse learners, including individuals with disabilities. Despite improvements in global enrollment rates, concerns persist regarding learning outcomes, particularly in fundamental areas such as reading and mathematics. According to UNESCO (2023), over 50% of school-aged children and adolescents fail to achieve minimum proficiency levels, with students with disabilities being disproportionately impacted. The persistent gaps underscore the necessity for inclusive instructional strategies that tackle both access and achievement.

Inclusive education in the United States has seen considerable progress since 2021, driven by policy reforms, technological advancements, and an increased emphasis on

educational equity. Rooted in the principles of the Individuals with Disabilities Education Act (IDEA) and Every Student Succeeds Act (ESSA), inclusive education fosters the integration of students with disabilities into general education classrooms, guaranteeing access to high-quality learning in the least restrictive environment. The worldwide focus on Sustainable Development Goal 4: Quality Education for All, has strengthened initiatives aimed at establishing inclusive learning environments. Following the COVID-19 pandemic, educational institutions swiftly embraced digital platforms, which not only enhanced instructional delivery but also prompted educators to reconsider accessibility and differentiation in virtual and hybrid environments. Despite these advancements, gaps in implementation and access remain, highlighting the necessity for ongoing investment in teacher training, resource distribution, and inclusive instructional design (Scientific and Cultural Organization [UNESCO], 2025).

Observations and experiences from mathematics teachers at Maricopa High School in Maricopa, Arizona indicate that inclusive classrooms frequently function with constrained institutional and instructional support. Educators frequently encounter challenges in modifying lesson plans and instructional strategies to accommodate the varied needs of students with disabilities. The challenges in mathematics instruction are notably significant, as students are required to understand abstract concepts and adhere to sequential procedures, abilities that may pose difficulties for learners with cognitive or processing differences.

Teachers at Maricopa High School have observed that inadequate development opportunities, restricted access to specialized resources, and limited collaboration with special education professionals impede their capacity to implement effective inclusive practices. The school is dedicated to creating equitable learning environments; however, numerous educators express feeling unprepared to adapt content or differentiate instruction effectively to fully support students with special needs. These experiences underscore the critical necessity for focused training, interdisciplinary collaboration, and strategic resource allocation to enhance inclusive education in mathematics and align with the objectives of SDG

4 or Quality Education for all.

Research indicates that although teachers often demonstrate a commitment to inclusion, they commonly lack the confidence and pedagogical resources necessary to effectively assist students with disabilities (Reyes & Santos, 2021). Barriers consist of inadequate professional development, absence of assistive technologies, and restricted collaboration with special education professionals.

Maricopa High School, situated in Maricopa, Arizona, has maintained a longstanding commitment to excellence in education and comprehensive student development for more than 65 years. Founded in 1959, the school has developed into a dynamic academic community recognized for its dedication to academic excellence, inclusive principles, and a supportive atmosphere that encourages personal development and continuous learning. Maricopa High School serves a total student population of 1,802 from grades 9 to 12, with an average class size of 26 students. This environment fosters a dynamic exploration of instructional practices tailored to support diverse learners.

This study aims to investigate mathematics teachers' perspectives on inclusive practices for students with special needs within the framework of inclusive education, in accordance with Sustainable Development Goal 4. As inclusive education emerges as a fundamental aspect of equitable learning, it is crucial to comprehend how mathematics educators modify their instructional strategies to accommodate the diverse needs of students with varying abilities. The research is conducted within an educational setting that prioritizes diversity and is committed to ensuring equitable access to high-quality education for every student.

While existing literature and policy frameworks emphasize the importance of inclusive education and highlight general strategies for supporting students with special needs, there is a notable lack of subject-specific research focusing on mathematics instruction. Most studies tend to generalize inclusive practices across various subjects or limit their focus to broad policy

directions and student performance outcomes, without delving into the daily instructional decisions and adaptations made by mathematics teachers. The specific challenges inherent to mathematics such as the need to balance conceptual understanding with procedural fluency are often overlooked, leaving a gap in understanding how inclusive strategies are actually implemented in mathematics classrooms. Furthermore, the perspectives and lived experiences of mathematics teachers, especially regarding the obstacles and supports related to inclusive education, remain underexplored in current academic discourse.

This study aims to address this gap by providing qualitative insights into how mathematics teachers interpret, adapt, and apply inclusive practices in real-world classroom settings, thereby informing both practice and policy tailored to the unique demands of mathematics education.

Examining mathematics teachers' perspectives is crucial for improving inclusive education at the classroom and systemic levels. Experiences and reflections can inform the creation of specialized professional learning programs that focus on the complexities of inclusive mathematics instruction. These insights may inform curriculum revisions to better accommodate diverse learners. Additionally, teachers' perspectives can influence policy implementation by identifying practical obstacles and opportunities for inclusive teaching. This research aligns with SDG 4, contributing to global and national initiatives aimed at providing high-quality and equitable mathematics education for all students, including those with special needs.

Theoretical Lens

This research is based on the Universal Design for Learning framework (Meyer & Rose, 2002 as cited in Center for Applied Special Technology [CAST], 2024) and the principles of Social Constructivism (Vygotsky, 1978 as cited in Singal, 2020).

Universal Design for Learning (CAST, 2024) is designed to foster inclusive and effective learning environments for all students, especially those with diverse needs. This framework is based on three fundamental principles: multiple means of representation, which involves providing diverse methods for presenting content; multiple means of action and expression, enabling learners to showcase their understanding through various formats; and multiple means of engagement, which aims to motivate students by aligning with their interests and offering suitable challenges.

Universal Design for Learning promotes the proactive design of lessons by teachers to reduce barriers and cater to diverse learning styles and abilities. This method is particularly advantageous for students with disabilities, as it enhances flexibility and accessibility in instruction and assessment. Embedding inclusive practices into the curriculum from the outset enables UDL to support equitable learning experiences that align with the objectives of SDG 4 – Quality Education.

This study is significantly informed by UDL, which provides a framework for analyzing how mathematics teachers modify instructional strategies to accommodate diverse needs. It advocates for the integration of inclusive practices within lesson design instead of treating them as supplementary accommodations. Teachers' views on differentiation, scaffolding, and assessment can be examined through UDL principles to assess the inclusivity of their methods. This theory supports the objective of SDG 4, which aims for equitable education by facilitating access and participation for all students, including individuals with special needs.

Social Constructivism, based on Lev Vygotsky's work, asserts that learning occurs through social mediation. The Zone of Proximal Development (ZPD) is a fundamental concept in this theory, representing the difference between a learner's independent capabilities and their potential achievements with assistance. The theory highlights the significance of interaction, language, and cultural context in shaping understanding, particularly through scaffolding and collaborative learning.

This theory is essential for comprehending the perceptions of mathematics teachers regarding their role in promoting inclusive learning. This emphasizes the significance of peer support, teacher scaffolding, and differentiated instruction in facilitating the understanding of mathematical concepts for students with special needs. Social constructivism emphasizes the importance of inclusive classroom dynamics, enabling diverse learners to both contribute to and gain from collective learning experiences. This study examines teacher-student interactions to reveal the enactment of inclusive practices in real-time and their role in facilitating meaningful learning.

Scope and Delimitation of the Study

The study explores the perspectives and instructional practices of mathematics teachers concerning inclusive education for students with special needs. It places particular emphasis on the challenges faced and strategies employed within the mathematics classroom, aiming to highlight the unique aspects of math instruction in inclusive settings.

This research is designed to fill a gap in subject-specific studies on inclusive education by focusing exclusively on mathematics teachers. By doing so, it seeks to provide deeper insights into how inclusivity is implemented and navigated within the context of mathematics teaching. Employing a qualitative research design, the study uses purposive sampling to select participants. Data are gathered through semi-structured interviews, classroom observations, and document analysis, enabling the collection of in-depth and nuanced insights into inclusive mathematics instruction.

Participants in the study are mathematics teachers from Maricopa High School in the Maricopa Unified School District 20, all of whom have direct experience teaching students with special needs in inclusive classroom environments during the 2025–2026 school year.

Data collection is limited to the 2025–2026 academic year, encompassing various grading periods within this timeframe. The scope of the study is confined to Maricopa High School and does not extend to other schools or districts, allowing for focused and context-

specific analysis.

Significance of the study

By examining the relationship between spatial reasoning and geometry achievement, the findings will help improve teaching strategies and learning outcomes. The results will be particularly relevant to educators, students, school administrators, and policymakers, offering a deeper understanding of how cognitive factors influence academic performance in geometry and supporting the implementation of more effective, skill-oriented instructional practices.

This study is expected to provide valuable insights and contribute significantly to various stakeholders:

Students. The findings demonstrate that inclusive instructional strategies in mathematics enhance the learning environment for students with special needs by promoting support and engagement. Understanding how teachers adapt lessons to diverse learning profiles enhances students' access to mathematical concepts and promotes increased participation. This fosters equity in academic performance and cultivates confidence and self-esteem in students.

Teachers. The study offers practical insights for mathematics teachers regarding effective inclusive practices and instructional strategies designed for students with special needs. The findings may guide the development of targeted training programs and promote collaboration among teachers for the exchange of strategies and resources.

Parents. Findings of the study aid parents in comprehending the efforts teachers undertake to address their children's distinct learning requirements, thereby promoting trust and enhancing school-home collaborations. It may also assist parents in advocating for suitable support and resources for their children. It promotes parental engagement in their child's educational process, particularly in addressing difficulties in mathematics.

School Heads. The findings provide evidence-based guidance for school leaders to enhance inclusive education policies and practices within their institutions. This identifies areas

requiring support, including teacher training, resource allocation, and classroom management, to effectively implement inclusive mathematics instruction. Administrators can utilize insights to formulate strategic interventions, oversee inclusive practices, and align school objectives with national and global educational priorities.

Future researchers. The findings offer valuable qualitative insights that can enhance future research, facilitate comparative analyses, and contribute to theory development. Researchers may expand upon these findings to investigate longitudinal effects, interdisciplinary methodologies, or assessments of policy. This study enhances the broader discourse on SDG 4 by providing localized insights specific to the Philippine context.

Definition of Terms

The following terms are defined operationally to ensure clarity and consistency in understanding key concepts used throughout the study.

Differentiated Instruction. It involves specific teaching strategies employed by mathematics teachers to adapt content, process, and product according to students' readiness levels, interests, and learning profiles in inclusive classroom settings.

Inclusive Education. Refers to the integration of students with special needs into mainstream mathematics classrooms, guaranteeing equitable access to learning opportunities, resources, and support.

Inclusive Pedagogy. It encompasses the beliefs and instructional strategies employed by mathematics teachers to foster learning environments that appreciate diversity and encourage the participation of all students, particularly those with special needs.

Instructional Strategies. The strategies employed by mathematics teachers to present content, engage students, and evaluate comprehension while addressing varied learning

requirements.

Mathematics Teachers. Licensed teachers will teach mathematics in inclusive school settings during the 2025–2026 academic year, possessing direct experience in instructing students with special needs.

Policy Environment. It comprises national and school-level policies, guidelines, and mandates that affect the implementation of inclusive practices by mathematics teachers in accordance with SDG 4.

SDG 4 – Quality Education. It is a global objective that highlights the importance of inclusive, equitable, and high-quality education for all, providing a framework for assessing inclusive practices in mathematics instruction.

Special Needs. It denotes students needing extra assistance because of physical, cognitive, emotional, or developmental difficulties that impact their mathematical learning.

Teacher Perspectives. This study examines the beliefs, attitudes, and reflections of mathematics teachers concerning their roles, responsibilities, and experiences in the implementation of inclusive practices.

LITERATURE REVIEW

This presents the review of literature and studies previously undertaken, which aids the researcher with the important information that bears significant relation to the present study.

Inclusive Education

Inclusive education is an approach that ensures all learners, regardless of ability, background, or circumstance, have equal access to quality education within mainstream

classrooms. It emphasizes removing barriers to learning by providing appropriate support, resources, and teaching strategies that meet diverse needs. Grounded in the principles of equity, participation, and respect for diversity, inclusive education fosters a learning environment where every student felt valued and empowered to succeed academically, socially, and emotionally.

Waisath et al. (2023) further this discourse by conducting a comprehensive global legal review of education that is inclusive of individuals with disabilities. Utilizing regional precedents, the report assesses legislation across 193 nations, identifying both strengths and enduring deficiencies in the assurance of inclusive education rights. Despite the broad implementation of policies, the consistency of enforcement and the availability of resources continue to exhibit significant disparities. As a result, the authors promote the establishment of strong accountability frameworks and the use of inclusive legal terminology. In conclusion, the review establishes a thorough basis for international advocacy initiatives.

Accordingly, the importance of inclusive education as a fundamental human right is emphasized in Article 24 of the United Nations Convention on the Rights of Persons with Disabilities (CRPD). Countries that have ratified this framework must ensure equitable access to high-quality education in traditional settings. It also advances the creation of an inclusive curriculum, improves teacher preparation, and promotes the ideas of reasonable accommodation. As a result, the CRPD serves as a cornerstone of international inclusive education policy. The Philippines' commitment helps to improve its conformity to global norms (McCusker et al., 2023).

Furthermore, the United Nations Educational, Scientific and Cultural Organization Framework for Disability-Inclusive Education (2021) provides comprehensive policy guidance for member states. It particularly underscores the importance of equity, participation, and accountability as foundational elements of inclusive education systems. To enhance the process of implementation, the framework promotes the congruence of national policies with

established international standards. Furthermore, it offers analytical instruments for monitoring advancement and pinpointing structural deficiencies. This document serves a crucial function in influencing the development of inclusive education reforms on a global scale.

Similarly, the United Nations International Children's Emergency Fund Summary of Article 24 (2022) articulates the Convention on the Rights of Persons with Disabilities directive on inclusive education in a manner that is comprehensible to a wider audience. It underscores the significance of fostering inclusive environments, empowering educators, and engaging families. Furthermore, the summary serves as a means of persuasion for educators, policymakers, and members of civil society. By elucidating legal responsibilities, it connects the divide between policy and implementation. Consequently, it fosters a deeper understanding and facilitates proficient execution.

Ultimately, the United Nation Sustainable Development Goal 4 (SDG 4) situates inclusive education at the core of the global development framework. The initiative encompasses a commitment to continuous education, the advancement of gender equality, and the integration of individuals with disabilities. In this endeavor, SDG 4 directs the formulation of national educational strategies and shapes the priorities for international funding. It further promotes the advancement of policy reform grounded in empirical evidence and the development of infrastructure that is inclusive in nature. Ultimately, this objective underscores the worldwide dedication to ensuring fair access to education for everyone.

In examining the national landscape, the Department of Education (2022) delineates its strategies aimed at promoting inclusion within educational institutions in the Philippines. Among its principal initiatives, it underscores the creation of Inclusive Learning Resource Centers and the enhancement of teacher capabilities. Nonetheless, enduring obstacles such as congested classrooms and restricted availability of assistive technologies continue to exist. The department underscores the significance of community engagement and the necessity of inter-

agency cooperation. These endeavors collectively illustrate the dynamic progression of inclusive education policy within the nation.

Republic Act No. 11650 (2022) stands as a pivotal legislative achievement in the establishment of inclusive education for individuals with disabilities. It is significant that it requires the establishment of Inclusive Learning Resource Centers and advocates for the integration of students into mainstream educational institutions. Moreover, the legislation emphasizes the importance of tailored assistance, professional development for educators, and collaborative initiatives among various agencies. By aligning with international frameworks such as the CRPD and SDG 4, RA 11650 fortifies the legal basis for inclusive practices. This signifies a pivotal advancement in the pursuit of comprehensive inclusion within the system.

In alignment with this, Department of Education Order No. 44, s. 2021 delineates operational guidelines for the implementation of inclusive education within the educational institution. Specifically, it delineates the responsibilities of school leaders, educators, and support personnel in cultivating inclusive settings. It further underscores the importance of tailored instructional approaches, inclusive educational frameworks, and cooperative strategic development. Furthermore, the directive advocates for the implementation of data-informed monitoring and evaluation mechanisms to uphold accountability. As a result, it converts policy into implementable strategies within educational institutions.

Moreover, RA 7277 or the Magna Carta for Disabled Persons remains a pivotal legal framework underpinning the rights of individuals with disabilities in the Philippines. Despite its earlier enactment, it continues to hold significance in the formulation of modern inclusive education policies. It is essential that access to education, employment, and social services is assured for individuals with disabilities. Consequently, the law serves as a foundational element for emerging legislative initiatives and fortifies the nation's dedication to fairness. The lasting impact underscores the imperative for ongoing legal advocacy in the realm of inclusive

education.

Perceptions of Professional Role in Inclusive Education

Mathematics teachers frequently view their responsibilities as encompassing more than mere content transmission; they strive to cultivate equitable learning spaces that accommodate the diverse needs of all students, including those with special requirements. Their convictions regarding inclusion significantly inform their instructional adaptations and interactions with a diverse array of learners, thereby impacting classroom dynamics and accessibility. Teachers who possess a robust sense of self-efficacy tend to adopt inclusive strategies with assurance and tenacity, even in the face of adversity. A considerable number perceive themselves as enablers of development, dedicated to guaranteeing that each student can interact profoundly with mathematical principles. This profound sense of purpose propels their endeavors to harmonize intellectual rigor with empathy and adaptability.

Initially, Guillemot et al. (2022) undertook a comprehensive meta-analysis that examined teachers' perspectives on inclusive education spanning the years 2000 to 2020. Their findings indicated a progressive transition towards more favorable perceptions, albeit with enduring disparities based on region and educational attainment. The research underscored the significance of educator preparation and organizational backing in cultivating inclusive perspectives. It further highlighted persistent issues regarding readiness and the management of classroom environments. These insights highlight the imperative for ongoing professional development to cultivate inclusive perspectives.

Expanding upon this worldwide viewpoint, Charitaki et al. (2024) investigated teachers' perspectives across various nations in a comparative analysis. Cultural and systemic factors were found to play a significant role in shaping perceptions and practices of inclusion. Teachers in nations characterized by strong policy frameworks and supportive systems often exhibited more positive attitudes. The research further emphasized the significance of teachers' experience and their familiarity with inclusive environments. It champions the

necessity of international collaboration to foster global equity in education by disseminating and implementing shared best practices.

In a national context, San Martin et al. (2021) investigated the attitudes, intentions, and self-efficacy of Chilean teachers concerning inclusive practices. Although numerous teachers endorsed the concept of inclusion theoretically, their assurance in executing it exhibited considerable variability. The research revealed a significant correlation between self-efficacy and the provision of training alongside institutional support. It proposed that augmenting teacher training and institutional support could facilitate a more effective implementation of inclusive practices. These findings enhance our comprehension of the ways in which individual and contextual elements influence inclusive pedagogical practices.

In a comparable manner, Lindner et al. (2023) undertook a systematic review examining the attitudes of primary school teachers regarding inclusion. While a majority of teachers expressed ideological support for inclusion, their enthusiasm was tempered by pragmatic issues, including insufficient resources and inadequate training. The analysis revealed prevalent obstacles, such as the demands of workload and the heterogeneity of the classroom environment. It advocated for specific measures to assist teachers within inclusive settings. These findings underscore the necessity for comprehensive reform to ensure the sustainability of inclusion.

In their exploration of instructional models, Chatzigeorgiadou and Barouta (2022) investigated the perspectives of early childhood teachers regarding co-teaching as a method for fostering inclusion. Both general and special teachers recognized the importance of collaboration; however, they encountered difficulties regarding role clarity and the process of shared planning. The practice of co-teaching has been recognized as advantageous for meeting a variety of needs, especially within early learning environments. The research underscored the significance of professional connections and collaborative training initiatives. It advocates for co-teaching as a legitimate framework for fostering inclusive practices.

Exploring the intricacies of psychological factors, Werner et al. (2022) examined the potential mediating role of self-efficacy in the interplay between policy knowledge, school support, and teacher attitudes. It was observed that teachers possessing a strong sense of self-efficacy were more inclined to adopt inclusive educational practices. The clarity of policy communication, coupled with robust support from the educational institution, significantly bolstered this confidence. The research underscored the psychological aspect of inclusive pedagogy. The conclusion drawn emphasizes that enhancing self-efficacy is essential for the effective execution of policy initiatives.

In a similar context, Yakut (2021) examined the self-efficacy of teachers in instructing students with learning disabilities. The research indicated that teachers possessing elevated self-efficacy demonstrated greater adaptability and effectiveness within inclusive educational environments. The interplay of training and experience profoundly shaped levels of confidence. It underscored the necessity for tailored assistance in tackling learning disabilities. These findings enhance the conversation surrounding teacher preparedness in inclusive environments.

In broadening the discourse surrounding student outcomes, Szumski et al. (2022) examined the impact of various forms of inclusion on the academic performance of students without disabilities. In contrast to prevalent misunderstandings, the research revealed that inclusive environments did not adversely affect these students and could, in fact, foster social-emotional growth. The nature of inclusion, whether partial or full, significantly influenced the resulting outcomes. The findings substantiate the notion that inclusive education yields advantages for every learner involved. It contests the belief that inclusion undermines academic excellence.

In their examination of neurodiversity, Bolourian et al. (2022) investigated the perceptions held by general education teachers regarding autism and the implementation of inclusive practices. It was discovered that strategies aimed at fostering relationships were

essential for the effective inclusion of students with autism. Teachers esteemed the importance of understanding, effective dialogue, and reliability in addressing a variety of needs. Nonetheless, deficiencies in training and comprehension of interventions tailored to autism were observed. The research promotes a more focused approach to professional development in this domain.

In further exploration of instructional differentiation, Schwab et al. (2020) presented a scale designed to evaluate personalization and differentiation across various subjects. Their research revealed that the approach to inclusive teaching differed across disciplines, with mathematics presenting specific difficulties. The scale facilitated the identification of domains in which teachers required assistance in modifying their instructional approaches. The research underscored the significance of tailored strategies pertinent to specific subjects within the realm of inclusive education. This serves as an essential instrument for assessing and enhancing pedagogical methodologies.

In the context of the Middle East, Almalky and Alwahbi (2023) explored the experiences of Saudi teachers regarding inclusive education. Although teachers largely endorsed the concept of inclusion, they encountered obstacles pertaining to resources, training, and prevailing cultural attitudes. The research underscored the significance of systemic support in influencing the experiences of teachers. It advocated for the reform of policies and a heightened investment in infrastructure that promotes inclusivity. The findings provide valuable perspectives on inclusion in culturally specific contexts.

In a concentrated examination of mathematics instruction, Özdemir and Kılıç (2023) investigated the perspectives of special education teachers regarding sustainable inclusive practices. The research indicated that employing differentiated instruction alongside visual aids proved to be effective methodologies. Teachers underscored the importance of adaptable curricula and continuous assistance. The research makes a significant contribution to the specialized domain of inclusive mathematics education. It corresponds with SDG 4 by

fostering equitable access to Science, Technology, Engineering, and Mathematics education.

In addition to this, Alnahdi et al. (2022) established a connection between teachers' inclusive methodologies and students' perceptions regarding academic, social, and emotional inclusion. The consistent application of inclusive strategies has been shown to significantly improve student well-being and engagement. The research highlighted the significance of educator conduct in fostering inclusive settings. It upholds the notion that inclusion transcends mere structure and is fundamentally rooted in relationships. These findings support comprehensive strategies for fostering inclusion.

Finally, Woodcock et al. (2022) explored the concept of teacher engagement by analyzing inclusive practices from the perspective of self-efficacy. Teachers who possess a robust sense of self-efficacy tend to demonstrate greater innovation and resilience within inclusive environments. The research interrogated conventional perspectives on inclusion, positing that they are often rooted in a compliance-oriented framework. It fostered a more enlightened and contemplative approach to education. The results substantiate the importance of professional development that fosters confidence and agency.

Instructional Strategies Shaped by Inclusive Pedagogy

Teachers employ a variety of pedagogical strategies to meet the needs of diverse learners, including differentiation, which customizes content and tasks to align with students' differing abilities and interests. Scaffolding offers a systematic framework that progressively diminishes as individuals develop autonomy, facilitating the cultivation of self-assurance and expertise. Assistive tools, including speech-to-text software, visual organizers, and adaptive devices, significantly improve accessibility and foster engagement for students with particular requirements. It is essential that a teacher's comprehension of inclusive pedagogy influences the timing and application of these strategies, thereby guaranteeing that instruction remains equitable and responsive. When teachers adopt inclusive principles, their choices demonstrate a dedication to promoting engagement and achievement for every learner.

Initially, Lindner and Schwab (2020) undertook a systematic review that underscored the significance of differentiation and individualization within the realm of inclusive education. Their findings indicated that although these strategies are frequently advocated, the manner of their implementation differs markedly across various contexts. Furthermore, they emphasized the necessity for more explicit pedagogical frameworks to adequately support a diverse range of learners. This research established a foundational framework for comprehending the ways in which instructional flexibility can improve inclusion.

Expanding upon this, Qorib (2024) examined differentiated instruction as an effective approach for addressing student diversity within inclusive and moderate educational environments. He posited that customized pedagogical strategies cultivate fair educational experiences and diminish disparities in achievement. Moreover, the research underscored the significance of educator readiness and the flexibility of the curriculum. These insights underscore the significance of differentiation within inclusive educational environments.

In a pertinent context, Alabdallat et al. (2021) examined the dynamics of collaborative teaching in Jordan, emphasizing the perspectives of both special and general education teachers. Their investigation uncovered that, although collaboration is generally regarded favorably, the presence of role ambiguity and the uneven distribution of responsibilities impede its efficacy. Furthermore, they emphasized the significance of collaborative planning and reciprocal respect. This research highlights the necessity for well-organized co-teaching frameworks within inclusive settings.

In the interim, Kurniawati (2021) conducted an analysis of inclusive strategies employed by teachers in primary schools located in rural Indonesia. In the face of constrained resources, teachers exhibited remarkable ingenuity and dedication to fostering inclusion by leveraging community involvement and tailored approaches. Nevertheless, enduring systemic challenges, including deficiencies in infrastructure and training, remained evident. This study underscores the tenacity of teachers and the significance of approaches tailored to specific

contexts.

Mendoza and Heymann (2022) undertook a systematic review to broaden the understanding of inclusive education interventions within low- and lower-middle-income countries. Their findings indicated that although policy frameworks are in place, the execution frequently suffers from inconsistencies stemming from resource limitations and insufficient teacher training. Significantly, they advocated for models that are both scalable and culturally attuned. This research enriches the international discourse surrounding fairness in educational access and opportunities.

In the realm of linguistic diversity, Tai (2022) examined translanguaging as a pedagogical approach that fosters inclusivity within English-medium science and mathematics classrooms. He discovered that permitting students to utilize various languages significantly improved their understanding and involvement. Furthermore, translanguaging cultivated a profound sense of belonging within a community of culturally diverse learners. This methodology presents a robust instrument for fostering inclusive pedagogy within multilingual environments.

Rasmitadila et al. (2021) investigated the application of brain-based learning systems within inclusive classroom settings, focusing on cognitive-oriented strategies. Teachers observed a notable enhancement in student motivation and retention when teaching strategies were congruent with inherent learning mechanisms. Nonetheless, they acknowledged the necessity for training to implement these strategies with efficacy. This research connects the fields of neuroscience and inclusive teaching methodologies.

In a similar vein, Alanazi et al. (2023) conducted an evaluation of cognitive presence strategies within the contexts of special education and autism classrooms. Their findings suggested that these strategies had a beneficial impact on both the attitudes of teachers and the results achieved by students. Furthermore, they underscored the significance of introspective pedagogy and the provision of emotional support. This study advocates for the

incorporation of cognitive structures within the realm of inclusive education.

Adu-Boateng and Goodnough (2021) undertook a qualitative case study centered on the adoption of inclusive pedagogy within the realm of science education. The educator in the research exhibited flexible methodologies and a profound dedication to fairness. Nonetheless, the significance of institutional support and professional development emerged as essential facilitators. This research elucidates the complexities and opportunities inherent in fostering inclusive pedagogical practices within Science, Technology, Engineering, and Mathematics disciplines.

In the realm of technology, Rao et al. (2021) explored the ways in which digital tools grounded in Universal Design for Learning or UDL principles facilitate the learning experiences of students with disabilities in online environments. The findings indicated that adaptable platforms and diverse multimedia resources significantly improved accessibility and engagement. Furthermore, the research underscored the importance of professional development for teachers in the realm of digital inclusion. The implications of these findings hold significant importance in the context of education following the pandemic.

In addition to this, Khasawneh and Alomyan (2023) investigated the potential of emerging technologies to facilitate inclusive learning. Their investigation underscored the possibilities inherent in AI, virtual reality, and adaptive software for the customization of educational experiences. Nonetheless, they emphasized the necessity of addressing equitable access and ethical considerations. This research indicates a progressive trajectory for inclusive education via innovative approaches.

In a continuation of the discourse, Yenduri et al. (2023) examined the evolution from assistive technologies to the metaverse within the realm of higher education. They contended that immersive environments have the potential to assist students with learning challenges by providing tailored and captivating experiences. Nevertheless, the challenges posed by infrastructure and digital literacy persist. This study unveils novel avenues for fostering

inclusive education within digital environments.

In the context of the COVID-19 pandemic, Rice (2022) examined the methods by which special education teachers employed technology to uphold inclusive practices. She observed that although numerous individuals managed to adapt effectively, inequalities in access and digital competencies significantly influenced the results. The research underscored the critical necessity of sustained support and investment in infrastructure. These insights are essential for the development of education systems that can withstand future crises.

Molina et al. (2023) compellingly demonstrated that inclusive interactive learning environments extend advantages to students who do not have special needs as well. Their research demonstrated enhancements in collaboration, empathy, and academic achievement across the entire student population. This confronts the erroneous belief that inclusion solely benefits students with disabilities. It underscores the fundamental importance of inclusive education for all individuals.

Porter et al. (2021) conducted an analysis of access and inclusion within virtual learning environments specifically tailored for students with disabilities. It was determined that meticulous design and coherent policy alignment are crucial for ensuring equitable participation. Furthermore, they emphasized the importance of adopting an inclusive approach to digital pedagogy in the aftermath of the pandemic. This research elucidates potential pathways for the advancement of online education.

Ultimately, Tohara et al. (2021) examined strategies for enhancing digital literacy among students with special educational needs. Their findings underscored the significance of scaffolded instruction and the availability of diverse content formats. Teachers observed a notable rise in student independence and involvement. This study highlights the significance of digital literacy within the framework of inclusive education.

Challenges and Support Systems in Inclusive Mathematics Instruction

Teachers frequently encounter challenges in the execution of inclusive education, stemming from inadequate training, a lack of resources, and constraints on time. Such challenges may impede their capacity to adequately respond to the varied requirements of students with special educational needs. Nonetheless, environments that foster collaboration among teachers, allowing them to exchange strategies and experiences, can greatly alleviate this challenge. Continuous professional development empowers teachers with the necessary skills and assurance to modify their instructional approaches effectively. Moreover, robust administrative backing guarantees that inclusive policies are not merely advocated but are actively implemented within the educational framework.

Kırmızıgül (2022) elucidates that mathematics teachers in Türkiye exhibit a constrained understanding of the overarching traits of individuals with special needs within the realms of both special and inclusive education. It is worth noting that the majority of teachers had not undergone practical training, which led to difficulties in meeting the varied needs of students. Moreover, the research revealed that teachers faced significant challenges in instructing numbers and operations within inclusive mathematics environments. The results highlight the necessity for focused professional development in strategies that are inclusive and specific to each subject area.

In a comparable manner, Abeykoon (2024) examines the difficulties encountered by teachers in England as they endeavor to assist children with special educational needs and disabilities. Through a qualitative examination of published articles and governmental resources, the study elucidates critical challenges including a lack of financial backing, insufficient teacher training, overcrowded classrooms, and excessive workloads. Furthermore, it underscores the necessity for more robust policy execution and enhanced support systems for teachers. This underscores the worldwide character of challenges associated with inclusion.

Similarly, Jardinez and Natividad (2024) explore the significance of incorporating learners with impairments into mainstream educational settings. Their research underscores the positive perspectives held by teachers, school leaders, and learners regarding inclusive education. Nonetheless, various obstacles impede its execution, such as insufficient professional development, inadequate facilities, fragile peer relationships, minimal parental engagement, and the lack of cohesive legislative support. The implications of these findings necessitate comprehensive reforms aimed at enhancing inclusive practices.

Meanwhile, Rakaa et al. (2025) concentrate on tailored pedagogical approaches within physical education for learners with special educational requirements. Their investigation delineates efficacious methodologies including co-teaching, peer tutoring, and the implementation of inclusive educational resources to enhance engagement and facilitate physical development. In light of these achievements, it is important to acknowledge the ongoing challenges posed by inadequate infrastructure and a lack of comprehensive teacher training. This research underscores the significance of inclusive frameworks that extend beyond traditional academic disciplines.

Furthermore, Mabanag et al. (2024) explore the correlation between teacher readiness and the obstacles encountered in inclusive educational settings. Through the examination of survey data, they delve into four fundamental domains: self-efficacy, self-help, social, and academic skills. The results indicate considerable challenges in obtaining resources, formulating personalized learning strategies, and addressing behavioral concerns. This underscores the intricacies of inclusive pedagogy and the necessity for thorough assistance.

In the realm of higher education, Dyleaiva et al. (2024) investigate the nuances of inclusive education within Japanese universities. Four principal themes are identified: conceptual challenges in inclusion practices, inconsistencies in reasonable accommodations, gaps in inclusion management, and broader barriers and opportunities. This investigation illuminates the disparity between policy and practice within higher education, underscoring

the necessity for institutional coherence.

Odeh and Lach (2024) present a detailed analysis of the obstacles and enablers in the education of children with disabilities on a global scale. Employing Bronfenbrenner's ecological framework, they delineate obstacles across various systems from challenges at the school level to constraints at the policy level. Elements such as technological advancements and proficient communication with personnel are also emphasized. This thorough perspective provides significant understanding of the intricate dynamics of inclusion across multiple layers.

In the context of the Philippines, Allam and Martin (2021) examine the difficulties encountered by special education teachers in Ilagan City. Their findings indicate that a significant number of teachers possess insufficient formal training and perceive themselves as inadequately equipped to instruct children with learning disabilities. Furthermore, educational settings are adversely affected by suboptimal learning conditions stemming from financial limitations, insufficient instructional resources, and inadequate infrastructure. This research underscores the critical necessity for investment in special education infrastructure and the professional development of teachers.

In their exploration of online education, Bachtsis et al. (2024) examine the psychological, educational, and technological challenges faced by students with special needs in the context of remote learning. The study reveals, through interviews with primary school teachers, various challenges faced by students with sensory disabilities, including adverse emotional states, difficulties in maintaining concentration, and occurrences of epileptic episodes. Furthermore, individuals with mild cognitive impairments encountered challenges when utilizing digital tools. The difficulties encountered can primarily be ascribed to insufficient infrastructure and a lack of preparedness among teachers.

Ultimately, Elsaadany (2025) explores the complexities encountered by visually impaired college students in the realm of foreign language acquisition. The research elucidates

obstacles including aphasia, discordant curriculum design, suboptimal assessment methodologies, and diminished student engagement. Teachers implemented strategies rooted in diverse cognitive frameworks to tackle these challenges; however, awareness of the program remained constrained. This study highlights the imperative for tailored and readily available language education within the realm of higher learning.

Institutional Support in the Implementation of Inclusive Education

The provision of institutional support is essential for the effective execution of inclusive education, as it supplies the necessary structural, financial, and human resources to address the varied needs of learners. Educational institutions that benefit from robust support manifested through sufficient funding, accessible facilities, comprehensive teacher training, the provision of assistive technologies, and well-defined policies are more adept at fostering inclusive learning environments. Institutional support cultivates a collaborative environment among teachers, administrators, parents, and the broader community, thereby ensuring the ongoing sustainability and enhancement of inclusive practices. In the absence of robust support, initiatives aimed at fostering inclusion frequently lack cohesion and sustainability, underscoring the critical need for a firm institutional commitment to advance equity and ensure quality education for every learner.

Vodičková et al. (2023) analyze the supportive components within inclusive mathematics education from the perspective of teachers. Their findings highlight the critical importance of collaboration, ongoing professional development, and the availability of teaching resources in fostering inclusive practices. Furthermore, the study underscores the significant influence of teachers' viewpoints and institutional support in shaping the efficacy of inclusive approaches in mathematics education. These insights underscore the imperative for thorough support to enable teachers in the realm of subject-specific inclusion.

In their exploration, Mahmood et al. (2025) delve into the roles played by teachers and administrators in promoting the inclusion of students with special needs within mainstream

high schools. Their research suggests that cooperative endeavors between instructional staff and school leadership are crucial for effective inclusion. Furthermore, the research underscores the significance of customized support approaches and ongoing communication with families. This underscores the idea that cultivating inclusion is a collective obligation among diverse educational participants.

In a related context, Khaleel et al. (2021) examine teachers' viewpoints regarding the influence of school principals in fostering inclusive educational settings. Their findings indicate that principals who actively support inclusive policies and allocate resources cultivate more positive attitudes among staff. Moreover, the research highlights the significance of leadership visibility and advocacy as essential components in fostering an inclusive school culture. The findings highlight the essential function of school leadership in promoting inclusive practices.

Redirecting attention to the convergence of technology and inclusivity, Ari et al. (2022) explore the relationship between sustainable management and stakeholder involvement in promoting inclusive education during the era of digital transformation. The study highlights that attaining digital inclusion necessitates the formulation of coordinated policies, significant investment in infrastructure, and the active participation of various stakeholders. Furthermore, it emphasizes the significance of ethical and equitable digital practices to guarantee that all learners receive adequate support. This research adeptly connects the realms of innovation and inclusive education.

In the ongoing examination of stakeholder perspectives, Ketheeswaran (2025) delves into the evolution of attitudes regarding inclusive education practices among diverse stakeholders. Although numerous individuals demonstrate positive perspectives and participate in productive methodologies concerning the dissemination of information and student engagement, the research additionally uncovers adverse attitudes towards personalized education initiatives and the development of inclusive policies. Furthermore, a

variety of perspectives arise regarding the tangible execution of inclusive education. The results underscore the intricate nature and diversity inherent in stakeholder engagement.

Expanding upon this notion, Nigam and Kumar (2023) highlight the essential function of responsible stakeholders in achieving meaningful inclusion. Their research demonstrates that the active engagement of teachers, parents, policymakers, and community members is essential for the ongoing success of inclusive initiatives. Moreover, they contend that accountability among stakeholders and a collective vision are essential for achieving inclusive success. This study enhances prior research by underscoring the collective essence of inclusive education.

Focusing on a particular demographic, Alsalem and Alzahrani (2023) undertake a thorough examination of the institutional practices that aid deaf and hard of hearing (DHH) students in Saudi Arabia. Their findings underscore the significance of cultivating appropriate educational settings, which encompass extensive support services, tailored programs, and engaged parental participation. Furthermore, the research highlights the significance of inclusive legislation and proactive policies. These insights enhance our comprehension of inclusion for learners with sensory impairments.

Desombre et al. (2021) explore the influence of social support on teachers' perspectives regarding inclusive education, particularly in the realm of psychological support. Their preliminary investigation conducted in France substantiates a positive correlation between perceived support and favorable teacher attitudes. Following this, an experimental study with 314 teachers reveals that accentuating the presence of support markedly enhances attitudes in contrast to underscoring a deficiency of support or providing no context at all. The results underscore the significance of emotional, informational, and instrumental support from peers and supervisors in fostering inclusive perspectives.

Ultimately, Donath et al. (2023) offer an extensive meta-analysis that investigates the impacts of inclusive education training. Through a comprehensive analysis of 342 studies

involving nearly 155,000 participants, the findings reveal significant enhancements in teachers' knowledge moderate improvements in skills, minimal changes in beliefs, and small-to-moderate effects on student behavior. Moreover, they ascertain that extended, practically applicable training incorporating active learning elements produces the most favorable results. This research presents compelling evidence regarding the significance of ongoing professional development in the realm of inclusive education.

Impact of Educational Policies on Inclusive Teaching

National mandates and school-level policies significantly influence teachers' ability to adopt inclusive strategies. When policies are articulated with clarity and applied consistently, teachers possess greater confidence and are better prepared to modify their practices. Nonetheless, numerous teachers recognize a disparity between the expectations set forth by policy and the actual conditions within their classrooms, particularly in the absence of adequate resources and support. Administrative support has the potential to close this divide by converting directives into practical recommendations and supplying essential resources. The effectiveness of inclusive education is fundamentally contingent upon the congruence between policy frameworks and the practical challenges encountered by teachers in their daily endeavors.

Department of Education Order No. 72 articulates that inclusive education embodies a philosophy advocating for the acceptance of all children, irrespective of their race, size, shape, color, ability, or disability. This methodology underscores the significance of fostering support from educational personnel, students, guardians, and the broader community. The 2013 Enhanced Basic Education Act encompasses stipulations aimed at diverse target groups within the realm of inclusive education. This includes provisions for gifted and talented children, learners with disabilities, those engaged in the madrasa curriculum, indigenous peoples, and learners confronting challenging circumstances such as geographical isolation, chronic illness, abuse, or displacement resulting from armed conflict, urban resettlement, or

disaster (Cabanero, 2023).

Khumalo and Mosia (2023) evaluate the extent to which teachers are equipped to embrace and execute the Language in Education Policy or LIEP, as well as the modifications they have made to their methodologies in order to conform to the objectives set forth by the policy. Data were collected through individual, semi-structured interviews conducted with a deliberately chosen group of eight primary school teachers. The analysis of the data was conducted using thematic analysis. The findings indicate that teachers lack awareness of the LIEP, and they have not been adequately informed or trained regarding the implications of the policy on their pedagogical approaches. Furthermore, the availability of teaching and learning resources that cater to diverse learners continues to pose a challenge to the comprehensive execution of the policy.

The study conducted by Bjerke et al. (2024) reveals that professional accountability was more significant in the narratives than performative accountability. This observation underscores the necessity to explore performative accountability within its national and local frameworks, particularly in the contexts of schools and classrooms. To comprehend these contextual variances, it is essential to incorporate a dimension of knowledge, as the information that the participants utilize evidently influences the way concepts of both inclusion and performance are realized.

Brussino (2021) highlights the significance of comprehensive policy frameworks and teacher preparation initiatives in enhancing the capacity for inclusive pedagogy within varied educational settings. The report delineates strategies including the integration of inclusive pedagogy within initial teacher education and the provision of continuous professional development to guarantee preparedness.

Simultaneously, Zakiah et al. (2021) investigate the implementation of inclusive educational policies at the elementary level in Indonesia, uncovering discrepancies between the intended objectives of the policies and their actual application in the classroom. Their

research elucidates obstacles such as insufficient teacher training and resource limitations, which impede the efficacy of inclusion efforts. Both works collectively emphasize the necessity for well-structured policies, robust institutional backing, and ongoing investment in the professional growth of teachers to achieve the objectives of inclusive education.

RESEARCH QUESTIONS

The study, Mathematics Teachers' Perspectives on Inclusive Practices for Students with Special Needs: An Instructional Approaches, aims to explore the perspectives of mathematics teachers on inclusive practices for students with special needs.

Specifically, it seeks to answer the following questions:

Central Questions:

1. How do you assess the mathematical learning of students with special needs?
2. What instructional approaches do you use when teaching mathematics to students with special needs?

Corollary Questions:

- What are the perspectives of mathematics teachers on the implementation of inclusive practices for students with special needs?
- What are the perspectives of mathematics teachers on their preparedness, the effectiveness of inclusive practices, and the challenges they encounter in teaching students with special needs?
- Based on the findings of the study, what inclusive mathematics instructional

framework may be proposed to enhance the teaching and learning of students with special needs?

METHODOLOGY

This presents a clear description of the research method and technique used including research design, data generation, selection of co-participants or co-researchers, thematic reflections, literature comparison, and ethical considerations.

Research Design

This study employs a qualitative descriptive research design. This methodology seeks to explore and understand the interpretations individuals or collectives assign to societal or human issues. Unlike quantitative research, which focuses on numerical data and statistical analysis, qualitative descriptive research emphasizes understanding complex social realities through direct engagement with participants and their lived contexts.

The qualitative descriptive approach is grounded in interpretivism, which posits that reality is socially constructed and best understood through the subjective experiences of individuals. According to Aspers and Corte (2021), qualitative research is distinct for its ability to illuminate the subtle complexities and layers of meaning inherent in social life. This approach is especially valuable when exploring phenomena that are multifaceted or deeply contextual such as inclusive education practices which cannot be adequately captured by numerical data alone.

One of the primary strengths of this approach is its flexibility and responsiveness to emerging insights during the research process. The researcher can adapt interview questions, observation protocols, or document selection based on initial findings, ensuring that the data collected remain relevant and comprehensive. Additionally, qualitative descriptive research provides a platform for participant voices, making it possible to capture diverse, contextually

grounded information that may inform policy, practice, and further research.

Consequently, the researcher deduced that this method is the most suitable for the inquiry, which aims to explore mathematics teachers' perspectives and practices in inclusive classrooms. Inclusive education is inherently complex, shaped by individual teacher attitudes, school policies, classroom dynamics, and the diverse needs of students. A qualitative descriptive design enables the researcher to delve into these intricacies, uncovering not only what practices are used but also why and how teachers implement them, and what meanings they ascribe to their experiences. This research method not only offers the investigator a thorough understanding of the circumstances but also proves invaluable in collecting diverse information pertinent to the issues at hand.

Data Generation

A formal letter of permission to conduct study will be sent to school principal of Maricopa High School. The school principal will endorse this letter to relevant authorities in Maricopa Unified School District 20 in Maricopa, Arizona. The request letter will encompass copies of the study instruments, university approval, ethical clearance, consent forms, data handling rules addressing security, storage, and destruction, and authorization for recording interviews if required.

The researcher will notify the participants and obtain their informed permission after securing their acceptance. The structured instrument includes in-depth interviews, focus group discussions, participant observation, and document analysis. These methods allow researchers to explore meanings, emotions, and social dynamics in detail.

Interviews and discussions are generally audio-recorded and transcribed verbatim to maintain the precision and authenticity of participants' responses. This methodology enables the researcher to maintain the precise language, tone, and phrasing employed by participants, which is crucial for capturing subtle meanings and executing comprehensive thematic analysis. Alongside audio recordings, the researcher will meticulously compile field notes

during or shortly after each session to capture non-verbal cues, including facial expressions, gestures, pauses, and emotional reactions, which may yield profound insights into the participants' experiences.

Reflective memos are consistently kept during the data collection process to document the researcher's insights, developing patterns, and contextual elements that could affect interpretation. Collectively, these instruments augment the data set by integrating verbal content with behavioral and environmental context, thus deepening the richness and reliability of the qualitative analysis.

The researcher categorizes the responses to facilitate efficient analysis once the respondents complete the questionnaire. Protocols shall be implemented to ensure the confidentiality and security of data throughout the processes of collection, storage, and disposal.

Selection of Co-participants or Co-researchers

The co-participants of this investigation comprise five mathematics teachers from Maricopa High School, Maricopa Unified School District 20, who are presently engaged in classroom teaching activities. These teachers constitute an important group within the educational setting because they are responsible for delivering mathematics instruction while addressing the diverse learning needs of students in inclusive classrooms. Their professional experiences, instructional practices, and perspectives provide valuable information for understanding how inclusive approaches are implemented in mathematics education. By focusing on this specific population, the study seeks to obtain authentic and contextually grounded perspectives regarding the implementation of inclusive instructional practices for students with special needs.

To ensure the relevance and depth of the information gathered, the study utilizes purposive sampling in selecting the co-participants. This non-probability sampling technique allows the researcher to deliberately select individuals who possess characteristics and

experiences relevant to the objectives of the investigation. In this study, participants are selected based on their direct involvement in teaching mathematics to students with special needs in inclusive classroom settings. The purposive approach ensures that the information obtained is closely connected to the phenomenon under investigation and comes from teachers who have actual experience implementing inclusive instructional practices.

The study will include five mathematics teachers who are currently employed at Maricopa High School, Maricopa Unified School District 20, during the 2025–2026 academic year. To qualify for participation, teachers must be actively engaged in classroom teaching and must have at least two years of mathematics teaching experience. They must also have at least one year of direct experience teaching students with special educational needs in an inclusive classroom setting. This criterion ensures that participants have sufficient experience to provide meaningful perspectives regarding inclusive mathematics instruction. In addition, participants must be willing and able to participate in the identified data-gathering procedures, specifically semi-structured interviews, classroom observations, and the provision of relevant instructional or classroom documents, when applicable. Participants should also demonstrate experience or involvement in inclusive education practices, such as the use of differentiated instruction, accommodations, collaborative learning, or other strategies intended to support students with special needs.

Teachers who are not currently employed at Maricopa High School or who are not part of Maricopa Unified School District 20 will be excluded from the study because their experiences may not correspond to the specific context of the investigation. Educators whose primary teaching assignment is not mathematics will likewise be excluded to maintain the subject-specific focus of the study. Teachers with less than two years of mathematics teaching experience will not be eligible to participate. Likewise, teachers who have no direct experience teaching students with special needs in an inclusive classroom will be excluded because they may not have sufficient firsthand experience relevant to the research questions. Individuals serving primarily in administrative, non-teaching, or support roles will also be excluded.

Finally, teachers who are unwilling or unable to participate in the required semi-structured interviews, classroom observations, and relevant document provision will not be included to ensure the completeness and consistency of the data.

Mathematics teachers are deliberately selected as participants because of their direct knowledge of the instructional demands associated with teaching mathematics to learners with diverse abilities. Mathematics often involves abstract concepts, reasoning, problem-solving, and procedural skills that may require teachers to adapt their instructional approaches according to individual learning needs. Consequently, mathematics teachers are well positioned to describe how inclusive education principles are translated into actual classroom practices. Their perspectives can provide valuable insights into the instructional adjustments, accommodations, classroom strategies, and resources used to support students with special needs.

Moreover, the study recognizes the important role of mathematics teachers in creating equitable and supportive learning environments. Their use of strategies such as differentiated instruction, appropriate instructional materials, assistive technologies, classroom participation strategies, and collaborative learning may help address the varied needs of students in inclusive settings. Through semi-structured interviews, classroom observations, and document analysis, the study aims to develop a comprehensive description of the inclusive instructional practices used by mathematics teachers, as well as the challenges and supports associated with their implementation. The resulting findings may serve as a basis for developing an Inclusive Mathematics Instructional Framework that can support teachers and schools in strengthening inclusive mathematics education.

Thematic Reflections

The qualitative data from the study will undergo thematic analysis, which functioned as the primary method for interpretation owing to its adaptability and thoroughness in

addressing qualitative data. This methodical approach allows the researcher to transcend superficial descriptions and reveal the deeper meanings, values, and patterns inherent in the narratives of participants. The study seeks to develop a nuanced and contextual understanding of the lived experiences and perceptions associated with inclusive education by systematically identifying recurring ideas and organizing them into coherent themes. Thematic analysis proves to be exceptionally appropriate for this study, as it facilitated both inductive insights and coherence with established research inquiries.

The researcher will utilize Boyatzis' thematic reflections. It refers to the process of identifying and analyzing recurring patterns or themes within qualitative data, typically in the context of research. This approach involves reflecting on the meanings behind the patterns observed, considering how these themes relate to the research questions, and interpreting them within the broader context of the study. By using thematic reflections, researchers can gain deeper insights into participants' experiences and perspectives, which helps in forming meaningful conclusions and recommendations.

The preliminary stage will entail a thorough examination of the transcripts, during which the researcher meticulously reads and re-reads the data to cultivate an intimate understanding and discern intricate subtleties in language, tone, and emphasis. This iterative process proves crucial for cultivating a comprehensive understanding of the participants' perspectives and emotional nuances. Consideration will be given not merely to the content of the discourse but also to the manner of its articulation, encompassing pauses, emphases, and contextual indicators observed throughout the data collection process. This thorough engagement establishes a robust and genuine interpretation of the data, guaranteeing that the perspectives of the participants will be maintained and honored throughout the analytical process.

Upon familiarization, initial codes will be developed to underscore significant phrases, concepts, and expressions that encapsulated the essence of participants' experiences. The

codes functions as analytical markers that categorized analogous concepts and enabled the systematic arrangement of data into coherent clusters. The coding process will be characterized by a dual approach, both descriptive and interpretive, enabling the researcher to discern patterns that will not be readily apparent. The initial codes will undergo a thorough review and refinement process to guarantee both consistency and relevance, ultimately establishing the foundational elements for more expansive thematic categories.

Upon the establishment of the codes, they will be systematically arranged into broad themes that correspond with the fundamental questions and theoretical framework of the study. Prominent patterns will be identified within the data set including themes related to barriers to inclusion, teacher preparedness, and institutional support. Every theme will be meticulously crafted to embody various facets of the participants' experiences, guaranteeing that the intricacy of the data was preserved. The thematic framework offers a distinct perspective for interpreting and engaging with the findings in conjunction with the existing body of literature.

Ultimately, the themes will undergo a thorough analysis and refinement process to guarantee that they will faithfully reflect the data and provide significant insights aligned with the research objectives. This entails a meticulous examination of themes in relation to the raw data, actively pursuing disconfirming evidence, and assessing the coherence among various participant responses. The refinement process elevates the analytical precision of the study, guaranteeing that the final themes will be firmly rooted in the data while also possessing both theoretical and practical significance. This reflective and iterative methodology will reveal the varied viewpoints and obstacles faced in the execution of inclusive education.

Data Analysis

Analysis of the participants’ responses revealed that mathematics teachers assess and support the mathematical learning of students with special needs through differentiated instruction, flexible assessment, continuous monitoring, and collaborative support. Teachers

commonly modify lessons by breaking down complex mathematical concepts into manageable steps, utilizing visual representations, scaffolding techniques, guided practice, repetition, and varied assessment methods such as observations, quizzes, classwork, exit tickets, bellwork activities, retakes, and performance-based tasks. These practices allow teachers to identify learners' strengths, determine learning gaps, monitor progress, and provide multiple opportunities for students to demonstrate their mathematical understanding. Participants emphasized that no single instructional approach is universally effective for all learners. Consequently, they combine visual, verbal, hands-on, collaborative, and individualized instructional strategies to address the diverse learning needs of students with special needs. Teachers further highlighted that differentiated instruction, tiered activities, peer-assisted learning, guided notes, and repeated practice contribute positively to improving learners' confidence, engagement, participation, and overall mathematical achievement.

The findings further revealed that mathematics teachers perceive inclusive practices as fundamental in creating equitable learning opportunities for students with special needs. Participants indicated that accommodations, modifications, flexible instructional approaches, and differentiated assessments promote meaningful participation, fairness, accessibility, and academic success in mathematics classrooms. Teachers observed that students become more engaged, motivated, and confident when instruction is adjusted to align with their individual learning profiles and when adequate support is provided within an inclusive environment. However, participants also identified several challenges associated with implementing inclusive mathematics instruction, including large class sizes, varied learner abilities, learning gaps, limited instructional resources, insufficient planning time, and difficulties balancing individualized support with whole-class instruction. To address these challenges, teachers relied on collaborative relationships with SPED teachers, parents, counselors, administrators, and other educational support personnel. Overall, the data suggest that effective inclusive mathematics instruction requires flexibility, patience, continuous assessment, differentiated teaching practices, and strong collaborative support systems to ensure that students with

special needs are actively engaged and successful in mathematics learning.

The analysis further revealed five overarching findings. First, teachers emphasized the importance of collaborative support, recognizing that partnerships with SPED teachers, parents, counselors, and other stakeholders enhance instructional effectiveness and provide coordinated assistance for learners with special needs. Second, teachers demonstrated preparedness in assessment and differentiated instruction by using diverse assessment measures and adapting instructional strategies according to students' abilities, learning styles, and support requirements. Third, participants highlighted a strong commitment to equity, accessibility, and continuous assessment, ensuring that learners receive appropriate accommodations, modifications, and opportunities to demonstrate understanding through varied assessment formats. Fourth, teachers reported persistent challenges in managing inclusive mathematics classrooms, particularly in addressing learner diversity, maintaining engagement, balancing instructional demands, and overcoming limitations related to time, resources, and specialized support. Finally, the findings showed that teachers engage in adaptive professional practices and continuous improvement through reflection, instructional adjustments, collaboration, and ongoing efforts to enhance inclusive mathematics instruction. These findings collectively informed the development of the I-CARE Mathematics Instructional Framework, which integrates Inclusive Assessment, Collaborative Support, Adaptive Instruction, Responsive Engagement, and Equitable Learning as key components for strengthening inclusive mathematics teaching and learning for students with special needs.

Literature Comparison

The study on Mathematics Teachers' Perspectives on Inclusive Practices for Students with Special Needs: An Instructional Approaches contributes significantly to the growing body of knowledge regarding inclusive education practices, specifically in the context of mathematics teaching. While much of the existing literature focuses on general inclusive strategies across subjects, this study narrows its scope to explore how mathematics teachers

perceive and implement inclusive practices for students with special needs in a specialized setting. Previous research has highlighted various instructional approaches, such as differentiated instruction and universal design for learning (UDL) but has not sufficiently addressed the challenges and perceptions of mathematics teachers, particularly in how they modify their teaching strategies to accommodate the diverse needs of students with special needs. By specifically focusing on the perspectives of mathematics teachers, this study fills a critical gap in understanding how subject-specific adjustments in instruction can support inclusivity, offering a more nuanced view of inclusion within the mathematics discipline.

Moreover, this qualitative study is positioned to extend the literature by providing in-depth insights into the practical realities faced by teachers in inclusive classrooms. While other studies have examined the broader educational implications of inclusive practices, there is limited research focusing on the specific challenges and adaptations required in the mathematics domain. By gathering firsthand perspectives from teachers, this research adds qualitative depth to the ongoing discourse about inclusive education, providing actionable data that can inform both policy and practice. The study not only contributes to academic knowledge but also offers valuable recommendations for teacher professional development and curriculum design, thereby enhancing the inclusivity of mathematics instruction for students with special needs.

Building upon existing research, the study contributes to the growing body of literature on inclusive education, particularly within the mathematics discipline. For instance, a study by Baog et al. (2024) examined the challenges and strategies employed by mathematics teachers in teaching students with special needs in the Davao region, Philippines. Their findings highlighted issues such as inadequate training, short retention spans among students, and a lack of educational resources. The study identified effective strategies like differentiated instruction, collaboration with co-educators, and the use of manipulatives and ICT to address these challenges. Similarly, a concept paper by Opoku et al. (2025) discussed inclusive teaching practices in mathematics education, emphasizing the importance of differentiated

instruction, technology integration, and co-teaching. Both studies underscore the necessity for continuous professional development for teachers and the adoption of flexible curricula to meet diverse student needs.

By focusing specifically on mathematics teachers' perspectives, this study adds depth to the understanding of how subject-specific adaptations in instruction can support inclusivity. While previous research has explored general inclusive strategies, there is limited focus on the unique challenges and perceptions of mathematics teachers. This study aims to fill that gap by providing insights into how mathematics teachers perceive and implement inclusive practices for students with special needs, thereby informing both policy and practice in the field of inclusive education.

Data Analysis

Analysis of the participants' responses revealed that mathematics teachers assess and support the mathematical learning of students with special needs through differentiated instruction, flexible assessment, continuous monitoring, and collaborative support. Teachers commonly modify lessons by breaking down complex concepts into manageable steps, using visual aids, scaffolding, guided practice, repetition, and varied assessment methods such as observations, quizzes, classwork, exit tickets, bellwork, retakes, and performance tasks. These strategies help identify students' strengths, learning gaps, and progress while providing multiple opportunities to demonstrate understanding. Participants emphasized that no single instructional approach works for all learners; therefore, they combine visual, verbal, hands-on, collaborative, and individualized strategies to address diverse learning needs. Teachers also highlighted the effectiveness of differentiated instruction, tiered activities, peer support, guided notes, and repeated practice in improving students' confidence, engagement, and mathematical understanding.

The findings further revealed that teachers view inclusive practices as essential in providing equitable learning opportunities for students with special needs. Participants

believed that accommodations, modifications, flexible instruction, and differentiated assessments promote meaningful participation, fairness, and academic success in mathematics. They observed that students become more engaged and confident when instruction is adjusted to their individual needs and when they are given sufficient support and opportunities to learn alongside their peers. However, teachers also identified significant challenges, including large class sizes, diverse learning abilities, limited instructional resources, insufficient planning time, learning gaps, and the difficulty of balancing individualized support with whole-class instruction. To address these challenges, they relied on collaboration with SPED teachers, parents, counselors, administrators, and other support personnel. Overall, the data suggest that effective inclusive mathematics instruction requires flexibility, patience, continuous assessment, differentiated teaching practices, and strong collaborative support systems to ensure that students with special needs can actively participate and succeed in mathematics learning.

Ethical Considerations

The researcher will adhere to the regulations established by the Department of Education (DepEd), as detailed in Regional Memorandum No. 228, s. 2020. These guidelines emphasize the significance of ethics in research involving both researchers and participants.

The ethical dimensions are crucial for upholding the integrity and credibility of this study, especially given the involvement of minors. Before the commencement of data collection, informed consent is obtained from both students and their parents or legal guardians, ensuring that participation is voluntary and based on a thorough comprehension of the study's aims, methodologies, and possible risks. Participants are informed that they possess the right to withdraw at any moment without facing any repercussions, and that there is no application of coercion or undue influence involved. The study complies with the ethical standards set forth by the Department of Education and relevant institutional review boards, ensuring the protection of the rights and welfare of child participants.

The principles of confidentiality and anonymity are upheld with the utmost diligence. Student responses are anonymized, and all data is securely stored to guarantee the protection of privacy. Reports and publications refrain from revealing any personally identifiable information. Survey instruments are thoughtfully constructed to ensure they are suitable for various age groups, non-intrusive, and carefully designed to reduce any potential distress or discomfort. In instances where delicate matters such as bullying or emotional distress are brought to attention, referrals are appropriately directed to school counselors or pertinent support services, thereby ensuring that the well-being of students remains paramount.

The study underscores the significance of cultural awareness and inclusiveness. The investigator is equipped to recognize the varied backgrounds of participants and to guarantee that data collection techniques and language are free from bias or discrimination. Engagement with teachers and community stakeholders is woven into the study to guarantee its alignment with the values and norms of the school community. The research framework prioritizes transparency, respect, and the protection of vulnerable populations, thereby maintaining the utmost ethical standards throughout its execution.

FINDINGS

Based on the analysis and interpretation of the participants' responses, the following findings were established:

1. The findings revealed that mathematics teachers consider collaboration an essential component of inclusive education. Teachers work closely with SPED teachers, parents, counselors, instructional coaches, and other support personnel to address the academic, behavioral, and socio-emotional needs of students with special needs. Through continuous communication, shared planning, consultation, monitoring of learner progress, and the implementation of accommodations and modifications, collaborative partnerships strengthen instructional effectiveness and provide coordinated support that promotes

student success in mathematics.

2. The findings revealed that mathematics teachers demonstrate preparedness in implementing inclusive practices through the use of varied assessment methods and differentiated instructional approaches. Teachers employ formative and summative assessments, observations, performance-based tasks, projects, class activities, and authentic assessments to measure mathematical understanding. Simultaneously, they adapt instruction through scaffolding, task modification, individualized assistance, flexible pacing, reteaching, intervention, and enrichment activities to address the diverse learning needs, abilities, and learning styles of students with special needs.

3. The findings showed that teachers promote equitable learning by providing appropriate accommodations, modifications, and alternative methods for students to demonstrate mathematical understanding. These include extended time, alternative assessment formats, guided support, modified tasks, small-group instruction, repeated practice, and opportunities for reassessment. Furthermore, teachers view assessment as a continuous and responsive process that enables them to identify learning gaps, monitor progress, adjust instruction, and provide targeted interventions that support meaningful mathematical learning outcomes.

4. The findings revealed that teachers encounter significant challenges in implementing inclusive mathematics practices. Managing diverse learner needs, maintaining student engagement, addressing behavioral concerns, and balancing individualized support with whole-class instruction become increasingly difficult in large and heterogeneous classrooms. Moreover, limited planning time, insufficient instructional resources, heavy workloads, and inadequate access to specialized personnel further constrain teachers' ability to consistently implement differentiated and individualized instruction.

5. The findings revealed that mathematics teachers respond to inclusive education challenges through reflective practice, instructional adaptation, professional collaboration, structured

routines, reteaching, and continuous improvement efforts. These adaptive practices informed the development of the I-CARE Mathematics Instructional Framework, which integrates Inclusive Assessment, Collaborative Support, Adaptive Instruction, Responsive Engagement, and Equitable Learning. The framework serves as a comprehensive guide for enhancing inclusive mathematics instruction by promoting continuous assessment, collaborative partnerships, responsive teaching practices, active learner engagement, and equitable access to learning opportunities for students with special needs

CONCLUSIONS

Based on the findings, the following conclusions were drawn:

- Mathematics teachers view inclusive practices as essential in supporting the participation and success of students with special needs. They recognize that effective inclusion requires collaborative efforts among teachers, SPED specialists, parents, and other stakeholders to ensure that learners receive appropriate academic and social support within mathematics classrooms.

- Teachers demonstrate preparedness and instructional adaptability in implementing inclusive mathematics education. They employ diverse assessment methods, differentiated instructional strategies, accommodations, modifications, and alternative learning activities that enable students with special needs to access mathematical concepts according to their individual abilities, needs, and learning styles.

- Assessment and instruction are interconnected processes in inclusive mathematics classrooms. Teachers utilize continuous and varied assessment practices to monitor learner progress, identify misconceptions, guide instructional decisions, and provide targeted interventions that support meaningful mathematical learning.

- Despite positive perspectives toward inclusion, mathematics teachers encounter

substantial challenges in implementing inclusive practices. Large class sizes, diverse learner needs, behavioral concerns, limited instructional time, insufficient resources, and inadequate access to specialized support personnel affect the consistent delivery of individualized and differentiated instruction.

- The proposed I-CARE Mathematics Instructional Framework serves as a comprehensive model for strengthening inclusive mathematics instruction. By integrating Inclusive Assessment, Collaborative Support, Adaptive Instruction, Responsive Engagement, and Equitable Learning, the framework provides a systematic approach for enhancing teacher practices, improving student participation and achievement, and promoting continuous instructional improvement for students with special needs.

- Mathematics practices for students with special needs.

RECOMMENDATIONS

Based on the conclusions, the following recommendations were proposed:

- Mathematics teachers should consistently implement differentiated and flexible instructional strategies that respond to the diverse mathematical abilities and learning needs of students with special needs. Teachers should provide individualized accommodations, use multiple representations of mathematical concepts, adjust instructional pacing when necessary, and incorporate regular reteaching and guided practice. They should also use ongoing assessment data to evaluate the effectiveness of instructional strategies and make necessary modifications to improve student participation and learning outcomes.

- Mathematics teachers and support personnel should establish regular collaborative practices to address students' academic and behavioral needs effectively. SPED teachers, counselors, instructional coaches, and resource teachers should engage in scheduled

consultations, joint lesson planning, progress monitoring, and strategy-sharing sessions to ensure that appropriate accommodations and interventions are consistently implemented across learning environments.

- School administrators should provide structured support for inclusive mathematics instruction. This includes allocating time for collaborative planning, ensuring access to adapted instructional materials and assessment tools, and facilitating teacher access to SPED specialists and other support professionals. Administrators should also review workload and class-size considerations that may affect teachers' ability to implement inclusive practices effectively.

- Professional development programs should prioritize practical training in inclusive mathematics education. Training initiatives should focus on differentiated instruction, inclusive assessment practices, scaffolding techniques, behavior management, classroom accommodations, assistive technologies, and evidence-based strategies for teaching diverse learners. Workshops should emphasize classroom application through demonstrations, coaching, and collaborative learning activities.

- Parents and guardians should actively participate in supporting mathematics learning at home. Schools should strengthen home-school partnerships through regular communication regarding students' progress, learning goals, accommodations, and intervention plans. Parents should be provided with practical strategies and resources that can reinforce mathematical skills and positive learning behaviors outside the classroom.

- School leaders and education policymakers should strengthen institutional support for inclusive mathematics education. Resources should be allocated for instructional materials, assistive technologies, teacher training, and specialized personnel. Policies should also promote collaborative teaching practices and establish systems that support the sustained implementation of inclusive education programs.

- The proposed I-CARE Mathematics Instructional Framework should be pilot-tested in inclusive mathematics classrooms. Schools implementing the framework should assess students' learning profiles, establish collaborative support structures, apply differentiated instructional strategies, strengthen classroom engagement practices, and provide equitable assessment opportunities. Regular monitoring and evaluation should be conducted to identify strengths, challenges, and areas for improvement during implementation.

- Future researchers should investigate the effectiveness of the I-CARE Mathematics Instructional Framework in different educational contexts. Studies may evaluate its impact on mathematical achievement, engagement, participation, self-confidence, and inclusion of students with special needs across grade levels and school settings. Researchers are also encouraged to utilize mixed-methods, longitudinal, and intervention-based research designs to generate stronger evidence regarding the framework's effectiveness and sustainability.

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