

# Engaging Students to Develop Mathematical Education in the Inclusive Classroom

OPEN ACCESS

Volume: 11

Special Issue: 1

Month: November

Year: 2023

E-ISSN: 2582-0397

P-ISSN: 2321-788X

Received: 27.10.23

Accepted: 19.11.23

Published: 20.11.23

Citation:

Gowrishankar, M., and J. Johnsi Priya. "Engaging Students to Develop Mathematical Education in the Inclusive Classroom." *Shanlax International Journal of Arts, Science and Humanities*, vol. 11, no. S1, 2023, pp. 76–81.

DOI:

<https://doi.org/10.34293/sijash.v11i1s1i2-Nov.7322>

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## Introduction

Inclusive education is becoming increasingly recognized globally as a crucial aspect of fairness in educational environments, with India following suit in this trend. There is a growing emphasis on inclusive education as a central strategy and practice in educational development worldwide. Research has extensively shown the benefits of inclusive education, which involves integrating all students into regular classroom settings, for both students with and without disabilities, as well as for the overall school community (Cologon, 2013; Hehir et al., 2016). Mathematics education, often associated with the development of sequential skills, presents a significant challenge in implementing inclusive practices compared to other subjects. Inclusive mathematics education acknowledges diverse human characteristics and aims to accommodate the varied learning needs of all students within general mathematics courses.

## Importance and Necessity of Inclusive Education

International efforts have been made to integrate children with disabilities into mainstream schooling, highlighting the importance of genuine inclusive education. Achieving true inclusivity involves considering and integrating students with special needs into regular classrooms. These students face obstacles that impede their learning and participation in school activities. As classrooms become more diverse, educators recognize the importance of embracing each student's individuality. Effective inclusive programs involve instructors adapting activities to meet the needs of all students, regardless of their individual objectives. Research suggests that inclusive education is a more effective approach in ensuring the success of all students, with studies indicating improved learning outcomes and performance for the majority of pupils when exposed to a comprehensive curriculum. Furthermore, evidence suggests that children thrive academically and socially in inclusive environments,

providing opportunities to foster connections, enhance social skills, reinforce personal values, increase comfort levels with those who have special needs, and create compassionate educational environments.

Friendships in inclusive educational settings primarily serve to provide individuals with feelings of care, affection, and security. Low-achieving students in inclusive environments receive additional support, even if they do not qualify for special education. Classmates of students with disabilities may also develop social cognition and become more attuned to the needs of others in inclusive classrooms. Additionally, parents of students with disabilities may feel more comfortable with individuals with special needs due to their children's experiences. Students with disabilities may form lasting connections that may not be achievable otherwise, providing them with the ability to navigate social interactions in the future.

### **Use Nine Key Elements of an Inclusive Lesson**

Natalie Packer, an expert in Special Educational Needs (SEN), identifies nine fundamental components that constitute an inclusive classroom. These components act as integral pieces of a puzzle, working together to enrich the educational experience. Omitting any of these elements may lead to an incomplete and less effective learning environment:

1. Elevated expectations
2. Cultivating connections and gaining a deep understanding of students.
3. Environment conducive to inclusive learning.
4. Curriculum tailored to age, interest, and ability levels.
5. Feedback of high quality.
6. Engagement via a tactile approach.
7. Inquiry and demonstration for provocation.
8. Facilitating learning via scaffolding.
9. Fostering autonomy.

These attributes are vital for fostering inclusive teaching practices within the mathematics classroom, benefiting not only students with Special Educational Needs (SEN) but all students alike. It's essential to intertwine the nine components, with the first four serving as foundational principles upon which lessons are built, while the final element serves to unify the entire instructional framework. The jigsaw model serves as an effective methodology for crafting lessons, enabling educators to discern authentic intentions through a deep understanding of their students. Moreover, educators may explore additional strategies, such as providing supplementary resource packs, regularly posing open-ended questions, challenging students' assumptions, maximizing the support of teaching assistants, promoting self-paced learning, offering tasks with multiple potential solutions, integrating role-playing activities, presenting tasks with increased complexity, minimizing unnecessary repetition, and fostering student self-assessment and reflection.

### **Know Your Pupils to Determine Scaffolding**

Understanding your students in the classroom is crucial for the success of any inclusive session. You can evaluate their preparedness and predict obstacles to learning. Understanding their backgrounds can assist in identifying the support structures your students need. This assists in choosing ways that strike a balance between providing assistance and presenting challenges.

Remember that all children have varying abilities. Understanding their unique strengths and disabilities is crucial for effective planning and achieving achievement.

Consistently assess the learning profiles and requirements of each kid. Consult with both the youngsters and their parents while making choices

Conduct inclusive whole-class instruction and whole-class teaching.

Grouping children based on their abilities may seem appealing, but it may have negative consequences. Individuals in the upper and lower groups have contrasting expectations. Some students may become stagnant in their learning, unable to progress to their full potential.

Inclusive teaching is key to a comprehensive class mastery approach. Whole class teaching has the benefit of allowing students to engage in learning without being categorized. Whole class inclusion emphasizes children learning from each other and allows instructors to have more interaction with all students. When inclusive education is used in the mathematics classroom, students will:

- Increase engagement, absorption, and eagerness to acquire knowledge.
- Find pleasure in mathematics, possess a development attitude, and be fearful of making errors.
- Enhance adaptability and flexibility
- Anticipate and embrace challenges
- Assess current position and choose future steps
- Cultivate resilience and self-reliance
- Acknowledge achievements
- Gradually build skills, knowledge, and comprehension

Ensuring that all students have equal access to the curriculum and feel valued is a crucial responsibility of comprehensive mathematics education. Every elementary school teacher can champion diversity, equality, and inclusion by incorporating inclusive teaching practices in the mathematics classroom.

### **Set an Inclusive Mathematics Policy**

It's crucial to ensure that your mathematics policy embraces inclusivity. Inclusive teaching in the mathematics classroom involves addressing language variations, pace, and rhythm.

- Incorporating multi-sensory and developmental activities
- Maintaining a consistent approach
- Striking a balance between safe learning and encouraging risk-taking
- Acknowledging diverse cognitive styles
- Offering feedback, feedforward, and praise
- Fostering student participation and engagement

### **Students with Disabilities benefit from Inclusive Mathematics Education**

To maintain the creative energy in future IEP sessions, I suggest starting and ending meetings with a shared vision. Building on the concepts of positive attitudes and supportive goals, introducing this third aspect can provide a strong foundation. In my experience leading my child's IEP meeting, I initiated a vision that exceeded the team's current efforts. I emphasized the importance of addressing urgent and complex societal issues both presently and in the future. I emphasized the need for students with disabilities to actively participate in finding solutions, excel in STEM fields, and integrate fully into society. Mathematics and other core subjects greatly benefit from the inclusion of students with disabilities. This perspective challenges the prevailing narrative that focuses solely on the perceived shortcomings of students in arithmetic skills (Gutiérrez, 2013).

People with disabilities provide a valuable array of information and unique perspectives that may help progress the area. Reframing is essential for students with disabilities in mathematics education to increase rigor and move them from a passive learning role. The IEP team must create a common vision where the student's objectives are determined. While the concept I presented may have appeared ambitious for any single IEP team to fully address, it resonated with certain members of my child's IEP team to some extent. Arguing against such a vision is challenging.

In my experience, the vision is often overlooked while creating practical short-term and specific objectives. This separation often occurs due to an excessive emphasis on addressing skill deficiencies, such as aiming to accurately identify numbers in mathematics for a 5th-grade pupil. The lead special education instructor believed it was crucial for my fifth-grade son to accurately identify single-digit numbers from a set of two as part of his IEP mathematics objectives.

As an experienced math instructor and parent with 11 years of information about my son's abilities, I informed the teacher that my son has beyond the level of identifying and recognizing numbers. I had taught him these abilities, and he had already perfected them by the age of two. However, the dispute persisted as they remained skeptical of my allegations. However, my perspective was disregarded as the instructor and the team was determined to uphold their objective. The deadlock was resolved when I guided the team towards our shared objective and our past discussions on strong mathematical attitudes. The team saw that there was a discrepancy between the stated aim and the prevailing discussions and shared vision for math mindset resources. As a result, they recognized the necessity for further steps, including increased collaboration with the general education math instructor and identifying suitable resources. The meeting fostered a unified and ambitious vision that served as the cornerstone for continued and productive future deliberations.

The strategies and tools centered around ambitious vision, strong mindsets, diverse knowledge sources, and defining mathematical goals aim to revolutionize team discussions by challenging existing practices and assumptions. Therefore, it is essential to provide educators with tools and establish procedures that enable them to showcase their expertise. School officials present may actively listen, take action, and offer guidance on utilizing available resources. Their roles shift from primarily passive members of the IEP team to proactive contributors who provide counsel and implement changes at the administrative level.

Researchers must possess a comprehensive understanding of IEP strategies and resources, such as those delineated in this article, to facilitate effective discussions focused on inclusive mathematical practices. Recent studies in mathematics education often portray students with disabilities through deficit perspectives. Theoretical frameworks like cultural historical activity theory by Engeström (1987) and disability studies in mathematics education by Tan (2014; in press) can assist in emphasizing concepts like powerful mathematics minds and shifting educational discussions from exclusion to inclusion.

### **Few Measures for Implementing Inclusive Education**

Implementing inclusive education in India requires a multifaceted approach and a commitment from various stakeholders. Here are some measures that can facilitate the successful implementation of inclusive education:

1. Ensure that the Right to Education (RTE) is universally applicable to all Indian citizens, with recognition of the diverse needs of students at all levels of education.
2. Establish a comprehensive strategy for promoting inclusiveness in all schools and across the Indian education system, focusing on providing meaningful educational opportunities for all children, especially those with disabilities and from disadvantaged backgrounds.
3. Provide specialized training for teachers preparing for rural special education programs to effectively integrate individuals with disabilities into their local communities.
4. Implement flexibility in the inclusive education system, allowing for customized techniques and resources to provide students with disabilities access to the standard curriculum.
5. Establish a school-based support team to develop solutions for addressing the needs of students with special educational needs throughout the entire school.

6. Adapt school structures, processes, and procedures to accommodate the needs of all students, particularly those facing significant barriers to education, within an inclusive school environment.
7. Encourage parental participation in decision-making processes regarding their children's education, recognizing parents as valuable collaborators in the educational journey.
8. Modify school infrastructure, including transportation and architectural facilities, to ensure accessibility for students with special needs.
9. Provide student-centered resources such as medical and educational evaluations, assistive devices, and therapeutic services based on individual student needs.
10. Promote the acknowledgment of differently-abled children's abilities and talents to foster self-respect and societal acceptance.
11. Provide essential educational resources such as audio learning materials and Braille textbooks, and consider revising examination methods to ensure inclusivity.
12. Cultivate positive attitudes towards inclusive education among teachers through specialized training programs and continuous professional development.
13. Encourage collaboration between families of typically developing children and families of children with disabilities to promote inclusivity and understanding.
14. Offer in-service training programs for both general educators and special educators to effectively educate children with disabilities across all impairment areas.
15. Provide specialized training for instructors in schools dedicated to admitting children with special needs to accommodate their specific requirements.
16. Conduct periodic assessments of training programs and revise them to align with emerging trends in special education.
17. Foster a culture of inclusion among all stakeholders, with continuous teacher training and accountability for promoting inclusivity.
18. Revise the curriculum to incorporate inclusive education concepts, with input from experienced educators, including special teachers, to ensure its effectiveness.

## Conclusion

The notion of inclusion has several applications and interpretations in the field of mathematics education research. Inclusion is often used to refer to an ideological position about participation from a broad social and critical viewpoint. Inclusion is considered significant from a critical standpoint, however some features of it are also disputed. There is criticism of the phrase "mathematics for all" since it is feared that rather than promoting inclusivity, it may lead to marginalization. This suggests a challenge in how inclusion is understood and implemented in practice. Another critique is the incorporation of redemption story. From a socio political standpoint, this might be seen as the marginalization of people and countries that are not prepared to engage in a global, competitive economy. When striving for inclusion, exclusion processes are inevitably involved, and power dynamics are linked to societal ideals. Exclusion is produced via the act of determining the standards of inclusion. Another critique is the risk of research being too focused on processes and tactics when using the concept of inclusion as a rigid framework for social justice. Skovsmose (2019) proposes that inclusion should be seen as a dynamic and participant-dependent field of study, rather than a fixed set of processes and methods. It emphasizes the role of participants, their involvement in the classroom, and the mathematics being studied. The setting is fundamentally welcoming, inclusive, and conducive to fostering cooperation (Skovsmose, 2019).

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## References

1. Dabell, J (2021) An inclusive approach to maths teaching Inclusive teaching practices lead to an inclusive classroom setting (mathsnoproblem.com)
2. Das, K. (2021). Inclusive mathematics education in classroom practice. Shanlax International Journal of Arts, Science and Humanities, 8(3), 1-5. DOI: <https://doi.org/10.34293/sijash.v8i3.3462>.
3. Singh, J. D. (2016). Inclusive education in India—concept, need and challenges. S. No. Paper Title Author Name Page No, 97. <https://www.researchgate.net/profile/Anuranjan-Singh-3/publication/356467857>.
4. Tan, P. (2017). Advancing Inclusive Mathematics Education: Strategies and Resources for Effective IEP Practices. International Journal of Whole Schooling, 13(3), 28-38. <https://www.researchgate.net/publication/321135822>.