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# INCLUSIVE MATHEMATICS CLASSROOM PRACTICES FOR CHILDREN WITH DIVERSE LEARNING NEEDS FROM THE PERSPECTIVE OF COGNITIVE LOAD THEORY

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## ABSTRACT

*Inclusion is a right, not a special privilege. The Indian Constitutions Article 21A recognizes education as a right, for all children. The concept of inclusive education rests on the belief that every child has the ability to learn and reach their potential when given a chance to participate in school provided with necessary resources and taught in a way that suits their individual needs (Handbook of Inclusive Education, p.13). Various educational policies, programs, acts and laws. From the Kothari Commission to the National Policy on Education 1968 Integrated Education for children (IEDC) in 1974 National Policy on Education 1986 Programme of Action 1992 Salamanca Statement in 1994 persons with disability act 1995 Sarva Shiksha Abhijan 2001 National Curriculum Framework 2005 United Nations Convention on Rights of Person with Disabilities (2006) Right to Education Act 2009, RPWD Act 2016 have discussed inclusion in varying manners (Handbook of Inclusive Education p. 45-47). Recently the National Education Policy (NEP) 2020 has underscored the significance of Inclusive Education and inclusive classroom practices for fostering development of every student irrespective of their backgrounds or abilities (NEP, 2020, p. 24). This research paper aims to contribute to the conversation about enhancing mathematics education in classrooms by incorporating insights, from cognitive load theory. This study delves into the idea of load theory (CLT). How it can be utilized in teaching mathematics to students, in inclusive classrooms, particularly those, with varying learning requirements. Inclusive mathematics classrooms can be enriched with meaningful learning experiences for all learners by teachers who tailor their instructional strategies depending on different and unique cognitive profiles of students. The initial part of the paper gives an introduction to the theory of cognitive loads. It also outlines why teachers must have knowledge about cognitive load theory since it is essential in inclusive classrooms for better teaching practices. The second section focuses on the obstacles and opportunities to implementing cognitive load theory into inclusive math classrooms, such as differences in thinking skills, prior knowledge, et cetera. Inclusionary techniques suggested by Cognitive Load Theory are vital towards facilitating a positive environment in which students with varying abilities can learn together in maths classrooms. If teachers emphasize effective instructional design, they would make their educational experience more comprehensive for each other's consideration so that everybody succeeds at school and has a positive educational experience.*

**KEY WORDS**: *Inclusive Mathematics Education, Inclusive Classroom Practices, Children with diverse learning needs, Cognitive Load Theory, Instructional Design,*

## INTRODUCTION

In recent years, the concept of inclusive classrooms has gained significant attention in teacher education (NEP, 2020, p. 28). Educators have paid close attention to the concept of inclusive classrooms as they attempt to establish learning environments that meet the different needs of all children. The National Education Policy 2020 aims to provide equal opportunities for quality education to all learners, including those with disabilities, and special needs or from disadvantaged backgrounds (NEP, 2020, p. 24-27). Within the realm of school education, one particular subject that has posed challenges for students with diverse learning needs is mathematics. Mathematics education has an important role in developing students' critical thinking skills, problem-solving abilities, and overall cognitive development. However, the complexity of mathematical concepts and the cognitive demands involved in learning mathematics can present significant barriers to students with diverse learning needs (Das, 2021). Cognitive load theory is a theory that provides an effective framework for understanding how the human mind processes information and how instructional design can maximize learning outcomes (Clerk et al., 2006). By examining the cognitive processes involved in learning mathematics, educators can develop strategies to reduce cognitive overload and enhance student understanding. This paper explores Cognitive Load Theory's application in the context of inclusive classrooms, focusing on how these principles can be leveraged to support students with diverse learning needs in mathematics education. Key considerations in creating inclusive mathematics classrooms include differentiation of instruction, providing multiple means of representation, engagement, and expression, and fostering a supportive learning environment that values diversity (Handbook of Inclusive Education p. 14, 22, 63). By tailoring effective teaching practices to accommodate students with diverse learning needs, educators can establish a more equal learning environment in which every student has the chance to succeed (Scherer et al., 2016). This paper reviews the current literature on inclusive classroom practices in mathematics education, highlighting the challenges faced by students with different learning needs and the potential benefits of applying CLT principles to address these challenges. By identifying the cognitive barriers that impede student learning and implementing research-based strategies informed by CLT, educators can design more effective instructional methods that promote deeper understanding and mastery of mathematical concepts for all students. Through a combination of theoretical insights and practical implications, this paper aims to provide educators with a comprehensive understanding of how CLT can be applied in inclusive mathematics classrooms to enhance outcomes of learning for students with diverse learning needs.

## METHODOLOGY

The methodology of the study is qualitative in nature. This paper has reviewed and critically analyzed existing research on cognitive load theory and its implications for equity and inclusion in mathematics education. Relevant databases and Google Scholar, have been used to identify scholarly articles, empirical studies, and theoretical frameworks that address the intersection of cognitive load and equity in educational settings. Books, documents, and government policies have also been considered as kinds of literature. The inclusion criteria focused on studies that are directly engaged with cognitive load theory and its application in diverse educational contexts to promote equitable and inclusive learning experiences while maximizing the learning outcome. This study also includes the recent pieces of literature on inclusive classroom practices in mathematics education, focusing on the obstacles faced by students with various learning needs and the potential benefits of using CLT principles in an inclusive classroom setting. National Education Policy 2020 encompasses a wide range of learners with special learning needs who may require additional support or accommodations to access and succeed in education (NEP, 2020, p. 24-27). However, this study only consists the students who are gifted and talented, children with specific learning disabilities like dyslexia, dyscalculia, and dysgraphia, etc, children with attention deficit hyperactivity disorder, children with cultural and linguistic diversity, children with behavioural disorders, and children from socio-economically disadvantaged backgrounds. This study will not be useful for students with major disabilities and who need continuous help and support in classroom.

## WHAT IS COGNITIVE LOAD THEORY?

Cognitive load theory is a psychological framework that explores how the processing capabilities of human memory can impact learning and performance (Gerjets, Scheiter & Cierniak, 2009, p. 44). The theory was developed by educational psychologist John Sweller in the year 1988 (Sweller, 1988). This theory focuses on the limitations of working memory and the importance of managing cognitive load to optimize learning outcomes (Clerk et al., 2006). Cognitive load theory suggests that our working memory’s capacity for processing information is limited (Sweller, 2020; Sweller & Chandler, 1991). When learners are presented with new material, they must actively process and make sense of it using their working memory. If the cognitive load is too high – either due to the complexity of the material or the instructional design – learners may struggle to understand and retain information effectively (Kirschner et al., 2006). There are three types of cognitive loads identified in this theory: intrinsic, extraneous, and germane (DeLeeuw & Mayer, 2008; Clerk et al., 2006). Intrinsic load refers to the inherent complexity of the material being learned (Chandler & Sweller, 1991). Some topics are naturally more difficult to grasp than others, leading to a higher intrinsic cognitive load. Extraneous load, on the other hand, is caused by the way information is presented or the instructional design itself (Mostyn, 2012). When extraneous load is high, learners may find it challenging to focus on the core concepts due to distractions or irrelevant details. Lastly, germane load relates to the cognitive effort needed to build meaningful connections and schema in long-term memory (Sweller et al., 1998). This type of cognitive load is essential for deep understanding and retention of information (Clerk et al., 2006).

## WHY DOES EVERY TEACHER NEED TO LEARN IT?

Understanding cognitive load theory is essential for teachers because it provides valuable insights into how students process and learn new information (Clerk et al., 2006). By applying the principles of this theory, educators can design instruction that reduces extraneous load, optimizes intrinsic load, and enhances germane load (Van Merrie¨nboer et al. 2006). Teachers who are aware of cognitive load theory can make informed decisions about instructional strategies, lesson pacing, and content delivery (Clerk et al., 2006, p. 8). For example, they can break down complex topics into smaller, more manageable chunks to reduce cognitive overload (Mostyn, 2012). They can also provide scaffolding and support to help students gradually build their understanding without overwhelming their working memory. Moreover, incorporating techniques such as worked examples, modeling, and cognitive prompts can help learners allocate their cognitive resources more efficiently (Clerk et al., 2006). By structuring lessons to minimize extraneous load and promote germane processing, teachers can create an environment that supports deep learning and knowledge retention (Clerk et al., 2006). In a world where students are constantly bombarded with information and distractions, educators face the challenge of capturing and maintaining their attention. Cognitive load theory offers a framework to address this challenge by guiding teachers in creating engaging and effective learning experiences. By optimizing cognitive load, teachers can help students focus on the most critical aspects of a lesson, leading to enhanced comprehension and mastery of the content. Dylan Wiliam, a British educationalist, referred to cognitive load theory as "the single most important thing for teachers to know" (William, 2017). Every teacher should familiarize themselves with cognitive load theory to ensure that their teaching practices are informed by the latest research in cognitive psychology, ultimately benefiting their students' learning experiences.

## WHY UNDERSTANDING OF COGNITIVE LOAD THEORY IS IMPORTANT FOR RUNNING AN INCLUSIVE CLASSROOM

Knowledge about cognitive load theory is very important to run an inclusive classroom. Cognitive load theory emphasizes the importance of managing intrinsic, extraneous, and germane cognitive load to optimize learning (Clerk et al., 2006). However, in inclusive classrooms, finding the balance between challenging students to reach their potential and providing the necessary support to manage cognitive load effectively poses a significant challenge. Educators must tailor instruction to meet diverse needs, ensuring that all students are appropriately challenged without being overwhelmed. Another reason is that many students have executive functioning challenges, such as difficulties with organization, planning, and self-regulation, and may experience high cognitive load when they do complex mathematical tasks (Handbook of Inclusive Education, 2020). Implementing cognitive load theory in inclusive settings involves addressing these executive functioning challenges through targeted support and explicit instruction in strategies for managing cognitive load. Designing of assessments is very important for inclusive classrooms. Designing an assessment for inclusive classrooms that aligns with cognitive load theory and provides meaningful insights into students' cognitive processing during mathematical tasks is challenging. Delivering targeted feedback that addresses not only mathematical accuracy but also the cognitive processes underlying learners' responses can be complex in inclusive settings. Cognitive Load Theory can help in this regard.

## CHALLENGES IN INCLUSIVE MATHEMATICS CLASSROOM FROM THE PERSPECTIVE OF COGNITIVE LOAD THEORY

Inclusive classrooms face several challenges, particularly when considering the diverse range of cognitive abilities and learning needs present in such settings. Cognitive load theory focuses on the amount of mental effort required for learning and offers valuable insights into how learner process the information and learn. Applying cognitive load theory in inclusive settings will arise certain challenges. The challenges are:

1. Diverse Learning Needs: In an inclusive mathematics classroom, students have diverse learning needs due to varying abilities, backgrounds, and experiences (NEP, 2020, p. 26). The challenge in implementing cognitive load theory is finding a balance in managing the cognitive load for each student, considering their individual differences.
2. Limited Prior Knowledge: Students in inclusive mathematics classrooms may have gaps in their prior knowledge or mathematical skills (Grootenboer & Sullivan, 2013), which can influence their achievement (Hailikari et al., 2008) and increase their cognitive load when learning new concepts (Gupta & Zheng, 2020).
3. Language and Communication Barriers: In inclusive classrooms, students may have diverse language proficiencies and communication challenges which can impact their cognitive load during mathematics instruction. Language barriers can significantly increase learners' cognitive load as learners struggle to comprehend mathematical concepts presented in a language that is not their primary or most proficient language (Faragher et al.,2016; Verzosa & Mulligan, 2013).
4. Behavioural and Attention Challenges: Some students in inclusive classrooms may have behavioural issues or attention difficulties, which can affect their ability to manage cognitive load during mathematics learning activities.
5. Resource Limitations: In some inclusive classrooms, there may be limitations in terms of instructional resources and support personnel, which can present challenges in learning and learners may hamper their learning.
6. Assessment: It can be difficult for teachers to accurately assess the learning of each student in a diverse, inclusive classroom setting (Mills et al., 2014). Also considering the cognitive load experienced by the students is equally difficult for any teacher in an inclusive classroom.

## PROBABLE SOLUTIONS TO DEAL WITH THE CHALLENGES IN INCLUSIVE CLASSROOMS FROM THE PERSPECTIVE OF COGNITIVE LOAD THEORY

Along with the challenges of inclusive classrooms, there are also potential solutions to address these issues. The solutions are:

1. To address the challenge of diverse learning needs teachers can employ differentiated instruction techniques (Handbook of Inclusive Education, p-63). This involves modifying the content, process, and products of learning to accommodate diverse learning needs. For example, teachers can provide varied levels of support, such as visual aids, manipulatives, or scaffolded instruction, to manage the cognitive load for students with different abilities.
2. To address the limited prior knowledge issue the teachers can implement pre-assessments to identify students' prior knowledge gaps and then provide targeted interventions to fill these gaps (Hailikari et al., 2008). By building on students' existing knowledge (Clerk et al., 2006), educators can optimize cognitive load management and promote a better understanding of new mathematical concepts.
3. To address the language and communication-related issues teachers must employ effective language support strategies while teaching mathematical content. Teachers can use visual aids, hands-on activities, and technology to supplement verbal instruction, making mathematical concepts more accessible to students with varied language abilities. Providing multilingual support materials (NEP, 2020) and encouraging peer collaboration can also help reduce language and communication barriers, thereby managing cognitive load for all students.
4. To address behavioural and attention-related challenges, educators can employ strategies that promote engagement and focus, such as incorporating

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frequent breaks, providing clear and structured instructions with cues (Clerk et al., 2006, p.78). Additionally, employing multi-sensory teaching approaches and incorporating movement into lessons can help to capture the attention of students with diverse learning needs, thereby reducing cognitive load related to behavioural and attention challenges.

5. To solve the resource limitations the teachers can leverage technology and digital resources to support cognitive load management, such as using educational apps, interactive simulations, and online tutorials to provide additional support to students with different learning needs (Handbook of Inclusive Education p. 55). Collaboration with special education professionals, resource teachers, and teacher assistants is necessary in addressing resource limitations by providing additional support and expertise to manage cognitive load effectively.
6. Teachers can use formative assessment strategies to gauge students' cognitive load and understanding of mathematical concepts. This can include techniques such as exit tickets, one-on-one conferences, and observation of students' problem-solving processes. By gathering ongoing feedback, educators can adjust their instructional methods and provide targeted support to manage the cognitive load for each student effectively.

## COGNITIVE LOAD THEORY STRATEGIES FOR PROMOTING INCLUSIVE CLASSROOMS

Cognitive load theory can be applied to mathematics instruction for students with different needs in various ways to optimize their learning experiences. Here are some specific examples:

1. Modifying Task Complexity: Cognitive load theory suggests that instructional tasks should be designed with an appropriate level of complexity to match students' cognitive abilities. For students with learning disabilities or other challenges, such as attention deficits, educators can modify the complexity of mathematical tasks by breaking them down into smaller, more manageable steps (Gupta & Zheng, 2020). This helps reduce the intrinsic cognitive load and allows students to concentrate on mastering one concept or skill at a particular time (Clerk et al., 2006, p. 44).
2. Explicit Instruction with Clear and Consistent Organization: Present instructional materials in a clear, organized, and easily accessible format. Well-structured materials reduce the cognitive load associated with decoding and processing information, allowing students to focus more on the content itself (Clerk et al., 2006, p. 43). Organizing learning environments clearly and consistently is also important. Predictable routines, visual schedules, and well-structured lessons can help reduce extraneous cognitive load associated with uncertainty and disorganization. Provide clear, step-by-step explanations of mathematical concepts and procedures, breaking down complex ideas into more manageable portions. Explicit instruction also helps to reduce the extraneous cognitive load by delivering information in a structured and easily digestible manner.
3. Scaffolded Support: Scaffolded support aligns with cognitive load theory by providing additional support and guidance to students as they work through math problems (Riccomini & Morano, 2019). Educators can scaffold instruction for students with diverse needs by offering prompts, cues, and differentiated levels of support based on individual learning profiles. This helps manage the cognitive load by gradually transitioning students from needing high levels of support toward greater independence in problem-solving solving (E- Learning Company Blog, 2023). By scaffolding the learning process and gradually releasing responsibility to students, educators can reduce cognitive load by ensuring that all students can access and process the information at a pace that aligns with their individual learning needs.
4. Chunking Information: In psychology, chunking is a cognitive process that groups information into meaningful pieces to increase working memory capacity. Chunking helps people overcome the constraints of short-term memory by organising information into manageable pieces that are simpler to remember and comprehend. By breaking down complicated information into understandable chunks or patterns, chunking aids in cognitive efficiency, memory recall, and problem-solving (E- Learning Company Blog, 2023; Mostyn, 2012).
   For instance, if you try to memorise the letter combination h-t-r-e-o-b-r, you have to memorise seven things at once since each letter stands for one object. Now, you have to commit the same seven objects to memory if you try to remember the letter combination b-r-o-t-h-e-r. However, you may merge the letters into a single item since you already have a schema for the word "brother" in your long-term memory. This frees up your working memory to recall other things (Cognitive load theory: Research that teachers really need to understand, 2017). Another example is, when memorizing a long string of numbers like "7462918305," instead of trying to remember each digit individually, chunking allows a person to group the numbers into chunks like "746," "291," "8305," making it easier to remember the sequence as a whole.
5. Multimodal and Multisensory Instruction: Multisensory approaches to teaching math can engage students with varying cognitive abilities by incorporating different sensory modalities to enhance learning (Handbook of Inclusive Education p. 72). These approaches allow students with diverse learning needs to access the material through different sensory channels, reducing the cognitive load associated with processing information in a single modality. So, present information using a variety of modalities, such as visual aids, manipulatives, and verbal explanations so that every student can be benefited and can use the maximum of it (Kalyuga, 2009).

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i)Manipulatives and Concrete Materials:
Use physical objects such as number paddle, tens frame (Clarke & Faragher, 2015) counting bears, base-ten blocks, fraction tiles, geometric solids, and other manipulatives to help students visualize and manipulate mathematical concepts. Incorporate hands-on activities that allow students to physically interact with mathematical ideas, such as using tangrams to explore geometry or using fraction bars to understand fractional relationships.
ii) Providing Visual Representations: Visual representations (Faragher et al.,2016), such as manipulatives, diagrams (Clerk et al., 2006, p. 57), charts, and graphic organizers can be particularly beneficial for students with different needs who may struggle with purely symbolic representations, including those with dyscalculia or visual-spatial processing difficulties. For example, use number lines, arrays, area models, and graphic representations of word problems to support visual learners in understanding mathematical relationships. Integrate color-coding, signaling, and visual cues to highlight patterns (Clerk et al., 2006), relationships, and operations within mathematical content, making it easier for students to process and remember information. By incorporating visual representations into mathematics instruction, educators can reduce the extraneous cognitive load associated with abstract concepts (Clerk et al., 2006) and make mathematical ideas more accessible and tangible for these students.
iii) Audio and Verbal Reinforcement:
Provide auditory supports such as math songs, rhymes, and chants to reinforce mathematical concepts and promote memory retention specially for low prior knowledge learners (Clerk et al., 2006, p. 69). Using music, rhythm and rhyme can support students with auditory learning preferences in remembering and understanding mathematical procedures and facts (Handbook of Inclusive Education p. 65, 67). Encourage verbal explanations and discussions where students articulate their mathematical thinking, reasoning, and problem-solving processes. This verbal reinforcement can help students solidify their understanding of mathematical concepts and build language-based connections to mathematical ideas.
iv) Kinesthetic Activities:

- Implement kinesthetic activities that involve movement and physical engagement to reinforce mathematical concepts. For instance, make students act out addition and subtraction with physical movements, create human number lines, or use kinesthetic games to reinforce concepts like symmetry and transformations in geometry. Incorporate movement-based strategies such as using gestures to represent mathematical operations and incorporate physical games that reinforce the numerical concepts (Handbook of Inclusive Education p. 67).

v) Technology Integration:

- Integrate educational technology tools and applications (NEP, 2020, p. 4) that offer multisensory experiences, such as interactive math software, virtual manipulatives, and math games that engage auditory, visual, and kinesthetic modalities. Utilize digital tools that provide audio feedback, visual modeling, and interactive simulations to support students with varying cognitive abilities in experiencing math concepts through diverse sensory channels (Faragher et al.,2016).

vi) Real-World Applications: Student perform better when they connect mathematical concepts to real-world contexts and experiences (Casey, 2013). So, allow students to engage their senses in practical applications of math. For example, use cooking activities to explore fractions, measurement, and ratios, or take students on a geometry scavenger hunt to identify shapes and angles in the environment. Encourage students to use their senses to observe and analyze mathematical patterns and relationships in their surroundings, fostering a sensory-rich approach to mathematical exploration.

6. Individualized Learning Plans: Developing individualized learning plans for students with varying cognitive abilities can provide targeted support. These plans outline specific accommodations, modifications, and individualized goals tailored to each student's cognitive strengths and challenges, ensuring that they receive the necessary support to thrive in mathematics instruction (Handbook of Inclusive Education p. 96-114).
7. Collaborative Learning Opportunities: Encourage collaborative learning experiences, such as group problem-solving activities and peer tutoring. Collaborative learning provides opportunities for students to share cognitive resources, support one another, and benefit from diverse perspectives and approaches to solving mathematical problems (Shank & Cotten, 2014; Casey, 2013; Faragher et al.,2016). Flexible grouping strategies allows students to work in collaborative settings while ensuring that they receive appropriate support based on their cognitive abilities. Teachers can create small groups or pairs based on student needs, mixing students with different abilities to provide peer support and enabling students to support each other and learn at the appropriate pace.
8. Implementing Universal Design for Learning (UDL) Principles: Universal Design for Learning, which aligns closely with cognitive load theory, emphasizes the need for flexible instructional methods and materials to accommodate diverse learners (Handbook of Inclusive Education, p-63). Educators can apply UDL principles by providing options for representation, expression, and engagement in mathematics instruction, allowing students with different needs to access and demonstrate their understanding of mathematical content in ways that align with their strengths and preferences.

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9. Explicitly Teaching Metacognitive Strategies: Teach students metacognitive strategies (E- Learning Company Blog, 2023) for managing their cognitive load, such as self-monitoring, self-questioning, self-explanation (Clerk et al., 2006, p. 226-233) and reflection. By fostering metacognitive awareness, students can become more adept at recognizing when cognitive load is excessive and employing strategies to address it. By explicitly teaching and reinforcing these metacognitive strategies, educators can equip students with the tools to become more autonomous, strategic, and effective learners in mathematics. This is particularly important for students with diverse needs, as it empowers them to manage their cognitive processes and navigate mathematical challenges more confidently and successfully.
10. Formative Assessment, Feedback, and Revision Practices: Implementing formative assessment strategies (NEP, 2020, p. 4) in place of summative assessment allows teachers to monitor students' progress and adjust instruction based on their cognitive abilities. Provide timely and constructive feedback that focuses not only on mathematical correctness but also on cognitive processes. Encouraging students to revise their work based on feedback can promote deeper understanding of the concepts while reducing the cognitive load associated with uncertainty and errors.
11. Provide options for assessment: Offer students a variety of ways to demonstrate their understanding of the material, such as through traditional tests, projects, presentations, or portfolios (Handbook of Inclusive Education p. 55, 73). This allows students to showcase their strengths in alternative ways, however the expectations about the quality should be same (Faragher et al.,2016).
12. Create a Positive & Supportive Classroom Environment: Creating a positive & supportive classroom environment is essential for supporting students with varying cognitive abilities (Handbook of Inclusive Education p. 26). Foster a classroom culture that celebrates diversity and encourages students to embrace their individual strengths and differences (Faragher et al.,2016). Encourage collaboration, respect, and empathy among students (Handbook of Inclusive Education p. 24). Encourage open communication (Faragher et al.,2016) and fostering a growth mindset that can help students feel valued and empowered to engage with mathematical concepts at their individual cognitive levels.
13. Culturally Responsive Teaching: Recognizing the cultural backgrounds and experiences of students and integrating culturally relevant examples and contexts in mathematics instruction can support students with varying cognitive abilities. Making connections between mathematical concepts and students' cultural experiences can enhance engagement and understanding, creating a more inclusive learning environment. NEP 2020 has also mentioned to consider students cultural background while teaching them (NEP, 2020, p. 25)
14. Offer additional support: Allow students to progress through the material at their own pace, providing extra support or challenges as needed. Provide extra memory support, resources, such as tutoring sessions, study guides, or additional practice problems, for students who need more help in understanding the material ((Handbook of Inclusive Education p. 55; Clerk et al., 2006, p. 43). Provide difficult questions and assignments for those students who have already mastered the concepts. This helps students feel more in control of their learning and can increase their motivation.

## CONCLUSION

Inclusive mathematics classrooms prioritize understanding, engagement, and support for students with diverse learning needs which are essential for promoting academic success and fostering a lifelong love for learning. The integration of Cognitive Load Theory (CLT) principles in inclusive mathematics classrooms presents a promising approach for supporting students with diverse learning needs in school education. By acknowledging the cognitive barriers that hinder student learning and implementing instructional strategies that reduce cognitive load, educators can create a more inclusive and equitable learning environment where all students have the opportunity to excel in mathematics. As the field of mathematics education continues to evolve, educators need to remain updated about best practices in supporting students with different learning needs in inclusive classrooms. By applying CLT principles and incorporating research-based strategies into their teaching practices, educators can create a dynamic and engaging learning environment that empowers all students to reach their maximum potential in mathematics. Through the lens of CLT, educators can design differentiated instruction, provide multiple means of representation, engagement, and expression, and cultivate a supportive classroom culture that values diversity. The Educators may require targeted professional development to effectively apply cognitive load theory within the context of inclusive mathematics classrooms. Building educators' capacity to understand, implement, and assess instructional practices aligned with cognitive load theory while addressing diverse learning needs is essential but may pose resource and time constraints for schools. Educators and educational professionals must collaborate to develop and implement strategies that promote inclusive and accessible learning environments while leveraging the cognitive load theory's principles to optimize students' learning experiences. This may involve ongoing professional development, collaboration with specialists in inclusive education, and a commitment to continuous refinement of instructional practices. By embracing inclusive practices educators can empower all students to engage meaningfully in mathematical learning and develop the skills needed for academic success and lifelong learning. These approaches will not only benefit students with diverse learning needs but will also enhance the learning experience for all students, fostering a more inclusive and enriched educational environment.

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