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THE EFFECTIVE MATHEMATICS TEACHING: THE ROADMAP TO DEVELOPING PUPILS' INTEREST AND UNDERSTANDING OF MATHEMATICS

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Abstract: *The study looks at the roadmap for increasing pupils' interest in and comprehension of mathematics, which is a successful method of teaching the subject. Because mathematics is so important to our everyday lives, it should be studied by everybody. Correct handling of mathematics necessitates having effective teachers. One prerequisite for this effective teaching of mathematics was the creation of a suitable classroom environment. In the classroom, a welcoming environment is necessary. The study examined successful methods of teaching mathematics to foster students' interest in and comprehension of the subject. Some of the literature looked at the efficacy of math instruction. The study looks at successful math teachers and the strategies they should employ to get kids more interested in the subject. A review of certain studies on the effectiveness of math training was done. The study looks at creative math instructors and various approaches to using efficient teaching methods to pique students' interest in math.*

Key words: *effective teaching; mathematics; pupils; interest.*

Introduction

Over time, there have been substantial changes in the realm of education. As a result of these developments, a lot of work is being done to figure out how to use different methods and advances to enhance the services that kids receive in schools (Ahmad, 2020, Chetty, Friedman & Rockoff, 2015, Gustafsson & Nilson, 2016, Garet et al., 2016). Classroom management is a generic word used to describe the actions teachers do to address student behaviour, instructional strategies, and classroom activities. The process includes handling behavioural problems, maintaining discipline, giving the right instructions, and evaluating the activities that students do in class. Despite attempts to train instructors in the best ways to raise students' academic performance, little is known about the precise strategies that should be employed in math lessons (Ahmad, 2020). Most people believe that managing the different aspects of one's social, civil, and private life requires a basic understanding of

mathematics. Like in the past, a lot of children now have trouble with arithmetic, which discourages them since they keep running into problems when they need to be competent (Anthony & Walshaw, 2009, Onoshakpokaiye, 2021).

For math instructors to address this issue, they must understand the essential elements of a quality mathematics education. Teachers who see gains in their students' academic performance do so because they believe that all students should be exposed to mathematics education from a wide range of perspectives (Anthony & Walshaw, 2009, Onoshakpokaiye, 2024). In this sense, classroom management is important to education and influences the degree to which academic objectives are met. It is also clear that teachers and other partners in teaching are particularly aware of math competency issues. Math underachievement is one of the most significant educational issues that have to be addressed right now. The premise of the argument is that mathematics is an essential part of every academic field. Given how important mathematics is to students' achievement, it is critical to establish an atmosphere that will maximize their performance.

The inventive math instructors

Good instruction depends on the efficacy or accountability of math teachers. According to Onoshakpokaiye (2024), pupils of any age can cultivate good mathematical personality and become prominent mathematicians. Effective classroom management is essential to both teaching and learning. According to Ahmad (2020), it helps teachers convey instructions and helps pupils reach their maximum potential. **Inventive** math teachers often demonstrate real care for their pupils' dedication, according to prior study (Noddings, 1995). In order to provide pupils an opportunity to develop their social and mathematical identities, the math instructor tries to build relationships. They provide opportunities for pupils to inquire about the rationale behind the class's activities and the anticipated outcomes, and they have realistic expectations for enhancing the students' ability to reason, communicate, think, and assess their own work (Watson, 2002, Anthony & Walshaw, 2009). To ensure that every student feels included, a great or inventive math teacher considers and honors the cultures that each kid brings to the classroom. They ensure every kid is comfortable, able to engage, and feels like they belong.

In the classroom, good math teachers create relationships that enable students to solve problems, ask questions, and reason on their own (Angier & Povey, 1999, Onoshakpokaiye, 2024). Each student's participation in the classroom is essential to the development of their mathematical thinking. Inventive teachers focus on the many needs that

result from the students' varied languages, living situations, perspectives, and abilities while making equitable arrangements. Inventive math teachers ensure every student have the opportunity to try mathematics independently without seeking help. The most crucial resource for assisting pupils in developing their mathematical identities is their teachers (Cobb & Hodge, 2002). Teachers have an impact on how students accept and feel confident in themselves in the classroom (Walshaw, 2004). The teachers' positive attitudes toward the subject help students feel more at ease, broaden their knowledge base, and are able to study and understand mathematics. With confidence in their comprehension, students will be better able to consider new ideas presented by the teacher, take into account the opinions of other students, research the validity of various methodologies, and persevere despite mathematical difficulties.

Techniques that excellent math teachers might employ to spark pupils' interest

1. Making use of students' ideas while attending to their needs

The instructors must become specialists in the areas of teaching mathematics and evaluating the pupils' past mathematical knowledge as well as their study and reasoning skills. These pupils' prior understanding of the subject they are about to learn must be valued by their math teachers (Onoshakpokaiye, 2020). Teachers must create, understand, and implement efficient teaching strategies in order to instruct pupils in mathematics (Lampart, 2001). By concentrating on improving pupils' current proficiencies rather than filling in knowledge gaps and fixing inadequacies, effective teachers may be sensitive to their pupils and the discipline (Carpenter, Fennema, & Franke, 1996). It's critical that educators and students listen to one another in order to structure a common understanding. Teachers are better able to decide when to enter and exit the discussion, when to push for understanding, when to address confusion or distortion, and when to resolve pupils' conflicting claims when they pay close attention to what they have to say (Lobato, Clarke, & Ellis, 2005, Onoshakpokaiye, 2024).

Lessons in mathematics should be planned and executed by an excellent instructor so that pupils may build on their existing knowledge, interests, and abilities. Effective instructors should consider the pupils' current interests and information while planning lessons and making judgments about their education. Based on their knowledge of the pupils' competences, language, evaluation, listening and reading skills, and ability to handle mathematical thought processes and challenges, effective instructors modify their lessons to meet the requirements of their pupils. Mathematics teachers can learn about pupils' study habits, interests, apparent knowledge, and competence by observing how they

work individually or in groups, listening to the language they use, checking their understanding, and having conversations with them. They can also observe the methods that pupils prefer during regular classroom activities (Onoshakpokaiye, 2023a).

Math teachers may keep an eye on classroom activities to determine whether they are progressing and stay informed about what needs to be done to satisfy the learning goals of their pupils due to the data they collect (William, 2007). By routinely evaluating pupils at every level, proficient math teachers can choose what to ask, what to ask next, how to answer pupils' questions, and when to join in on their activity. Furthermore, teachers need to know how to deal with negative conduct in the classroom and ensure that children get the support and direction they need (Hasibuan, 2001, Levin & Nolan, 2003, Hadriah, 2015). With the correct classroom monitoring strategies, these goals may be accomplished. Effective classroom management is one of the criteria that distinguish bad performance from the accomplishment of academic goals.

2. Creating an atmosphere that promotes learning among children

One of the most important duties of the teacher is to create outstanding lesson plans that take into account the demands of the pupils. Math instructors' capacity to successfully teach material in classes with few disturbances is associated with the pattern. Instructors should be passionate about what they do and provide an environment that encourages learning so that pupils want to learn new things (Liu, Wang & Ryan, 2016, Blankson & Blair, 2016, Onoshakpokaiye, 2024). According to Sfard and Keiran (2001), every student requires specific time to work autonomously and reflect apart from the numerous and often conflicting viewpoints of other pupils. Math teachers are expected to choose lessons that will help pupils learn and provide them with the resources they need to comprehend novel concepts.

Furthermore, the instructor must to establish well-defined objectives for the class and offer perceptive criticism (Hafen et al., 2015, Lessani, Yunus & Bakar, 2017). It's also critical to remember that the teacher can be expected to establish a rapport with the pupils, offer them assistance, and encourage learning. These objectives are only met when effective classroom monitoring techniques are used. In addition to boosting involvement, group formation facilitates testing, idea exchange, and the development of higher order thinking skills (Ding, Li, Piccolo & Kulm, 2007). Peer groups can facilitate the process of sharing ideas and learning from others (Anthony & Walshaw, 2009). According to O'Conner and Michaels (1996), pupils learn how to venture a guess and participate in core activities and disputes in mathematics in supportive small-group environments.

In groups with varying academic achievement levels, material is presented at various levels, which usually fosters a deeper comprehension of the subject matter. However, the instructor must clarify the concept of participation and make sure that the participants' abilities—such as writing, inquiring, listening, and responding are comprehended and used (Hunter, 2008). In other words, if teaching mathematics improves pupils' learning, it is effective (Chris Coombes generation ready, 2013).

3. Be aware of the facts that kids need to know.

One of the elements that have contributed to the progress in the education sector is the contemporary educational environment, which is typified by children with exceptional needs and abilities (Ahmad, 2020). The ideas and processes that comprise the framework of mathematical standards that pupils need to know are well known and understood by effective teachers. These educators have a thorough comprehension of ideas and use a range of methods to address and comprehend them. Additionally, they are aware of the methods and routines that their pupils will require to be successful in mathematics. The government's attempts to raise the standard of education would be ineffective if no steps are taken to enhance teachers' capacity to oversee the classroom.

Since classroom monitoring is crucial to the learning process, the quality of education might suffer if it is not used effectively. Because of the trend, researchers are looking at potential strategies to prevent disturbances, resolve disagreements, and encourage learning in classroom settings (Demirdag, 2015). The studies' conclusions provide important insights that may be used to improve math education and guarantee that pupils achieve at the greatest possible levels. Nez, Fernandez, León, and Grijalvo (2015) and Longobardi, Prino, Marengo, and Settanni (2016) state that learning results may suffer as a result of discipline issues in a badly run classroom.

4. Creating specialized educational experiences

All action pupils participate in can teach them mathematics. Mathematical experiences may be found in literature, music, social studies, science, movement, language, art, and every other facet of the classroom learning environment (Onoshakpokaiye, 2020). An extended examination gives pupils *great chances to make connections between mathematics and to foster independence, self-control, and adaptability in addressing real-world issues (NCTM, 2000). Conversely, a well-run classroom creates an atmosphere in which the instructor can help pupils flourish and comprehend ideas. Researchers agree that one of the things preventing new instructors from making a big impact on* pupils *and advancing their careers is unlucky or poor classroom management (Curwin & Mendler, 2008, Canter, 2010).* Furthermore, the practice has been connected to problems including teacher burnout and stress.

Generally speaking, math teachers have to determine how effectively they can manage such behaviour and help pupils realize their full potential regardless of the situation.

Effective math teachers face issues in pertinent and significant contexts to give their pupils meaningful learning opportunities. The need for problem-solving to be an essential part of all mathematics education is sufficiently supported by the available data. However, problem-based learning suggests that real-world scenarios, challenges, and models help pupils grasp mathematics (Onoshakpokaiye, 2024). By using particular scenarios and models, pupils are able to get an understanding of the principles. By continuing in this manner, they can ultimately arrive at more abstract ideas.

A difficulty is any work or action for which pupils lack the ability to recall rules or methods, have no choice in the matter, or even know that there is a certain appropriate arranging technique. To more effectively enhance the quality of education, the math instructor should be able to manage the classroom and have two skills: (a) well-planned learning programs; and (b) effective class management. According to Lavy (2015) and Burroughs (2019), classroom management encompasses the activities that math teachers design to organize and direct classes in a way that will result in the achievement of certain academic objectives. To help pupils build skills and strategies, good math teachers will include ideas like early phases and a continual approach for them to explore and comprehend calculated thinking. With the help of these challenges, all pupils receive the appropriate sectional attention to actively foster conceptual knowledge and more sophisticated problem-solving abilities.

5. Understanding student learning

Nwachukwu (2009) asserted that knowledge has several levels of objectives that pupils can achieve, depending on the levels of information that are taught to them. He went on to argue that instructors should take entering behaviour into consideration since it is the basic building block that new information is built upon. As Onoshakpokaiye (2007) notes, pupils have varying methods of grasping certain mathematical concepts, thus teachers should try harder to communicate these ideas. The finest teaching methods for their pupils' learning are known to effective math teachers. According to these teachers, pupils must first comprehend the ideas being presented as well as the abilities being taught in order to utilize mathematics successfully (Chris Coombes generation ready, 2013, Onoshakpokaiye, 2023b). Consistent and more complex use of ideas, concepts, and skills helps pupils become more comfortable and proficient in their use. Teachers that are successful in math are familiar with the fundamentals of their subject. They are aware of the need of using concrete resources and visual aids

to develop a deep comprehension of the subject matter. Their understanding of the educational procedure that best advances their pupils' knowledge and abilities is realistic.

In order to accommodate each pupil's unique learning demands, they may also employ their diverse sense of taste for growth chances in the classroom. Using the formative principle of what emerges before or after the misunderstanding, effective instructors may analyze pupils' incorrect conclusions from homework, class assignments, or assessments and reteach the content. When pupils have a solid grasp of the material, teachers may immediately address the specific mistakes that they may make. Teachers themselves should be lifelong learners. Effective teaching strategies are the focus of continuous study, and there is rarely a static approach to mathematical education.

6. Determine which of their students are beginners or learners.

Recognizing a pupil as a math learner is difficult. In order to help pupils rapidly form an image of themselves, a good math teacher provides them with several opportunities to demonstrate what they have learned. According to Chris Coombes' Generation Ready (2013), teachers therefore update and expand their knowledge of every student. A skilled teacher uses their increasing knowledge of their pupils as learners to consistently refine their lessons to better suit their needs. Evaluation is fundamentally formative in mathematics. It involves gathering data using a range of techniques and sources. Details on the students' approaches, understandings, viewpoints, and past knowledge and abilities are provided by this.

An essential component of assessing pupils *is forming informed opinions about their knowledge.* As a result, good teachers evaluate both pupil's performance and their ability to show that they understand the content. Proficient teachers are aware of their pupils' past knowledge and assist them in making the connection between it and the new information they are learning. Additionally, they analyze the material provided, gather data from a range of official and informal sources using a number of techniques, including verbal and written, and incorporate assessment into educational practice. Lastly, they identify the unique learning requirements of every pupils via progressive assessments. This makes it possible for them to actively instruct, helping the pupil to reach predetermined objectives.

Effective math teachers encourage taking risks. A perfect learning environment encourages trust and the sense that mistakes are normal as they are a necessary part of learning. In a classroom setting, a variety of methods are promoted to aid pupils in studying mathematics. It is crucial to emphasize that each teacher goes above and beyond to keep the classroom free of distractions and disruptions in order to meet the learning objectives. Managing pupils' behaviours, arousing them, and

including them in class activities are the most common approaches to classroom management. Consequently, the time spent teaching has become dependent on keeping the classroom in order (Ahmad, 2020). Teachers create a social environment that is just as vital to the real climate.

Studies have indicated that collaboration between teachers and pupils, especially the critical feedback pupils get affects how successful education is (Hattie, 2003, Generation Ready, Chris Coombes, 2013). One must overcome challenges in order to master mathematics. This will undoubtedly occur if pupils feel that their behaviour will be valued. In the study of mathematics, children need to learn from their teachers that making errors is a natural part of learning. By embracing their students' approximations and answering them with information, support, and honesty, teachers may show that they believe in their pupils. Teachers may provide the conditions that promote learning and demonstrate how it should be done by effectively involving the pupils. Pupils should find the course interesting enough to desire to participate in the learning process.

Conclusion

Effective mathematics is essential for math learners. Math comprehension needs a nurturing atmosphere. Math instructors, curriculum developers, and the government must all understand the developmental phases of young children to be able to teach and educate kids in an approach that makes math relevant to them. For the children's future problems to be avoided, math teachers must also ensure that the foundation is laid properly. Pupils may now improve their mathematical knowledge and abilities as they proceed to higher school. Effective education at this level of learning necessitates professional training. Examining certain literature taught us that in order to promote pupils ' mathematical learning, math teachers must be successful. If educators wish to keep their pupils interested in mathematics, they must recognize how important it is to teach the subject well. For that reason, it should not be ignored.

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