

## STRENGTHENING EARLY CHILDHOOD MATHEMATICS EDUCATION WITH EFFECTIVE MATH TEACHERS

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### ABSTRACT

The effective learning and instruction of early math is a top priority in every country's system of education. Math is first introduced to young children in a structured educational setting in their early years. It is crucial to take precautions of this crucial phase in order to support and build a strong, firm foundation throughout their math learning as well as other subjects. Throughout this era of life, children may develop mathematical concepts and skills for use in the future and scholastic success. Everybody has to be proficient in math since it is so important to our everyday life. To teach math effectively, teachers must be efficient in the subject. One prerequisite for this effective math education was the creation of an appropriate atmosphere for learning in the school setting. The classroom should be a comfortable place to study. By analyzing effective mathematics teaching, the study aimed to raise students' interest in and comprehension of mathematics. A review of certain research was conducted about the efficacy of arithmetic training. A few studies on how to improve early childhood math instruction with proficient math instructors were examined. The study examines innovative math teachers and different strategies for stimulating students' interest in arithmetic through effective teaching techniques.

**Keywords:** Early Childhood; Effective Mathematics Education; Math Teachers

### INTRODUCTION

Passing a math Examination is mandatory for candidates to higher education programs, as most nations include mathematics as a subject in the school curriculum. However, the West Africa Senior Secondary Certificate Examination (WASSCE) consistently lists math as one of the subjects with the lowest performance levels (Abreh, Owusu & Amedahe, 2018). School administrators and other educational players have been aggressively seeking the implementation of efficient instructional methods that stimulate students' interest in arithmetic in order to improve performance and accomplishment (Arthur, Dogbe & Asiedu-Addo, 2022). Scholarly interest in the field of math education and the field of education in general has increased dramatically, according to Zhang & Wang (2017) and Arthur, Asiedu-Addo, & Assuah (2017). The educational field has seen significant transformation throughout time. As a result of these developments, a great deal of effort is being put into determining how to use various technologies and techniques to improve the services that young children get in educational institutions (Ahmad, 2020, Garet *et al.*, 2016).

The general term "classroom management" refers to the methods used by teachers to deal with the behaviour of young children, instructional techniques, and classroom activities. Managing behavioural issues, establishing routines, providing clear directions and assessing the work completed by the young students in class are all part of the process. In order to address this issue, math educators or instructors need to be knowledgeable about the fundamentals of a strong math education. Anthony & Walshaw (2009) assert that math educators who witness improvements in their young students' academic performance do so because they are convinced that every young child has a right to receive math instruction from a wide perspective. Despite efforts to educate instructors about how to raise young children's academic success, there is little knowledge on the exact methods that must be put in place in math classrooms (Ahmad, 2020).

Good classroom management affects how successfully educational objectives are fulfilled and is crucial to the education of children. One of the most important educational challenges that must be addressed immediately is the disparity in math achievement. The foundation of the argument is the notion that mathematics is a necessary component of all academic subjects. Students' performance in math determines their achievement; therefore it's critical to create an environment that will inspire them to put up their best effort.

### **The imaginative math instructors**

The effectiveness or accountability of math teachers determines the quality of math instruction. The effective math educator believes that all students, regardless of age, have the capacity to develop into significant mathematicians and strong mathematical personalities. A crucial element in both education and training is proficient classroom management. It assists students in realizing their full potential and facilitates teachers in communicating lessons (Ahmad, 2020). Previous research indicates that effective math teachers encourage learning by frequently exhibiting genuine concern for their students' dedication (Noddings, 1995). Math teachers must put in a lot of effort to help students enhance their social and mathematical abilities. In addition to offering open doors for any child to inquire about the rationale behind the class's actions and their anticipated outcomes, math educators have realistic expectations for further developing the students' ability to reason, impart, think, and evaluate their practice (Anthony & Walshaw, 2009). By recognizing and valuing the cultures that each student brings to the classroom, an excellent math teacher makes sure that every student feels engaged. It provides an opportunity for every child to participate and feel like they belong. Effective math teachers foster relationships in the classroom that empower students to ask questions, think critically, and overcome obstacles in the classroom, according to Angier & Povey (1999). A child's ability to think mathematically is greatly influenced by how involved they are in class.

While creating equitable arrangements, competent math teachers take into account the numerous demands arising from the children's diverse languages, living conditions, perspectives, and capacities. Effective math teachers ensure that each young child has the chance to explore arithmetic without needing assistance. The most important source for helping kids build their arithmetic competence, according to Cobb & Hodge (2002), is math instructors. According to Walshaw (2004), teachers have an impact on students' acceptance of himself and self-assurance in the classroom. Due to the educator's positive attitudes regarding the subject, kids are more comfortable, are able to get more information, and find it simpler to understand and apply math recognition. If kids are confident in their knowledge, they will be more inclined to study the usefulness of different strategies, discover new ideas presented by the teacher, take into consideration the opinions of their peers, and persevere through arithmetic difficulties.

### **METHODOLOGY**

The study used systematic review method. Systematic review is one kind of literature review that demands the same level of rigor as primary research. It provides the review's reader with a clear and logical justification. The researcher employs a systematic process to find, compile, and assess a body of literature on a certain subject based on a set of predetermined standards. A critical evaluation of the included studies and a summary of the research studies' findings are standard components of a systematic review. This study reviewed some published works that were concerned with bolstering early childhood math instruction with proficient math teachers. These reviewed works were evaluated and appraised for the study.

## DISCUSSION

### **How to use effective teaching strategies to pique children's interest in arithmetic**

#### ***Developing individualized educational opportunities***

Arithmetic could be taught to kids via whatever activity that they engage in. Children can be exposed to arithmetic in many different ways, including through literature, music, social studies, science, movement, language, art, and other elements of the educational setting (Onoshakpokaiye, 2020). Children have excellent opportunities to connect arithmetic to real-world problems and develop their independence, willpower, and adaptability through extended evaluations (NCTM, 2000). In a rigorously regulated classroom, math teachers can help children learn and understand concepts. According to Curwin & Mandler (2008), one of the aspects that academics continue to concur on is the ability of inexperienced educators to make a significant influence on children and grow in their professions.

Furthermore, there is a connection between the practice and issues with burnout and stress among educators. Regardless of the circumstance, math teachers usually have to assess their capacity to handle such behaviour and support kids in reaching their greatest potential. By placing their students in situations where the topics are relevant and important, effective math teachers provide their students with opportunity for meaningful learning. Sufficient evidence exists to support the requirement that solving problems constitute a fundamental component of all mathematical education. But according to the theory of problem-based learning, children may learn arithmetic by using situations, challenges, and models from their daily lives. Kids may be able to understand the concepts via the use of real-world examples and representations. They can continue along this path to ultimately arrive at more abstract concepts. An issue may be defined as any task or activity whereby the students are unable to recall instructions, rules, or procedures, or even the presence of a certain appropriate organizing system. When directing the learning process, teachers of mathematics should possess these two skills to be able to more effectively enhance pedagogical standards: a carefully planned curriculum and a successful classroom management system.

According to Lavy (2015), classroom management covers the activities that math educators design to organize and direct classes in a way that will result in the achievement of certain academic goals. In order to help their pupils build skills and strategies, efficient math educators will combine ideas like starting phases and a continual approach for them to investigate and comprehend calculated thinking. All children are provided with the appropriate sectional emphasis through these challenges in order to actively build conceptual knowledge and increasingly more complicated abilities that support efficient problem-solving.

#### ***Establishing a setting that encourages learning throughout early childhood***

Developing efficient teaching strategies that take into account the needs of the students is one of the math educator's main responsibilities. The tendency has to do with math teachers' ability to impart knowledge in classes with little disruptions. Math teachers need to be passionate about what they do and provide a welcoming environment for kids to desire to learn new things (Blankson & Blair, 2016). Sfard & Keiran (2001) stated that every kid has to set up time for individual work and contemplation. It is best to spend this time away from the diverse and often radically different viewpoints of other kids. It is required of math teachers to select lessons for their students that will support their learning and give them the tools necessary to understand new ideas. Lessani, Yunus, & Bakar (2017) stated that the math teacher should set clear goals for the class and provide insightful comments. It's also important to remember that the math teacher may need to engage with the students, help them, and promote learning. Only with the application of efficient classroom monitoring strategies are these goals achieved. Forming groups may facilitate testing, idea sharing, and higher order thinking in addition to increasing engagement.

(Ding, Li, Piccolo & Kulm, 2007)

Peer groups can offer a structure for exchanging ideas and learning from one another (Anthony & Walshaw, 2009). When members of a group have different degrees of academic achievement, the availability of information at different levels within the group frequently promotes collective comprehension. Nonetheless, the math teacher has a responsibility to emphasize the value of student involvement and ensure that the students comprehend and apply their abilities to communicate, which include written form, asking questions, paying attention, and interacting. In other words, arithmetic instruction is effective if it helps children learn more (Chris Coombes, Generation Ready, 2013).

Young children need to feel confident in their ability to understand and use math. Show children that math is not impossible. Since early experiences impact the way kids feel toward arithmetic, NCTM (2000) states that it is critical to be involved and support effective learning settings for initial mathematical experience. They will become more assured of their capacity to comprehend and apply arithmetic. Positive experiences applying arithmetic for solving problems help young kids acquire characteristics including curiosity, creativity, adaptability, and tenacity (Clements & Conference Working Group, 2004). This ultimately helps them succeed in basic math both inside and outside of the classroom in the future.

### ***Characterize their students as beginners or young learners***

It could be challenging to understand a young child who struggles with math. A competent math teacher gives their students plenty of opportunities to demonstrate the concepts they have acquired, which helps them quickly build an opinion of who they are as individuals. Consequently, math teachers learn more about each child and keep up to speed with their understanding (Chris Coombes, Generation Ready, 2013). The skilled math teachers always refine their teaching methods to better suit the requirements of their students by drawing from their growing understanding of their kids as learners. In mathematics, evaluation is mostly formative and entails collecting data using a variety of methods from several sources. This provides information regarding the children's methods, understandings, perspectives, past knowledge, and skills. Making educated assessments of young people's understanding is an essential part of evaluating them.

Thus, effective math teachers assess a student's performance in addition to their capacity to demonstrate that they have grasped the material. By recognizing their prior knowledge, effective math teachers assist students in drawing connections among whatever they are acquiring now and whatever they currently know (Onoshakpokaiye, 2023). They also include evaluation into their teaching strategies, collect data from formal and informal sources using a variety of methods, primarily both written and verbal ones, and do research on the supplied material. Lastly, they use progressive assessments to determine the particular learning needs of every student. They can therefore actively instruct and assist the kids in achieving their goals.

Successful math instructors promote taking risks. Since mistakes are a necessary part of learning, a perfect learning environment fosters trust and the belief that mistakes are acceptable. Many tactics are encouraged in the classroom to support kids' mathematics development. It is important to stress that every math instructor goes above and beyond to prevent problems and distractions in the classroom so as to guarantee that the learning objectives are met. Among the most popular strategies for managing a classroom are controlling what the kids do and behaviours, inspiring them, and including them in class activities. Consequently, maintaining order within the classroom has become essential to the instructional time (Ahmad, 2020). Equally important as the actual environment is the social atmosphere that math teachers cultivate.

Math mastery requires overcoming obstacles. If students believe that their efforts will be valued, then this will undoubtedly happen. It is important to instill in kids the idea that making mistakes is an essential part of learning. Math teachers may demonstrate to their students that they believe in them by accepting their approximations and responding with awareness, encouragement, and candor. By properly incorporating the students, math educators may better foster learning and provide an example of how it should be done. The kids should find the course engaging enough to want to engage in the learning process.

### **Using students' ideas or past knowledge while meeting their needs**

The math teachers must specialize in teaching math and assessing the students' existing arithmetic knowledge, which they either brought to class or had previously acquired, as well as their method of approaching and understanding the material. Math teachers should recognize or appreciate the past knowledge that these students have in the subject matter that they would be studying, according to Onoshakpokaiye (2020). When teaching arithmetic to youngsters, math educators need to design, comprehend, and use efficient strategies (Lampart, 2001, Onoshakpokaiye, 2023). Effective math teachers may be attentive to their students and the discipline by putting the growth of their students' competencies ahead of filling in knowledge gaps and correcting errors. In order to arrange a common understanding, math educators and students must work together and pay attention to or listen to one another's comments. According to Lobato, Clarke & Ellis (2005), math teachers who pay close attention to the viewpoints of their students are better able to determine when to clarify misconceptions, solve conflicts among the students' claims, and push for comprehension.

An outstanding math teacher would guarantee and create math lessons that let students develop on their prior knowledge, interests, and abilities. When organizing learning activities and determining the subject matter of their courses, effective math teachers should take the students' existing interests and knowledge into account. Skilled math teachers modify their classes to meet the requirements of their students based on their knowledge of the students' abilities, language, listening, and reading skills, as well as their ability to handle the difficulties and mental processes associated with arithmetic. By observing students working alone or in groups, observing the language they use, assessing their understanding and having discussions with them, as well as by observing the methods they prefer during regular classroom activities, math educators can learn about the students' study habits, interests, and level of competence. According to William (2007), math instructors can monitor student progress and stay up to date on modifications needed to meet the demands of each child's learning style thanks to the information they gather.

Effective math teachers may choose what to ask, what to ask next, how to respond to children's inquiries, and when to participate in a child's work by routinely assessing the pupils at each level. In order to ensure that students receive the guidance and support they require, math teachers must also be aware of the tactics they may use to deal with disruptive behaviour in the classroom (Hadriah, 2015). These are objectives that are achievable with the right techniques for in-class observation. Effective classroom management is one of the factors that separate meeting academic objectives from mediocre work.

### ***Recognize the information that students should know***

Children with special needs and talents serve as examples of the modern educational environment, which has led to advancements in the education sector (Ahmad, 2020). Effective math teachers are knowledgeable about the methods and ideas that make up the structure of the mathematical standards that students need to know. These math teachers are knowledgeable in their subjects and employ a variety of approaches to address and understand them. They also



know the tricks and techniques that will help their children succeed in math. If steps are not taken to enhance teachers' ability to supervise classes, the government's efforts to improve educational standards would be futile.

Since the teacher's presence in the classroom is essential to the learning process, improper use of class supervision might result in lower-quality education. Scholars are investigating potential classroom tactics to promote learning, settle conflicts, and reduce disruptions caused by the pattern (Demirdag, 2015). The results of the research offer vital information that may be utilized to enhance mathematics instruction and ensure that students succeed to the greatest extent possible. Longobardi, Prino, Marengo & Settanni (2016) state that learning results in an unmanaged classroom are often significantly influenced by discipline concerns.

It is necessary for math instructors to expand their expertise in teaching arithmetic to young students. The math teachers need to ascertain the students' prior mathematical knowledge as well as their learning, reasoning, and reasoning processes (Onoshakpokaiye, 2010). Before introducing new content to these children, math teachers must acknowledge that these pupils have a solid understanding of math. Teachers need to understand, develop, and use effective strategies when teaching arithmetic to young children (Lampart, 2001). Early arithmetic training is essential for young children's academic success, both now and in the future. Teachers must exhibit a range of classroom skill levels in order for early childhood mathematics education to be successful in the classroom (Onoshakpokaiye, 2010, Onoshakpokaiye, 2020).

Math is taught to kids in schools to help them acquire the information and skills that will help them succeed in their future studies, help them become better versions of themselves, and improve the society in which they live. Because of this, it's critical that math teachers use effective and appropriate teaching strategies that may pique young students' interest in arithmetic at all educational levels, but especially for the youngest students. This will meet both the eventual stated aims of the national strategy on education and the actualization of early childhood mathematics.

### ***Comprehension of the teaching process***

According to Nwachukwu (2009), knowledge has varying degrees of goals that students may achieve in accordance with the knowledge that has been imparted to them. He continued by saying that since entering behaviour is the cornerstone upon which new knowledge is constructed, instructors had to consider it. According to Onoshakpokaiye (2007), teachers need to perform a greater job of communicating these ideas to students since each student learns specific mathematical concepts in a unique way. Effective math teachers know what the best ways to teach their students are. The author claims that students must first thoroughly understand the newly taught skills as well as the newly given concepts before they can effectively use mathematics (Chris Coombes, Generation Ready, 2013, Onoshakpokaiye, 2023). Children get more comfortable and proficient in doing so as they apply ideas, concepts, and abilities in a continuous and increasingly sophisticated manner.

Effective math teachers are conversant with the principles of teaching their topic. They understand that in order to have a thorough understanding of a subject, it is necessary to use tangible items and visual aids. They think that teaching is the most effective way to improve students' knowledge and abilities. Furthermore, they possess a wide range of growth opportunities that they may utilize in the classroom to meet each child's unique learning needs. Effective math teachers may investigate children's wrong conclusions from assignments, homework, or exams and re-teach the material based on how the students grasp the formative thought that arises either before or after the misunderstanding. Teachers of math may correct

particular errors made by students when they have a thorough understanding of the topic. All of these teachers ought to be lifelong learners. The best ways to teach and learn arithmetic are never singularly optimal; instead, effective teaching strategies remain the subject of ongoing research.

## CONCLUSION

It is essential for the future of a kid's academic and personal success to have a strong foundation in early math. It is crucial to instill in early children a good mindset and a solid foundation in arithmetic education. It is possible to establish a solid mathematical foundation at this stage. The government, curriculum specialists, and math teachers need to be aware of the stages of development of young kids in order to prepare and train them in a way that makes arithmetic meaningful to them. Math teachers also need to ensure that the foundation is established correctly to prevent issues in the children's future lives. At this time, students can advance their arithmetic knowledge and skills as they go into higher education. This level of learning requires professional instruction to be effective.

Effective arithmetic is essential for kids who struggle with math. Supportive environments are necessary for mathematical understanding. We discovered after reviewing some literature that effective math educators need to encourage their kids' mathematical growth. If math teachers wish to keep their students interested in the topic, they need to understand how important it is to impart math in a way that is successful. For this reason, it should not be ignored.

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