Methods Of Teaching Mathematics In Primary Education, Learning Using Mathematical Games

Axundjanov Ibragim Maratovich

Andijan State Pedagogical Institute, Teacher

ABSTRACT

Mathematics, a fundamental subject that forms the backbone of various disciplines, has long been considered a challenging and daunting task for many students. The primary education stage is crucial in laying the foundation for future mathematical understanding, and it is essential to adopt effective teaching methods that foster a deep appreciation and comprehension of mathematical concepts. One such approach that has gained popularity in recent years is the use of mathematical games as a tool for learning mathematics in primary education. This article will explore the benefits and methods of incorporating mathematical games into primary education, highlighting their potential to enhance student engagement, motivation, and overall mathematical proficiency.

Keywords: math subjects, effective teaching methods, games, new approaches, primary education, students

Introduction: These evolutions have underlined the need for plural cooperation in diverse areas such as philosophy, psychology, sociology, and other areas of pedagogy. These reflections aim to initiate a debate and change the behavior by some characteristics of the mathematical education process; they prove to be important and relevant given the challenges posed by the new Curriculum Guidelines. Most of these proposals in a decontextualized teach mathematics, deprived of the material and social needs of real men who really take advantage of the benefits provided by the accumulation of human knowledge. Any teaching of math should fit in all their ways, to subjective conditions and the conscious subjectivity of learning, promoting the encounter between the different characteristics between students. Recognize the need for a convergence of educational lines geared to the training of attitudes that provide students an intellectual progress toward living in a society based on democratic principles.

The teaching of mathematics in primary education is characterized by overexposure of formulas and procedures, often yielding the desired result, but without understanding the concepts and without learning concepts needed in the succeeding years of school life. For many years, the mathematical object was used essentially as an experimental object that has only the value of realizing the manifestations of natural phenomena or as an instrument in the service of the applications to the most diverse questions. With Plato, mathematics related to the sphere of values because its object, the idea, is part of that world. For centuries, mathematics has become increasingly important and, in some periods, with hazards, letting the issue of application of mathematics to instrumentalist concern or even the issue of the relationships between different areas. The evolutions of the last decades highlighted, among several goals, the necessity of a higher cooperation between mathematics and education, which the introduction of new disciplines, in the curricular plan, in the initial formation of teachers on a way

of understanding mathematics, assumed the character of high flexibility, with a greater valorization of the understanding compared to the traditional objectives.

Utilizing game-based learning (GBL), particularly computerized game-based learning (DGBL), as an educating and learning climate can be an educational asset and a decent system in the study hall to help numerical learning. Powerful manipulatives and games assume a pivotal part in advancing numerical comprehension. They support understudies in building, supporting and associating fluctuated portrayals of numerical ideas. Great games are especially important for students as they give them control and versatility. These games have properties that are adjusted to mental and numerical designs, working with the improvement of associations between various pieces and types of information. Advanced games can assist with accomplishing similar impacts.

As indicated by Rosli et al. prekindergarten, kindergarten, and primary teachers utilize both unmistakable and virtual manipulatives as educational helpers to work with understudy comprehension of ideas in numbers, activities, calculation, polynomial math, estimations, information examination, and likelihood. Substantial manipulatives help understudies in building, supporting, and connecting different numerical ideas. From writing, participating in substantial exercises fills in as a useful mental activity. Clements tracked down that for educators to effectively draw in youngsters' reasoning, manipulatives should be coordinated into instructive undertakings to give significant setting and backing, alone they are sufficiently not. "Games are compelling not in light of what they are, but since of what they exemplify and what students are doing as they play a game". As indicated by Russo and Russo (2018) and Russo et al. (2023), the six standards of instructively rich numerical games in the writing are: 1. Understudies are locked in; 2. There is an equilibrium between expertise and karma. 3. Math is focal. 4. Adaptability in learning and educating. 5. Advances self-teach associations. 6. Games into studies. The instructive worth of a game relies upon the degree to which educators see that a game is suitably difficult, connecting with, pleasant, versatile to help various students, and versatile to request or more extensive numerical examinations. In like manner, saw levels of understudy happiness and commitment, as well as the capability of a game prompts rich numerical request, were significant elements in evaluating how likely an educator would involve a specific game with understudies from here on out whenever offered the chance, similar to the game's capacity to help numerical conversation. Research by Bordás (2016) shows that to propel understudies and adjust to their singular requirements, instructors at both lower and upper auxiliary level consider it essential to utilize intuitive techniques, game-based educating and the utilization of the web and computerized apparatuses.

By and by, elementary teachers will generally utilize non-computerized numerical games to help math's learning (board, dice, and games). As per Russo and Russo (2020) and Russo et al. (2021) practically every one of the essential educators conceded playing numerical games in their study halls at least one time per week, they view games as profoundly compelling for fostering each of the four proficiencies featured in the Math Educational program: familiarity, understanding, critical thinking, and thinking. As indicated by Dienes (2015), exercises, games and substantial encounters ought to be the foundation of learning science, that could be a cheerful involvement in the utilization of devices that improve productivity. In grade school, kids lay out associations between unique ideas and commonsense encounters in a more unmistakable way, encountering them through games. Manipulatives are "objects intended to address expressly and solidly numerical thoughts that are unique". Rosli et al. (2015) said that manipulatives assist understudies with seeing the associations among ideas and work on their insight in critical thinking and issue presenting, even on account of genuine issues. The fuse of games fills in as a convincing device during the time spent learning science. Di Sia (2017) found that the relationship with games invigorates kids' creative mind, giving a charming way to deal with math, that is seen as

a supportive and pleasant discipline. Understudies partake in the errands, where they need to put mental exertion in the utilization of games, educational materials.

The virtual instrument doesn't appear to be appropriate for this. Öztop analyzing the effect of involving games in grade school arithmetic training on learning results and looking at impact sizes by game kind observes that the impact of advanced games is little (0.436) and that of non-computerized games is huge. The outcomes show that non-advanced games are significantly more viable on learning results than computerized games in grade school science training.

As per the writing, there is a difference between the recurrence that educators like to utilize non-computerized games with understudies versus the propensity in the writing to zero in on computerized games, where most of exploration zeroed in on game-based learning in math, explicitly will generally unequivocally zero in on advanced games, as opposed to non-computerized games. The enormous size of quantitative examinations including non-computerized games are similarly intriguing, with most investigations into games happening inside a solitary school setting, by and large including understudies from a restricted scope of explicit grade levels.

Traditionally, mathematics instruction has relied heavily on rote memorization and drill-and-practice exercises, often resulting in students viewing mathematics as a dry and abstract subject. However, research has consistently shown that students learn best when they are actively engaged and motivated (Hativa, 2013). Mathematical games offer an innovative way to break away from traditional teaching methods, providing an interactive and enjoyable learning experience that can captivate even the most reluctant learners.

One of the primary advantages of using mathematical games in primary education is their ability to promote active learning. Games require students to participate actively, think critically, and solve problems collaboratively, thereby encouraging a deeper understanding of mathematical concepts. For instance, games like "Math Bingo" or "Math War" can help students develop fluency with basic arithmetic operations such as addition and subtraction, while games like "Geometry Scavenger Hunt" can introduce students to geometric shapes and spatial awareness. By engaging students in game-like activities, teachers can create a sense of excitement and competition, motivating students to learn and practice mathematical skills.

Another significant benefit of mathematical games is their ability to differentiate instruction and cater to diverse learning styles. Games can be adapted to suit various skill levels, allowing teachers to tailor instruction to meet the needs of individual students. For example, games like "Math Charades" or "Math Puzzles" can be modified to accommodate students with special needs or English language learners. Moreover, games can be used to support differentiated instruction by providing multiple entry points for students to access mathematical concepts. This flexibility enables teachers to create an inclusive learning environment that promotes equity and accessibility.

In addition to promoting active learning and differentiating instruction, mathematical games can also help build problem-solving skills and critical thinking abilities. Games often require students to apply mathematical concepts to real-world scenarios, fostering a deeper understanding of mathematical principles and their practical applications. For instance, games like "Budgeting" or "Shopping" can help students develop an understanding of money management and financial literacy. By presenting mathematical problems in a contextualized manner, teachers can help students develop a more nuanced understanding of mathematical concepts and their relevance to everyday life.

Furthermore, mathematical games can provide opportunities for formative assessment and feedback. Teachers can observe student behavior during gameplay, identifying areas of strength and weakness, and adjusting instruction accordingly. Games can also be designed to provide immediate feedback, enabling students to track their progress and adjust their strategies. This ongoing assessment process helps teachers refine their instructional

practices, ensuring that students receive targeted support and scaffolding.

Despite the numerous benefits of using mathematical games in primary education, there are some potential challenges that teachers may encounter. One common concern is the lack of resources or infrastructure to support game-based learning. However, with the advent of digital technologies, online platforms and educational apps have made it possible for teachers to access a wide range of mathematical games without significant investment. Another challenge is the need for teacher training and professional development to ensure effective integration of games into instructional practices.

To address these challenges, schools can provide teachers with opportunities for professional growth and development, equipping them with the necessary skills and knowledge to design and implement game-based lessons effectively. Additionally, schools can invest in digital resources and infrastructure that support game-based learning, ensuring equitable access for all students.

Conclusion

In conclusion, incorporating mathematical games into primary education offers a promising approach to enhancing student engagement, motivation, and overall mathematical proficiency. By promoting active learning, differentiating instruction, building problem-solving skills, and providing opportunities for formative assessment and feedback, mathematical games have the potential to revolutionize the way we teach mathematics in primary education. While there may be challenges associated with implementing game-based learning, these can be addressed through teacher training and investment in digital resources. As educators strive to create engaging and effective learning environments, the use of mathematical games offers a valuable strategy for making mathematics accessible, enjoyable, and relevant for all students.

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