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LEARNING MATHEMATICS THROUGH GAMES

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A B S T R A C T

Mathematics play a very important role in our daily life. Generally students consider Mathematics as a difficult and dry subject. Reason behind it is use of old and traditional methods of mathematics teaching. To consider mathematics as a dry subject is myth. Mathematics can be converted into a very interesting and joyful subject by using new techniques and innovative practices. Various methods, techniques and different audio-visual teaching aids are used for making Mathematics teaching interesting and long lasting. Here the researcher has made a humble attempt to provide teachers with information that may be useful in better understanding the nature of games and their role in teaching and learning mathematics. In this paper, the researcher has discussed about mathematical games, benefits of using mathematical games, hints for successful classroom games and some examples of games. Games are one of the most effective ways that teachers and parents can develop their child's math skills without lecturing or applying pressure.

Introduction

Mathematics play a very important role in our daily life. Generally students consider Mathematics as a difficult and dry subject. Reason behind it is use of old and traditional

methods of mathematic teaching. To consider mathematics as a dry subject is myth. Mathematics can be converted into a very interesting and joyful subject by using new techniques and innovative practices. Various methods, techniques and different audio-visual teaching aids are used for making Mathematics teaching interesting and long lasting. Here the researcher has made a humble attempt to provide teachers with information that may be useful in better understanding the nature of games and their role in teaching and learning mathematics. We all know that children enjoy playing games. Experience tells us that games can be very productive learning activities. But,

* What should teachers say when asked to educationally justify the use of games in mathematics lessons?
* Are some games better than others?
* What educational benefits are there to be gained from games?

What is a mathematical game?

When considering the use of games for teaching mathematics, educators should distinguish between an 'activity' and a 'game'. Gough (1999) states that "A 'game' needs to have two or more players, who take turns, each competing to achieve a 'winning' situation of some kind, each able to exercise some choice about how to move at any time through the playing". The key idea in this statement is that of 'choice'. In this sense, something like Snakes and Ladders is NOT a game because winning relies totally on chance. The players make no decisions, nor does that have to think further than counting. There is also no interaction between players - nothing that one player does affect other players' turns in any way.

People of all ages love to play games that are fun and motivating. Games give students opportunities to explore fundamental number concepts, such as the counting sequence, one-to-one correspondence, and computation strategies. Engaging mathematical games can also encourage students to explore number combinations, place value, patterns, and other important mathematical concepts. Further, they provide opportunities for students to deepen their mathematical understanding and reasoning. Teachers should provide repeated opportunities for students to play games, than let the mathematical ideas emerge as students notice new patterns, relationships, and strategies. Games are an important tool for learning in elementary school mathematics classrooms.

Mathematics is a subject that is absolutely necessary for functioning adequately in society. More than that, mathematics is a subject that should be more enjoyable than it

sometimes is. The National Council of Teachers of Mathematics (NCTM) has identified the appreciation and enjoyment of mathematics as one of the national goals for mathematics education. This goal, coupled with the task of nurturing children's confidence in their ability to apply their mathematical knowledge to solve real-life problems, is a challenge facing every parent today.

Parents' attitudes toward mathematics have an impact on children's attitudes. Children whose parents show an interest in and enthusiasm for mathematics around the home will be more likely to develop that enthusiasm themselves. Mathematical games are 'activities' which:

- Involve a challenge, usually against one or more opponents
- Are governed by a set of rules and have a clear underlying structure
- Normally have a distinct finishing point
- Have specific mathematical cognitive objectives.

Benefits of Using Games

Math games in the classroom have many benefits**:**

- Meets mathematics standards
- Easily linked to any mathematics textbook
- Offers multiple assessment opportunities
- Meets the needs of diverse learners
- Supports concept development in math
- Encourages mathematical reasoning
- Engaging (maintains interest)
- Repeatable (reuse often & sustain involvement)
- Open-ended (allows for multiple approaches & solutions)
- Easy to prepare
- Easy to vary for extended use & differentiated instruction
- Improves basic skills
- Enhances number and operation sense
- Encourages strategic thinking
- Promotes mathematical communication
- Promotes Positive Attitudes Toward Maths

- Encourages parent involvement

In addition to these, it has more benefits which are stated below :

- Meaningful situations - for the application of mathematical skills are created by games
- Motivation - children freely choose to participate and enjoy playing
- Positive attitude - Games provide opportunities for building self-concept and developing positive attitudes towards mathematics, through reducing the fear of failure and error
- Increased learning - in comparison to more formal activities, greater learning can occur through games due to the increased interaction between children, opportunities to test intuitive ideas and problem solving strategies
- Different levels - Games can allow children to operate at different levels of thinking and to learn from each other. In a group of children playing a game, one child might be encountering a concept for the first time, another may be developing his/her understanding of the concept, a third consolidating previously learned concepts
- Assessment - children's thinking often becomes apparent through the actions and decisions they make during a game, so the teacher has the opportunity to carry out diagnosis and assessment of learning in a non-threatening situation
- Home and school - Games provide 'hands-on' interactive tasks for both school and home
- Independence - Children can work independently of the teacher. The rules of the game and the children's motivation usually keep them on task.
- Playing games encourages strategic mathematical thinking as students find different strategies for solving problems and deepen their understanding of numbers.
- When played repeatedly, games support students' development of computational fluency.
- Games present opportunities for practice, often without the need for teachers to provide the problems. Teachers can then observe or assess students and work with individuals or small groups of students.
- Games have the potential to allow students to develop familiarity with the number system and with "benchmark numbers" (such as 10s, 100s, and 1000s)

and engage in computation practice, building a deeper understanding of operations.

- Games support a school-to-home connection. Parents can learn about their children's mathematical thinking by playing games with them at home.

Hints for Successful Classroom Games

These tips come from Alridge & Badham (1993):

- Make sure the game matches the mathematical objective
- Use games for specific purposes, not just time-fillers
- Keep the number of players from two to four, so that turns come around quickly
- The game should have enough of an element of chance so that it allows weaker students to feel that they have a chance of winning
- Keep the game completion time short
- Use five or six 'basic' game structures so the children become familiar with the rules - vary the mathematics rather than the rules
- Send an established game home with a child for homework
- Invite children to create their own board games or variations of known games.

Some examples of games are :

- Games like bridge, chess, and backgammon are ideal for teaching strategic thinking.
- Snakes and ladders
- Bowls and Pearl Counting
- Rowlette circle
- Triangle and Balls Counting
- Divide of circle area
- Marbles Counting

Here's an example of a great game for children who need to sharpen their multiplication skills:

Salute Multiplication

What you need: 2 players, deck of cards, face cards removed

- Shuffle deck and place face down in a pile.
- Player #1 turns over the top card and places it face up on the table for all to see.
- Player #2 draws a card and does not look at it. Player 2 holds the card above his or her eyes so that player #1 can see it, but he can't.
- Player #1 multiplies the 2 cards mentally and says the product out loud.
- Player #2 listens and decides what his or her card must be and says that number out loud.

Example: Player #1 turns over a 6 for all to see. Without looking at it, player #2 puts a 4 on his forehead. Player #1 mentally multiplies 6 x 4 and says, "24". Player #2 must figure out 6 x ? = 24.

Both players decide if the response is correct. If it is, player #1 gets 1 point.

Players reverse roles and play continues until one player has 10 points.

Conclusion

Present research was a modest attempt to check the effectiveness of games and activities for enhancing learning of Mathematics. By applying such innovative approaches students involvement & interest in learning can be increased and maintained. In conclusion, it can be said that Math games for kids and families are the perfect way to reinforce, sharpen, and extend math skills. They are one of the most effective ways by which teachers and parents can develop their child's math skills without lecturing or applying pressure.

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