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STRATEGIES IN MAKING MATHEMATICS LEARNING EASY A LITERATURE REVIEW

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ABSTRACT

Student's achievements and interest in learning Mathematics are the two major problems especially those who achieve less. This paper aims to review how these students make learning interesting and fun to do in mathematics. This review also aims that traditional teacher should also look into considerations the new innovations and strategies in teaching mathematics so that children will be able to achieve a higher learning skill. It reviewed articles published in an online international journal from 2019. This paper also gives emphasis to learning through action learning and concept motivation.

Keywords: strategies, innovations, action learning, motivation

INTRODUCTION

The context of this paper refers to how the teachers make the learning in mathematics easy through various strategies. Learning strategies are classified into two categories the indirect and direct strategies (Oxford, 1990). In the indirect strategies, we have metacognitive, affective and social strategies while in the direct strategies includes memory, cognitive and compensation strategies. Learning strategies in Mathematics are best executed to children by "learning by doing" or through factual experiences and manipulative devices.

To be able to impart your knowledge as a teacher and use the strategies to children to make their learning fun and easy, learning behaviors should exist and these learning behaviors that contribute to successful learning includes practice, cooperation, planning, monitoring and evaluation.

The essence of this literature review narrows the thinking of teachers and create their own teaching and learning strategies on how to make the children's learning in Mathematics easy and ecstatic. Reviewing various articles in teaching not only in Mathematics but as the teaching itself will help yourself nurture your knowledge and skills in your chosen profession.

DISCUSSIONS

Literature Review: Strategies in Making Mathematics Learning Easy

In the research entitled *"Teaching Mathematics through Concept Motivation and Action Learning" by Sergei Abramovich et al. Copyright State University of New York at Potsdam USA, 2019.* Emphasize the concepts of effectively teaching mathematics through the use of action learning and concept motivation. The author explained that in action learning.

> *"In mathematics education, action learning, the genesis of which is in the early childhood experience, has natural levels of maturity. Before we become concerned with the day-to-day responsibilities attached to adulthood, we can freely consider action learning in a game form. Our fondness for gaming and for learning winning strategies are carried into later life, both as means of entertainment and as a tool for instructing the next generation of children. (e motivation for action learning in mathematics education gradually changes from winning games to success in real-world ventures. (e key to success is the ability to solve problems. Research finds that curiosity can be characterized in terms of excitement about peculiar observations and unexpected phenomena."*

This means that action learning starts with early experience of the child and gaming or through combining match teaching in gaming in early learners enable actual motivation for learners in the context of understanding and enjoying mathematics. While on the other hand motivation is defined by the author as:

> *"The term concept motivation means a teaching strategy through which, using curiosity of students as a pivot, the introduction of a new concept is justified by using it as a tool in applications to solving real problems. For example, the operation of addition can be motivated by the need to record the augmentation of a large quantity of objects by another such quantity, the concept of irrational number can be motivated by the need to measure perimeters of polygonal enclosures on the lattice plane (called the geoboard at the primary level), or the concept of integral can be motivated by the need to find areas of curvilinear plane figures."*

Thus, the joint use of action learning and concept motivation as a joint framework in the context of teaching mathematics is an effective tool that enable children to learn and enjoy math. Also, different examples of action learning in the research paper presented an individual work on a real problem followed by reflection under the "supervision "of a more knowledgeable other which can be the teacher or co teacher. The paper further presented that action learning of mathematics goes hand in hand with concept motivation:

> *"a teaching methodology where the introduction of mathematical concepts is motivated by (grade appropriate) real-life applications which may include student action on objects leading to formal description of this action through the symbolism of mathematics. (is approach is based on notable recommendations by mathematicians and educational psychologists*

In the research paper entitled *"Enhancing achievement and interest in mathematics learning through Math-Island Charles Y. C. Yeh1*, Hercy N. H. Cheng2, Zhi-Hong Chen3, Calvin C. Y. Liao4 and Tak-Wai Chan, Published by Springer Open Access March 11, 2019 1National Central University, No. 300, Zhongda Rd., Zhongli District, Taoyuan City 32001, Taiwan"* The research paper looked to address the traditional teacher led instruction of mathematics in school. Studies cited by the paper presented various reasons on learners or termed low achieving students in math. Some of the studies were cited by the researchers of this paper stated that:

> *Unfortunately, in teacher-led instruction, all the students are required to learn from the teacher in the same way at the same pace (Hwang et al. 2012). Low-achieving students, without sufficient time, are forced to receive knowledge passively. Barr and Tagg (1995) pointed out that it is urgent for low-achieving students to have more opportunities to learn mathematics at their own pace. Researchers suggested one-to-one technology (Chan et al. 2006) through which every student is equipped with a device to learn in school or at home seamlessly. The low-interest problem for almost all students in Taiwan is usually accompanied by low motivation (Krapp 1999). Furthermore, students with continuously low performance in mathematics may eventually lose their interest and refuse to learn further (Schraw et al. 2001). This is a severe problem. To motivate students to learn, researchers design educational games to provide enjoyable and engaging learning experiences (Kiili and Ketamo 2007). Some of these researchers found that game-based learning may facilitate students' learning in terms of motivation and learning effects (Liu and Chu 2010), spatial abilities and attention (Barlett et al. 2009), situated learning, and problem-solving (Li and Tsai 2013).*

Given this problem the researchers looked into educational and learning innovations that institutions and teachers utilized to address the problem of lack of interest, slow learners and motivational problems of students in learning math. Focus of their study was to look into learning by playing for students. And also keeping up with the interest of learners in the time of internet and computer technology the researchers developed a software called "Math Island". A computer assisted tool in learning math for learners.

> *"The students used their own tablet PCs to learn mathematics from the game in class or at home at their own pace. In particular, low-achieving students might have a chance to catch up with the other students and start to feel interested in learning mathematics. Most importantly, because the online educational game was a part of the mathematics curriculum, the students could treat the game as their ordinary learning materials like textbooks. In this paper, we reported a 2-year study, in which 215 second graders in the school adopted the Math-Island game in their daily routine*."

The digital educational games and activities in Math Island covers tailored games for specific sets of mathematical knowledge to motivate students to learn math. The educational games activities were three-tiered meaning it has various features like goal setting and quest and rewards when the quest is completed. It is also supported by existing learning materials as resources in solving the games. The result of the study indicated that slow learning students in math achieved higher grades in using the technology. The study presents evidence-based learning innovations on how effectively teachers and educators can reach out to low achieving and slow learning students in mathematics.

There are also some basic math teaching strategies that can also be effective in teaching specially to young learners such as preschoolers. These strategies are repetition, pair work, math games, timed testing and manipulation tools. In pair work or group work, it is said that working together makes children solve problems easily through discussions and exchanging of ideas. Through repetition of the lessons and information children easily comprehend with the concepts. Manipulation tools are usually used in the four fundamentals of mathematics and through these children easily understand how these fundamentals work. Math games are effective strategy to children because most children learn through playing. It is important for teachers to assess their students every after a lesson to help them know their student's understanding level. Math skills are an important part of our life. To give students the needed help, teachers should incorporate several strategies to give students the opportunity for their future development.

Increase in the comprehension and retention of math concepts are increased through hands-on activities. Creating a project with combination and integration of lessons in mathematics will decrease the use of time spent in teaching like a building project which includes measurements, geometric shapes, weight and angles. Hands-on learning has proven an effective tool in teaching math concepts from basic to advanced. A math class in a study of a South Texas college proved that 13% of the class passed the subject.

Although there are many ways and strategies you can apply to teach mathematics and make it easy, there are still children with difficulties in learning mathematics but there are still some ways these children should be treated. Research facts to numerous strategies that have been constantly effective in teaching students who is going through difficulties in mathematics. These are the use of structured peer-assisted learning activities, systematic and explicit instruction using visual representations, modifying instruction based on data from formative assessment of students (such as classroom discussions or quizzes), and providing opportunities for students to think aloud while they work.

Struggling students specially in math subjects are not so new. Some strategies should be introduced to make it easy and fun to do. Some suggestions are they should learn the basics first and make it a positive experience. You can use some learning aids and models and encourage the children to think out loud. In some cases, struggling students feel helpless in dealing with math problems and there are some interventions that can be used that will help you pass through this problem. Some children needed direct instructions to lead the students into a step-by-step instruction and pick up the learning gaps immediately.

Engaging children in the real world in learning mathematics is also one effective strategy that can be used in teaching mathematics. Real world experience is one thing that stays in the mind of child that is also learning by doing. Homework is the perfect opportunity to teach math for the real world. After all, students are literally using mathematical reasoning outside of school hours and in a non-classroom environment. You can introduce them into cooking, they use also their mathematical abilities in skill while cooking, it includes measuring and computation as well.

Understanding the material presented, applying the skills, and recalling the concepts in the future are the ultimate goals of mathematics education. You have to create and effective class opener, this serves as the motivation for the class. Introducing topics with multiple representations by showing a picture or using manipulatives. You can also solve the problems in many ways and encourage them to create their own way to solve the problem. And finally end the class with a

summary, you can do a quick formative assessment and preview the homework to avoid confusion.

Effective Mathematics Teaching Practices

There are some mathematics teaching practices that we can consider in teaching and used as strategies as well. One is we should establish mathematics goals for to focus learning, to be effective in teaching mathematics we should establish clear goals, situate goals and use these goals to guide instructional decisions. Implement task that promote reasoning and problem solving, use and connect mathematical representations, facilitate meaningful mathematical discourse, pose purposeful questions, build procedural fluency from conceptual understanding, support productive struggle in learning mathematics and use evidence of student thinking. These are some practices that are suggested to be use and practice in teaching mathematics so that learning will be fun and easy.

The Role of Teachers in Young Children's Mathematics Classrooms

Several experiments performed by professionals are mentioned in the research paper by Kyoko Johns entitled "How do Kindergarteners Express their Mathematics Understanding?". In these experiments the main role of the teachers is to guide the students in the right path. It showed in the study of McClain and Cobb, the study revealed that the students constructed their disposition toward mathematics with the teacher's guidance and created the learning environment with rules of their own by communicating with each other and the teacher and debating what rules were allowed in this mathematics classroom.

Yackel and Cobb's study has established and reported the significance of the classroom teachers' beliefs and values along with their mathematical knowledge and understanding play in shaping students' perceptions toward mathematics. Their study uses debate as their strategy in teaching the lessons and making the students autonomous in mathematics by sharing opinions and ideas and established a sociomathematical norms in their classroom.

The studies also indicate that the teacher can facilitate social interactions and enhance student learning by interacting with them and giving them opportunities to express themselves and will not have a fear of being judged.

Many researches observed that cooperative learning maximize the learning of the students and developed relationships in which they share their ideas and come to positive and relative conclusions and solutions. It is important that teachers or facilitators are knowledgeable enough in mathematics to teach the different functions and aspects of it so that the learning process can support their mathematical development.

CONCLUSION AND RECOMMENDATION

The articles reviewed showed that there are various techniques and strategies that can be done or use to utilize the learning of the children in Mathematics specifically and making it fun while learning. However, without the children's good behavior or attitude learning in an easy way is

not probable. Thus, it is recommended that children's behavior should come first and inculcate discipline for the best results to their learning.

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