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NUMERACY: A CHALLENGE IN SECONDARY SCHOOLS

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ABSTRACT:

This literature review article aims to organize various concepts on the challenges encountered by secondary schools in relation to the numeracy level among learners. This discusses the importance of honing and improving the numeracy level among the secondary students and the possible reasons for their poor numeracy level. This sums up the roles of teachers and parents in the development of the learners' mathematical skills. It is found out that several factors are sometimes unnoticeable but can affect the learner's numerical performance.

INDEX TERMS: Numeracy, Mathematical skills, factors affecting poor numeracy, roles of parents in numeracy, roles of teachers in numeracy

INTRODUCTION

Numeracy is the information, abilities, practices, attitudes that learners need to use to do arithmetic in a wide scope of circumstances. It includes perceiving and understanding the functions of math in the world. Number, estimation and calculation are normal parts of many people's numerical experience in daily lives. Learners are presented to progressively complex and refined numerical agreement, familiarity and critical thinking. These capacities empower them to utilize math in making educated choices and solving problems proficiently (VCAA, 2017).

Teaching mathematics is subject to an emphasis on improvement of computational capabilities. This is with the aim of creating abilities like presenting and tackling issues, numerical argumentation, thinking and analysis. These capabilities are expressed as objectives in the school educational plan on numeracy (Julie, 2020). Otis (2019) said that what is good about teaching math is that it has three components. There's such a lot of adaptability by the way we clarify ideas and abilities, how exercises we manage our classes and how we assist kids with learning math. We can make them fully aware of the excellence of what they're realizing in any capacity you like. Also, that is not in any event, referencing the sort of independence we have when we instruct math. We can discover or make a road for math at school through extracurricular gatherings. But teaching math is far beyond visions of making our students learn it. Of course, it is really challenging for both teachers and schools to meet the needs of our learners in terms of numerical skills.

According to Larson (2018), we ought to always remember, or neglect to appreciate, that as educators of arithmetic, all of us are occupied with something substantially more significant than our day by day assignments of guidance, educational plan, and evaluation. We must engage our learners so they can work on their own lives yet can likewise better comprehend and evaluate their general surroundings. Brown (2016) mentioned that teachers should instruct youngsters that maths is its very own language. In the event that learners can't communicate in the language of

maths easily, it means that they don't actually comprehend the essential ideas. And this problem really exists in the teaching and learning process among schools.

Even before the pandemic, schools are having troubles with regards to the learners' improvement in numeracy level. According to the analysis of Joseph Rowntree Foundation (JRF), five million adults are inadequate with regards to fundamental perusing, composing and numeracy abilities crucial for regular daily lives and having the option to learn and get work (JRF, 2016). Moreover, JRF said, it suggests that they may find it hard to finish different fundamental tasks, going from making short messages, using a cashpoint to pull out cash, having the choice to understand value marks on food or cover family charges (JRF, 2016). We can say that this may be a result of poor numeracy background taught at school. This problem becomes more extensive in our today's situation as we are facing a global crisis due to pandemic.

School terminations have left numerous guardians accountable for supervising their youngsters' schooling at home. Parents and guardians may be battling with maths specifically – not least due to wrestling with subjects and methods that are new to, like number bonds, plentiful numbers, lumping and many more (Penazzi, 2021). In this case, learners may find it more difficult to cope up with the lessons since there is limited help from the adults at home. In the COVID-19 pandemic, kids are similarly however worried as their folks about the thing that seems to be occurring. The closure of schools is a problem in youngsters' lives. As guardians support kids and think about their learning, this can be a chance for both parents and children to address, investigate, think and learn math together through regular exercises (Hold and Kajander, 2020). Because we believe that teaching math is not a sole responsibility of the school, but rather collaboration with the parents especially now that teaching children face to face is not applicable.

A result of study says that moms' support in number expertise exercises and fathers' cooperation in number game and application exercises fundamentally anticipated their kids' numerical exhibition even subsequent to controlling for foundation factors and kids' language capacity (Huang et al., 2017). Even online classes nowadays have predicaments. With Math, there are three primary difficulties of online-based instruction: how to clarify and introduce math without face to face teaching and learning process, how to track students' schoolwork and tasks progressively and how to assess learnings eventually (Kačič, 2020). We can therefore say that there are truly problems in the development of numeracy level and teaching math in schools in whatever approaches we have.

RESULTS AND DISCUSSION

1. Factors Affecting Students in Improving Numeracy Level

Learning higher Math needs a good foundation because the greater parts of its competencies are prerequisite- meaning it's a must to know addition before learning subtraction. Fleming (2019) said that Math expertise is aggregate, which implies it works similar to a heap of building blocks. We need to acquire understanding in one region before we can adequately proceed to "expand upon" another region. Our first numerical structure blocks are set up in elementary school when we learn rules for expansion and duplication, and those first ideas contain our establishment. The following structure blocks come in secondary school when learners initially find out about equations and activities. This data needs to sink in and turn out to be "firm" before they can continue ahead to grow this system of information. Poor numerical foundation could mean difficult understanding of concepts in secondary level.

Next, we consider Math anxiety as one of the factors. This Math anxiety is the inclination of strain and dread that numerous individuals experience when approached to work out an entirety. For learners, it can prompt social issues in class, just as actual manifestations like butterflies in the stomach and a hustling heart. Learners with high maths nervousness perform more poorly in normalized maths tests and school tests. Restless minds meddle with reviewing maths-related realities and methods, and furthermore with playing out these techniques well.

This is frequently portrayed as the experience of inability to think clearly (Morsanyi, et al., 2020).

Third, the learner's peer influences learning math. In a study conducted in Nigeria, it is discovered that peers' conduct, for example, poor learners who caused a ruckus and bright learners controlling the class, and discussion, like utilizing alarming and deterrent words in Math class, directly affects increasing math anxiety. On the other hand, the discoveries likewise showed that peer conduct, like accomplishment of friends and brainstorming among groups, like positive guidance, limit math anxiety among learners (Garba, A. et al., 2020; Moliner, L., & Alegre, F. 2020; Suleiman, F., et al., 2020).

Next, is the learner's disposition on learning math. Attitude towards Math is characterized by behavior as liking or hating the subject; an inclination to participate in or stay away from mathematical exercises; a conviction that one is positive or negative at Math; and a conviction that Math is helpful or pointless. (Mazana, et al., 2019; Kibrislioglu, 2016) Similarly, Kennedy (2019) stated that as per the American Psychological Association, sentiments that sway an individual's mind-set and passionate response can be alluded to as influence, and demeanor towards math is one illustration of an emotional state. Researchers think about the effect to exist on a sliding scale – going from positive to negative. Normally, this implies in a school brimming with learners, we will see a colossal scope of various emotional states identified with math learning. For each learner who anticipates their next mathematical exercise, there's another who feels perplexed. Some students probably won't care for math since they figure the subject isn't valuable, while other students might doubt their own capacity to succeed.

It is also noted that secondary school learners will in general foster their own personality in school and act likewise on what is generally anticipated from them. This circumstance is important to the school obligations and activities that learners may experience in school. On the off chance that learners foster their perception towards Math, they will distinguish their own strengths and weaknesses. Subsequently, they perform activities as indicated by their apparent abilities. The generalization that Math is for male students is ordinarily seen in schools. With this, teachers need to build up methodologies that are disposing of gender as a factor in determining the capabilities of the learners in Math (Brezavšček et al., 2020; Peteros et al., 2019; Dowker et al., 2016).

Moreover, it is shown that a large portion of the learning facilities that are relevant to the learning process of learners seems not to be adequate in public schools today. Those accessible appear to be not of standard quality, some appear to need repairs, while some are in feeble conditions. The situation with these facilities particularly in public schools today gives off worries to teachers, since learning materials and facilities are relevant in learning. Great number of schools lack essential learning materials and facilities to ensure high scholastic performance (Akomolafe and Adesua, 2016).

Another one is that teaching approaches and strategies are one of the significant factors that add to the improvement of student results. In the study of Umugiraneza and Bansilal (2017), it is uncovered that educators were bound to use only one strategy in teaching statistics and more in other mathematics disciplines. Also, it is found out that the learning process was mostly teacher-centered. Teaching strategies can be another factor why there are challenges in numeracy level among the students in secondary schools.

Another study tracked down an immediate impact of instructional guidance on the opportunity to learn math guidance in the classroom and professional growth of teachers. The result of the study exhibits a possible system through which school can uphold the readiness of teachers in giving learners fair access to intelligible, centered, and thorough mathematical learnings. (Urick, et al., 2018) For some countries, instructional leadership interceded the connection between home resources and freedom to master numerical thinking abilities. (Liu, et al., 2019)

It is also indicated in the study conducted by Ramirez et al. (2019) that teachers' math apprehension is related with lower math accomplishment. This relationship is incompletely intervened by the learners' insight that their teacher accepts that not every person can be intelligent in math. In the result, it is tracked down that higher teacher math anxiety is connected with a decrease in teaching process, which in return affects the students' math achievement and their perception on how their teacher sees Math.

Numerical capacity is a significant expertise to math teachers. But there are existing math teachers with a degree in math who don't have great numerical reasonable arrangements. This may cause a less ideal effect on learners who are needed to have numerical understanding and abilities (Hidayat, et al., 2019).

2. Teachers and Parents Roles in Improving Numeracy among Secondary School Learners

One of the variables that decide the achievement of Math learning is the utilization of learning media. Learning media can assist learners with numerical abstraction and critical thinking. (Widodo, 2018). Learners need to become familiar with the critical thinking ability with which they can solve problems in their current circumstances (Widodo, 2018).

Teachers should also utilize the use of worksheets-based learning so the learners may improve critical thinking. In the study by Krisdiana et al. (2019), it is shown that students' critical thinking skills are increased by worksheet-based learning, and they are excellent. Another study shows that Team Accelerated Instruction can further develop numerical critical thinking abilities. By utilizing visual learning media in this learning, learners are required to comprehend the abstract idea of math. It is important to plan visual learning media to make learning more successful (Widodo, 2019; Bernard, 2019).

In a research, authorized by Steljes and overviewed by Censuswide, it is found that teachers in primary and secondary believed that technology and innovation in the classroom conveys a further developed learning experience. Regardless of whether that is the interactive whiteboard or board, touch screen and other technology-based materials; they helped learning for both teachers and students (Oakman, 2016).

Next, is that teachers' support has an important effect on the learners' cognitive, behavioral and emotional aspects in a Math class. Teachers should promote enjoyment in math activities (Liu, 2018). It is also noted that teachers' efficacy is related to the learners' performance and accomplishment (Gulistan, 2017). One of the teaching qualities a teacher should have is that he should foster new techniques to evaluate the sorts of information, abilities and manners we need for kids and society. Critical thinking is an important ability close to conventional proficiency and numeracy (Fischetti, 2016). As educators, we need a profound comprehension of being proficient and how we can lead students to their own practical and basic education. Without this, our kids won't be empowered to be powerful communicators of their thoughts or confident as practical grown-ups. These abilities are significant fundamental abilities. Without numeracy and basic education abilities, an individual will battle. Devices like calculators will not help without an applied comprehension of what should be determined and why (Sheridan and Bahr, 2019).

Teachers should also make learning real and based on everyday life. The discoveries of the study by Zakaria and Syamaun (2017) have demonstrated that the utilization of Realistic Mathematics Education Approach can improve Math accomplishment of learners. This showed that Realistic Mathematics approaches are more effective to learners than traditional methodologies. It is supported by another study which showed that learning materials dependent on a sensible math learning approach met the successful standards and can further develop numerical critical thinking capacity and self-viability of the learners. It was proposed that math teachers should put forth an attempt to use learning materials that are based on a realistic math education approach (Ulandari et al., 2019).

Subsequently, secondary teachers should express effectively in the language of their discipline so they are guaranteeing their learners understanding of the subject matter. Without unequivocal guidance, language that is not clear to the learners could be frustrating to them. Educators won't know whether their students are underachieving on the grounds that they don't comprehend the language or on the grounds that they don't comprehend the ideas. It is important that we communicate to our students well (Adoniou, 2016). Effective math teachers know their teaching practices, educational programs and techniques to guarantee all learners can understand math. They are providing ways to promote the student's reasoning and critical thinking to develop their potential in learning maths (Brown, 2016).

Parents, in the same way, should help their children to promote numeracy level. Foundation of learning math started at home. Number-related activities can be done at home that will uphold the mathematical skills of the children through different board games or card games (Zippert and Rittle-Johnson, 2019). Moreover, parents can be urged to utilize home numeracy encounters to the advancement of their kids' numeracy skill (Cheung, 2018). What is required in our discussions with our children is an acknowledgment that we use maths on a daily basis. For instance, while exploring, deciding probability, estimating, assessing, or when paying attention to the measurements of people around us. Oftentimes, the emphasis on maths in schools is on abilities, instead of tackling its uses and importance, that is why some learners cannot appreciate the subject well (Larkin, 2016).

The parents' optimism also helps the learners' achievement. It is discovered that positive thinking sometimes relies upon the kid's gender. Specifically, moms' optimism regularly lined up with generalizations that young men are better at math and young ladies are better at reading.

Parents with solid convictions that young ladies are awful at maths will in general give schoolwork help that is both nosy and controlling. This could prompt more unfortunate school results and diminished inspiration (Parker et al., 2021). Parental involvement is a huge factor in the learner's achievement. In a study of Cai et al. (2016), they summed these roles up as parents being the motivators, the resource providers, the monitors, the mathematics content advisors and the mathematics learning counselors.

SYNTHESIS

This review paper tells us several reasons for the low performance level of the students in the secondary schools. These are the poor mathematical foundation, the math anxiety among students, the peer influences, the learners' attitude towards math, the availability of learning materials and facilities and the teachers' approaches and teaching methodologies. Moreover, this also discusses the roles of parents and teachers alike to promote the numeracy level among the students. It is known that the use of media and technology could be of great help, the teachers' strategy to relate math in everyday living, how they communicate with their students, the parents' support to their children's learning and the parents' optimism.

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