Challenges Faced by Slow Learners in Mathematics at Primary Level of Education  
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Abstract: Research in the area of difficulty of slow learners in language has been on an up surge since a decade while the field of mathematics remains underdeveloped. The present study deals with this inadequacy by focusing on mathematics learning difficulties of slow learners especially at primary level of education as many research evidences shows that early interventions are effective. The need to carry out this study arose from the high drop-out rate at primary level and poor annual results of students in mathematics. The objective of this study was to investigate the extent to which the limitations of cognitive abilities of slow learner student and learning and teaching environment contribute to the low performance of slow learners in Mathematics. The findings revealed that ignorance of individual difference and traditional teaching methods followed by teachers along with the cognitive limitations of slow learner students’ are responsible for the challenges faced by them in mathematics. Therefore, teachers should provide remedial instruction to help students with difficulties in mathematics to improve their numeracy level and mathematics achievement.

Keywords: slow learners, mathematics, primary education, cognitive ability.

The growing awareness of importance of education resulted in significant increase in number of children enrolled in school in past decades but high dropout rate especially at primary level of education has remained a matter of major concern. Among many factors responsible for high dropout rate, the unsatisfactory academic progress of students is the major concern (Jimerson, Anderson & Whipple 2002) as many of them give up due to frustration caused from regular failure in acquiring academic skills. The failure of the child may be because of acquired or congenital defect, unfavorable home situation, emotional deprivation or some problems in school. A significant percentage of these failure prone students may be characterised as “slow learners”. The average academic progress of the classroom gets low due to the contribution of those few students in the class. They look like other students in the classroom but they have learning problems (Khan, 2008). They are not focused to learning in learning environment designed under traditionally acknowledged education system (Mukunshan, 2013). They are not eligible for special education as their IQ falls between 70 and 85 which is too high to consider them mentally retarded (Mercer, 1996). William & Ruth termed them as “Educationally Retarded in comparison with their ability”. They not only lack in the skill of learning abstract concept but also in applying the learned concept in daily life situation due to their limited cognitive abilities. However, they learn the concept if it is presented in concrete form.

Although they struggle to meet the academic demands of all the subjects but learning the concepts of mathematics is more challenging for slow learners due to its abstract nature. As reported by Wong, Omar and Mak (2004), at primary school level this subject appears bamboozled for slow learners but not appalling. The fundamentals of Mathematics such as the concept of number, time, money, fraction, numerical classification and word problem is being taught in primary classes and develop as the individual grows (Flinter 1979). According to National Policy on Education (1986), “Mathematics should be visualized as the vehicle to train a
child to think, reason, analyze, and articulate logically. Apart from being a specific subject it should be treated as a concomitant to any subject involving analysis and meaning.” The foundation of academic success is strongly laid to a great extent on the development of concrete early math skills (Duncan, Claessens, Huston, et al. 2007). If a child fails to understand these fundamental concepts, he will find difficulty in solving the problems at higher level due to hierarchal nature of mathematics. The concept in mathematics to be introduced in next class is dependent on the concept taught in previous classes. Not only in academics but in long term acquisition of mathematics skills are required for employment in highly technical dominated job market. Poor performance of students in mathematics may create a barrier for their future personal and professional life.

The challenges faced by slow learners in mathematics can be classified into three categories namely- sociological, psychological and philosophical problems. The sociological problems include family background, home environment and pedagogy and attitude of teachers. The psychological problems comprises of lack of interest, subject phobia and fear of failure. Students’ helplessness to apply formal mathematical concept in problem solving constitute philosophical problems of slow learners. The concepts of mathematics seem to be concrete in nature but this is the most abstract and speculative of the science which further enhances the difficulty level of slow learners in dealing with this subject as they lack in the ability to comprehend problems which are presented in abstract form. Understanding numerous abstract ideas, for example, place value and simple calculations (Telecsa, Slaton, & Stevens, 2001; Farooq and Aslam, 2017), BODMAS rule, concept of time and multiplication by recalling tables are difficult for slow learners (Priyadarsini and Kumar, 2016). Based on the those problems identified among slow learners in mathematics the researcher has suggested remedial measures such as use of concrete examples, visual aids, regular supervision and encouragement of students allotting them manageable amount of work. Additional deficiency in understanding spatial relations and association and organization of materials among slow learners (Montague, 2005) makes the subject more complicated for them. Recognizing the familiar concepts in unfamiliar context is an essential feature for conceptualizing the concept (Salomon and Perkins, 1989). The inability to generalize the concept among slow learners may interfere in classifying the events given in the problem (Ackerman & Dykman, 1995). Even if they understand and solve the problem with continious effort of teacher and practice they may not apply the same concept in another similar kind of problem with little modification. According to Salomon and Perkins’ (1989), transfer is a vital feature, requiring students to identify familiar problems in unfamiliar contexts. Deficits of slow learners in generalization and translation of the problem into a concrete and practical problem through imagination may interfere with their ability to classify and find relationship between different events, objects and their relative size. They get confused in solving problems having three dimensional pictures as it demands the perceptual skills and logical analysis on the part of learners. The problems get more complex in the progressive grades and require many steps to be solved. Due to limited short term memory and working memory (Jankowska, Bogdanowicz and Shaw, 2012) they forget the steps in between and lose the track and also find difficulty in recalling quantity details required to solve the problem (Thames & Ball, 2010). Short attention duration and non-alertness during learning further add to their problems in Mathematics (Ball & Forzani, 2009). The most common errors committed by slow learners as found by Novitasari, Lukito and Ekawati, (2018) are comprehension, process skills and counting errors especially when the question requires division
with fraction. They are found to have problems in understanding the concept of simplifying fractions, addition or subtraction between integers and fractions.

Another factor considered causing special concern is the peculiar language such as signs, symbols, terms operations used in mathematics. Reading the language of mathematics demands accuracy and reasoning has proven to be a severe hindrance for the slow learner and many times lead to rote-learning without understanding (Mok, 1994). According to Kaliski (1962) the success and failure of teaching arithmetic depends to a large extent on words used to explain the concept and process of problem solving in Mathematics. The abstract and symbolic terminologies which may sounds complex to slow learners must be slowly clarified in a simple, precise way. To deal with this language problem in mathematics Do1gen (1977) has suggested to teach the necessary vocabulary to develop a productive learning environment which can be done by textbook adaptation. Mumpuniarti (2017) also advised for rethinking on pedagogical strategies followed by teachers dealing a variety of learners in inclusive classrooms.

Besides limited cognitive abilities negative attitude and perception of mathematics as tough subject significantly identified with later high mathematics anxiety (X Ma and Jiangming Xu, 2004) and this subject specific anxiety has noteworthy negative connection with mathematics performance. In many cases students maintain a strategic distance from mathematics at whatever point or at every possible opportunity (Karimi and Venkatesan (2009). There are many other reasons related to curriculum, parents and teachers were found by Gezahegn, (2007) for unsatisfactory performance of students in mathematics such as overloaded curriculum, time limitation of teachers to finish the curriculum, low socioeconomic status of family etc. The hurry to finish the lengthy syllabus by teachers does not allow them to pay individual attention and monitoring of children’s work. Lack of individual attention and provision of extra time to complete the task on the part of teachers further aggravates the problem of slow learners (Rajkumar and Hema, 2017). the inability to cope with individual differences, and the aptitude test driven curriculum were seen as the major problems in primary mathematics education (Wong, Lam & Wong, 1995). Diversity to cater for individual differences was lacking, and there is a need to put more effort to deal with students’ misconception.

Apart from the factors of child’s own cognitive limitation and teaching learning process of the classroom, their socio economic condition of the family & physical and psychosocial status of the students also affect negatively their performance in mathematics (Selvarajan, Vasanthagumar, 2012).

Instructional explicitness, instructional design to minimize the learning challenge, provide strong conceptual knowledge for procedures taught, drill and practice are few pedagogical approaches suggested by Fuch and Fuch (2008) to be followed by teachers in the inclusive classroom. Adoption of these approaches ensures the conceptual transfer of knowledge within the same type of problem and opportunity to drill and practice the basic mathematics skills. Besides this, plethora of remedial strategies has been suggested by researches for teaching mathematics in an effective way to slow learners. Fuchs and Fuchs (2005) suggested ‘Schema-Based instruction’ and ‘Self-regulation’ to teach mathematics. The ‘RIDE’ (remember, identify, determine and enter) and ‘FAST DRAW’ (find, ask, set, tie & discover, read, answer and write) is especially designed to assist students in solving word problems. TINS (thought, information, number & solution) strategy given by Owens in 2003 was especially designed to analyze and solve word problems. Use of teaching materials developed from indigenous materials, picture book and peer tutoring method was advocated by Deluao (2018). Few new methods such as “Reform Agenda” (Piet, 2009) in which teachers focused on social interaction along with problem solving method
to teach mathematics to slow learners. YUGAL (Yusha, 2012), ‘Mastery Learning Approach’ (Uchechi, 2013), ‘Taped Problems intervention’ consisted of a CD player, problem set CD tracks and corresponding intervention worksheets, headphones, assessment probes, a stopwatch, and a pencil (Mc Callum and Schmitt, 2011), Multisensory approach (Eissa and Huseini, 2013; Mattuvarkuzhali, 2012) and mental abacus technique (Barner et al., 2016) are recommended as an alternative model to teach Mathematics to slow learners. Peer tutoring method was advocated by many researchers as effective strategies for improving the performance of slow learners in mathematics (Deluao, 2018; Pujar and Gaonkar, 2008). Role-play and ICT can also be used to minimizing the language barrier (Cyparsade et al., 2013). Many assistive technologies has been designed for improving academic skills of learning disabled children which can also be used for slow learners. Assistive technologies should not be limited to computers tape-recorders, calculators or electronic devices but there are many software such as FLASH (Fuchs, Fuchs & Hollenbeck, 2007) for quick retrieval of math facts, Fx-CG20 (Pawar, 2015) for promoting mathematical thinking, which can help them in academics to a great extent.

**Conclusion**

The reasons behind incompetency of slow learners in mathematics are the result of limitation of child’s own cognitive abilities and problems in his/her outside world such as school, teachers and parents and the nature of the subject itself. No special pedagogical strategies were being followed by the teachers for slow learners in the classroom. There is a strong need of rethinking on pedagogical strategies followed by teachers dealing a variety of learners in inclusive classrooms. Educators need to look for remedial strategies which may be incorporated within the traditional teaching methods or the remedial strategies that may be used alone.

**References**


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