BARRIERS IN LEARNING MATHEMATICS AND STUDENTS MISCONCEPTION IN SECONDARY SCHOOLS

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ABSTRACT

The critical thinking towards learning mathematics and significant to recognize in match with the developing unaware able knowledge of secondary students in learning secondary classes. However, in spite of this understanding of its importance the overall performance of students in mathematics is unsatisfactory and the number of indiscipline quality of education. The focus of this research is to find out the existing barriers in teaching-learning process of mathematics of secondary grades IX-X. The objectives are; to identify the specific barriers in teaching learning process of mathematics; to examine the barriers of teaching learning process of mathematics at secondary level; to evaluate the mathematics teachers detect out the barriers for the secondary students learning. The research questions are to reveal the major problems in the teaching-learning process of mathematics and propose possible solution in order to overcome these barriers. A quantitative design approach was used to collect data from teacher in close ended questionnaires and students involved in learning of secondary mathematics. It was found that the problems are multifaceted and accordingly the solutions require overall effort from all concerned pedagogical, social, economic, administrative and learning attitudes of students and competence of teacher in overall teaching learning process. This believe study will have a contribution in endeavor of identifying some of the major factors which barricade the teaching and learning of mathematics and thereby towards possible solution. It could be also used as an initial work for those who are interested to do further studies in the area of secondary mathematics.

Keywords: teaching learning process, competence of teacher, towards possible solution.

INTRODUCTION

Today's world largely depends on science, and science in turn depends on mathematics. People grant it as a theoretical subject. But the truth is all the branches of mathematics were developed to meet the demand of day to day practical life. Modern math, consisting of arithmetic, algebra and geometry has an important role in the field of education (JA Makowsky, 2017). Mathematics has a vital role in the classroom not only because of direct application of the syllabus material but because of the reasoning processes the student can develop. Education policy states that Mathematics is deeply interrelated to science and it should be prioritized. Despite such importance now-a-days it is unfortunate that many students have erroneous impressions about Mathematics and dislike Mathematical activities; many seem to fear, even hate Mathematics (W Mansell, 2015). Mathematical problems are problems within a science arising for a large part from this science itself or from other

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sciences whereas education problems are problems of life arising from changing needs, moods and whims of a changing society. Mathematics has become a terrifying for most of the students (Weiss, 2017). If this phenomenon continues, a time will come when good scientists and engineers will not be easily available in the work. The quality of education is seriously questionable, which is the crying need now. However the importance of quality education in nation building has also been realized by several nations including Pakistan (Ball, 2017). Teaching-learning activities have a great impact on students achievement, hence it is essential to investigate how effectively are being carried out in classroom. "Appropriate teaching strategy can lead the students to master the abstract and symbolic forms of thought much earlier and more systematically". Students learn much more effectively if the teaching-learning techniques meet their special needs (Nilson, 2016). This unfortunate situation indicates that there must be multifaceted challenges and barriers in teaching learning of mathematics in secondary level of District Ghotki, Sindh. This study targets to assess the existing barriers and shed some lights on the loopholes of improve the concepts of students (B Eichelberger, 2017).

REVIEW OF RELATED LITERATURE

Barriers in learning mathematics of secondary students

Teachers' faced due to the barriers that exist can be classified as either external or internal barriers as to participation of traditional learners as attitudinal barriers, physical and material barriers or structural barriers. In these four barriers as in Situational, Attitudinal, Structural and Academic (J Jaccard, 2014). This stated that teaching is a lively process in which a person shares information and ideas to make behavioral changes. Learning is the process of assimilating information with a resultant change in behavior. Teaching-learning process is a planned interaction that promotes behavioral change that is not a result of maturation or coincidence. (JW Son, 2016)W has developed a transactional model to categorize the variables that influence classroom teaching learning process. There were evidences of students in Year 8 mathematics classrooms experience little complex problem solving in the results from the Program for International Student Assessment (PISA) and the Trends in International Mathematics and Science Study (TIMSS). On the pronounced the average constituting "a condition of low teaching, where students are asked to follow procedures without reasons (JC Richards, 2014). Factors that inhibit or prevent people from participating in activities are referred to as barriers, constraints, deterrents, impediments, or obstacles. Students is facing many challenges in the way of its progress and prosperity mainly struggling with the education sector. Negative attitude of mathematics means having an aversion towards learning mathematics and using it in their daily life and discouraging students from choosing mathematics as their major subjects (Markle, 2017). Hostile feelings and negative attitudes toward Mathematics and science, therefore, have a great influence on general behavior and values. These feelings and attitude that sustain a dislike of Mathematics or hamper any interest in mathematics and are great barriers to the development of Mathematical literacy than any lack of particular concepts, skills, or thinking abilities' (Daniyan, 2015). This mentioned students believe that mathematics is important, difficult, and based on rules and mentioned that one out of every two students thinks that learning mathematics should be above all memorization as cited in. Science and mathematics were often described as difficult subjects (R Harrington, 2015). Therefore students hardly choose science streams.

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STUDENTS FAILURE AND FEAR TOWARDS STUDY MATHEMATICS

Many students develop fear towards Mathematics due to their misunderstanding, non-understanding and failure during previous lessons. This is stated that mathematical anxiety is developed as a result of having a poor image of mathematics due to general lack of comfort in that someone might experience mathematical when required to perform (Clement, 2016). Children with negative attitudes towards Mathematics have performance problems because they develop anxiety. Mathematics has been largely neglected in practice. The lack of connections to the use of mathematics and relevance in daily life or in relation to other sciences fosters low motivation and negative attitudes towards mathematics learning, and hence the feeling that why learn if it has no use prevails among most students. Modern experts on child development and early childhood education firmly mentioned that there are differences in individual thinking and they advocate that learning should be related to students' own pace (T Allen, 2015). Mathematics must be very remarkable and interesting courses that can help the students solve the many problems they actually have to face. If a problem is a realistic application using mathematics, then students can see the importance of the skill involved. Often gender difference in attitudes about mathematics have been referred as one factor that has contributed to lower enrolments and less success of girls in compare to boys in mathematics courses. A number of scholars have noted that Mathematics is perceived as a male domain in various countries (Gamboa-Brooks-Gray, 2015). It is showed women are clustered in the life-sciences with far fewer in physical sciences, mathematics, and engineering and computer science. The boasted about studies in science because of the status of science and mathematics as 'difficult subjects' (Z Said, 2016).

Textbooks not satisfied to easily learn of students

Mathematics textbooks do not satisfy the requirements of the students and the teachers of different levels; as a result, the inevitable consequence is that students go for collecting the guidebooks, just for cramming the solutions (R Williams, 2017). Even the best teachers feel barriers as there are an excessive number of specified learning outcomes and the textbooks contain a maximum amount of information. The content of text books emphasizes rote memorization of factual information. The shortage of relevant, low-cost books for use inside and outside the school continues to create challenges to provide quality education for all. Many studies indicate that reduced class sizes have a great impact in the progress of student achievement (Filby, 2015). Overcrowding in classroom has pernicious effect on the quality of teaching learning achievements. Though education policy recommended to maintain teacher student ratio into 1:30 in 2010, often classes are crammed with 100 or more students. Large class affects the interaction between the teacher and the students. All students learn at different paces, and particularly among young people, it takes time and practice for formal Math procedures to make practical sense. Lack of motivation in mathematics has been proven as great barrier in high schools of United States. Studies shown a strong correlation between the lack of motivation and rising number of at risk students in mathematics (L Vandenbroucke, 2018). Since students in a class differ in different perspective such as level of mastery, economic background, cultural background and each student should be treated according to their individual need. Students learn much more by touching, seeing and smelling and testing than by just listening. Therefore use of teaching aids can be a great help to aid students learning. This is teaching methods are important but the use of teaching aids plays a significant role as it influence students learning as well as achievement. Use of teaching aids is required to make teaching learning activities more relevant. Different strategies and teaching methods should be used and individual plan should be adapted to meet the student's requirements (RJ Wlodkowski, 2017). But the existing method of teaching in

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schools is much more traditional and less activity based, which is highly dependent on the performance of the teacher only. No group discussion, question answer or any other interactive teaching learning which is being practiced in the class. As reported that teachers are prejudice to teach the same things in the same way they were taught when they had been students (PJ Mellom, 2018).

Research Objectives

1. To identify the specific barriers in teaching learning process of mathematics.
2. To examine the barriers of teaching learning process of mathematics at secondary level.
3. To evaluate the mathematics teachers detect out the barriers for the secondary students learning.

Research Questions

1. What are the specific barriers in teaching learning process of mathematics?
2. What are the barriers of teaching learning process of mathematics at secondary level?
3. What are the mathematics teachers detect out the barriers for the secondary students learning?

METHODOLOGY

Research Design

The study used descriptive in survey design because it is concerned with collecting information the status of research population and variety of study the scope of education and attitudes of parents in learning mathematics of public secondary schools of District Ghotki, Sindh in selected the close ended questionnaires for data collection. The methods of valuation must be constructed on the requirements of the research. The researcher is used to describe the survey method whose characteristics will be concerned with information generally obtained by close ended questionnaires data collection. According to (Ndungu, The Effects of Rewards and Recognition on Employee Performance in Public Educational Institutions: A Case of Kenyatta University, Kenya., 2017) situations that the ordering a questionnaire to a sample of respondents. Designated the 20 secondary school mathematics teacher respondents for data collection and analyzed with SPSS software. This observes that the survey studies are conducted to determine and report the barriers in learning mathematics and students' misconception of secondary schools.

Population

The target 20 mathematics teachers for population comprised who is the study the scope of education and attitudes of barriers in learning mathematics and students' misconception of secondary schools.

Sample and Sampling

This sampling used for selected population of secondary school mathematics teachers of Ghotki District respectively on the sample of 20 mathematics teachers for respondents was considered to be suitable demonstration of the defendants. The investigation used to simplify sufficient to be particular terms expenses of data analysis (N Colegrave, 2017). The themes and other necessary details of the mathematics teachers in the division were obtained from the area education office. All the selected head teachers of the sample schools were included in the study and simplified.

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DATA ANALYSIS AND INTERPRETATION

The complete questionnaire was appropriately of fully responding to incase used the available responses to analyze data and initially sought information on various barriers of learning mathematics of secondary schools proceeding of respondents' on difficulties in the academic progress. In this study, testing the suitable responding the answers for regarding study the scope of education and attitudes of mathematics teachers in District Ghotki, Sindh. The data were then interpreted through SPSS software for frequency and percentage. The data obtained was organized and then analyzed descriptively using coupled methods to refer a systematic description of the objectives and with which certain themes would have been used to comprise the sample. The results frequency which in idea appeared was understood a measure of standing, consideration by ratios and regularities taken (Erwin, 2017).

FINDINGS AND DISCUSSION

The study was influenced by barriers in learning mathematics and students' misconception of secondary schools increased concern with the secondary school mathematics teachers of Ghotki District. During their headship had attitudes of parents in girls' education of public schools Sukkur, Sindh in the school environment and better facilitation for students, classroom completion, and teaching of students with study managed. The study sought to establish the following study objectives; to identify the specific barriers in teaching learning process of mathematics; to examine the barriers of teaching learning process of mathematics at secondary level; to evaluate the mathematics teachers detect out the barriers for the secondary students learning. Twenty mathematics teachers are sample for population.

Table 1: Mathematics teachers' views about the scope of barriers of learning mathematics of secondary schools' students.

Analyzed Items: Strongly Agree (SA), Agree (A), Undecided (UD), Strongly Disagree (SDA), Disagree (DA).

S:No	Items	SA	A	UD	SDA	DA	Total
1	The barriers are in core standards on conceptual understanding component of mathematical expertise	12	5	1	1	1	20
2	The barriers are understanding for ability way to appropriate in mathematical maturity	9	4	2	3	2	20
3	The barriers are of particularly tough rules comes from mathematical perception	8	6	1	2	3	20
4	The barriers are in learning mathematics of students to understand the connections of equation	6	7	2	1	4	20
5	The barriers are in the contents of the math textbook regarding the level of mastery	10	4	1	2	3	20
6	The barriers are in regarding contents and equivalent doing sums of students in mathematics	11	5	2	1	1	20
7	The barriers are attitudes towards in learning mathematics subjects of their tough to understanding	13	3	2	1	1	20

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Table 2. Analysis of research questions and related items

Item	SA	A	UD	SDA	DA	Total
1	12%	5%	1%	1%	1%	20%
2	9%	4%	2%	3%	2%	20%
3	8%	6%	1%	2%	3%	20%
4	6%	7%	2%	1%	4%	20%
5	10%	4%	1%	2%	3%	20%
6	11%	5%	2%	1%	1%	20%
7	13%	3%	2%	1%	1%	20%

They were selected from (sampled) schools. Data collection was done using questionnaires with five Likert items of (Strongly Agree, Agree, Undecided, Strongly Disagree and Disagree). While data was analyzed using descriptive statistics with SPSS software in frequency and percentage. The study concluded the head teachers of District Ghotki were answered from the mathematics teachers strongly agree and agree. The mathematics teachers are teaching attitudes of public secondary schools of the barriers in teaching and learning of students, which included best of classrooms' with cooperation in the provision of parents' requirements for learning facilities of classroom usage of study for teaching, learning investment. The examination suggests that the government should address the usage of school strategies like the arrangement of additionally workshop for learning mathematics which are real barriers in looked by mathematics teachers of mathematics educator in the teaching procedures in realm settings of District Ghotki. At long last, the examination prescribes that the teaching and learning mathematics of Sindh should offer constant preparing, to the set out educators toward understudies' barriers to stay up with the latest with aptitudes of students that help them to run their understanding adequately. The government should encourage all the secondary school with organization and the school condition for teaching and learning mathematics for secondary level.

CONCLUSION

Mathematics is core subject for life-long learning and understanding for further investment of study and attitudes in the requiring participation in schooling working point the right to use mathematical concepts measures and mapping the all arranged time to attend school development and involvement for teacher certification; requiring schools to hold two providing supplemental funds for high-quality in all districts of Sindh outreach activities; and requiring school district report cards to include progress on learning of secondary schools students involvement. To date, state governments have taken a number of individual actions to promote secondary school involvement, but to date no state has developed a comprehensive, well-funded vision for higher concepts involvement. The potential exists for a state to position itself as a leader in promoting understanding of secondary level students' involvement. The policymakers of mathematician do not have a choice about whether they affect timeline' ability to educate the students easily learning and clear conception during learning math and teachers teaching.

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