

**IDENTIFICATION OF THE DIFFICULTIES FACED BY  
TEACHER/STUDENTS IN TEACHING/LEARNING  
MATHEMATICS AT SECONDARY LEVEL**

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**Abstract**

The major purpose of the study was to investigate difficulties faced by Teachers/Students in the Teaching/Learning of Mathematics at Secondary Level in Khyber Pakhtunkhwa. The objectives of the study were to know the difficulties faced by teachers and students in the teaching and learning of mathematics at secondary level in Khyber Pakhtunkhwa respectively. To know the perception of teachers and students about difficulties faced by them in teaching and learning of mathematics at Secondary Level in Khyber Pakhtunkhwa separately. The population of the study was comprised of all government boys' secondary schools of Southern Districts of Khyber Pakhtunkhwa. From the population of Khyber Pakhtunkhwa, five districts that are Bannu, Lakki Marwat, D. I. Khan, Karak and Kohat were selected randomly. From each district 20 schools and from each school 02 teachers and 05 students were randomly selected. Thus, the sample was stood 200 mathematics' teachers and 500 students of secondary schools. The data was collected through two distinct questionnaires each for teachers and students. The collected data was analyzed using Percentage. In light of the conclusions, it is recommended that the findings of the study should be used in the lessening and subsidizing the difficulties faced by teachers in the teaching and students in the learning of mathematics at secondary level. Similarly, students studying mathematics at secondary level should be taught in such a manner that made them learn mathematics in a better way. By providing sufficient instructional material and resources, the negative attitude of students as well teachers about mathematics at secondary level will be turned

into positive one. Findings of the study should be presented to authorities responsible for developing educational policies and designing staff trainings.

**Keywords:** Difficulties, Teaching and Learning, Mathematics, Secondary Level

### **Introduction**

Mathematics is a significant subject at all levels. It has remarkable impact on the contemporary life. It is the queen of all sciences. It has played a significant role in the development of science. So the need for teaching mathematics has increased considerably because of its paramount importance on national development and prosperity. According to Bertrand Russell “Mathematic takes us into the region of absolute necessity to which not only the actual world but also every possible world must confirm”.

Mathematics has significant place in the school curriculum, because it combines the most distinctive activities of human mind which has fundamental importance both as an intellectual discipline and as a tool of practical application in every aspect of life.

The Commission on National Education (1959) regards “The education system as an instrument for the society to be used to equip individuals to lead productive lives according to their talents and interests. The system must be such that gifted individuals may have full opportunity to develop their skills”.

Mathematics is the language of science and without its basic understanding, it is impossible to understand science and technology. As a language, mathematics is a basic skill to be used in integrated teaching.

The Commission further states “In order to bring about a change in syllabi, even new methods of instruction and professional leadership is imperative. However, the change cannot be made without having teachers with sound background in their subjects. To make teaching effective, particularly that of mathematics teachers’ interests and facilitation is emphatic. It also requires full support from the administration as well as the community. In like manner, teacher is the center of the entire education programme and the success of educational activity is directly

concerned with his devotion, confidence and satisfaction. Therefore, teachers (teaching mathematics) can be motivated through attractive salaries”.

Keeping in view the significance of secondary school education, the government of Pakistan (1998) declares that secondary education is an important phase of the educational system. In the first place, it provides middle level workers for the economy of the nation. In the second place, it acts as a feeder for higher level of education. The quality of higher of higher education, which is likely to produce high quality of professionals in different ranges of social, economic and political life, rests on the quality of secondary education. Therefore, secondary level of education needs to be organized in a way that results in the preparation of youth for pursuing higher education. Similarly, it aims to make these youth productive in their practical lives.

House (1998) expounds “Futurists tell us that the twenty first century world would be characterized above all else by exponential growth and ever accelerating change, by society built on information technology and mathematical tool...by connectedness within the world community and a myriad of new realities and new changes and new problems only vaguely imagined today. The children we educated for life in that world will need new coping skills if they are to live as productive citizens”.

Discussing the significance of mathematics at secondary level Iqbal (2004) holds that the progress in science and technology is through the knowledge of mathematics, because it has enabled man to send satellites into space to approach to other planets, to communicate through information technology, to launch guided missiles and send airships without pilots. Thus, teaching and learning mathematics is significant from social and economic point of view.

### Method and Procedure

The major purpose of the study was to identify the difficulties faced by teachers/students in the teaching/learning of mathematics at secondary level. The descriptive type of research design was used. All the teachers and students of the Southern District of Khyber Pakhtunkhwa were taken as population of the study. Sample was selected randomly. 200 teachers teaching mathematics at

secondary level and 500 students studying mathematics at secondary level were selected as sample of the study. Two separate questionnaires, one each for teachers and students were developed for the collection of data. The questionnaires were validated through pilot testing before those were administered on the sample. Data was collected through the questionnaires. For this purpose the researcher visited all the sampled schools and respondents personally. In light of the objectives of the study, the collected data was analyzed, tabulated and interpreted through percentage, mean, standard deviation and T. Test.

### Data Analysis

The study was aimed at the identification of the difficulties faced by teacher/students in teaching/learning mathematics at secondary level. The data collected through research instruments were analyzed, tabulated and interpreted through percentage, mean, standard deviation and T. Test. The data was analyzed through Statistical Package for Social Sciences (SPSS) version 17.0.

**Table 1: Teachers related difficulties in teaching and learning Mathematics**

S. No	Factors, Difficulties	% of Response				
		SA	A	UD	DA	SDA
1	Teachers' frequent transfers	37.7	16.6	10.7	30.0	5.0
2	Teachers lack of preparation before entering in to the class	30.7	24.9	21.3	19.3	3.9
3	The teachers' weak academic background	26.7	32.1	9.1	27.4	4.6
4	The teachers' lack of content knowledge for teaching	30.1	29.9	10.9	14.7	17.4
5	The poor teaching methods and practices adopted by teachers	38.3	20.3	12.4	17.3	11.7
6	Teachers' little interest in the teaching of mathematics	32.7	35.9	10.7	16.7	4.0
7	The lack of time with teacher	37.6	32.1	7.4	18.0	4.9
8	Teachers' extra responsibilities rather than teaching of mathematics	28.6	29.1	13.0	20.4	8.9

9	Exam focused teaching by teacher	29.0	25.7	22.0	14.9	8.4
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Table No. 1, the first parameter includes the theme of teachers' related difficulties in the teaching and learning of mathematics at secondary level. The above table demonstrates that 37.7 % respondents are strongly agree, 16.6 % agree, 10.7% undecided, while 30.0 % disagree and 5.0 were strongly disagree to the statement that the frequent transfers of mathematics teachers offer a major difficulty in the teaching and leaning of mathematics at secondary level. Similarly, 30.7 % respondents are strongly agreed, 24.9 % are agree 21.3% undecided while 19.3 % disagree and 3.9 % are strongly agree to the statement. Moreover, 26.7 % are strongly agree, 32.1 % agree while 27.4 % disagree and 4.6 are strongly disagree that the major difficulty faced by teachers in teaching and students in learning mathematics at secondary level is the teachers' week academic background. In like manner, 30.1 % are strongly agreed, 29.9 % agreed, 10.9 % undecided, 14.7 % disagreed and 14.4 % strongly disagreed to the statement that the major difficulty in the teaching and learning of mathematics is the teachers' lack of content knowledge for teaching mathematics. In the same way, 38.3 % are strongly agree, 20.3 % agree, 12.4 % undecided, 17.3 % disagreed and 11.7 % strongly disagreed to the statement that the major difficulty faced by teachers and students in the teaching and learning of mathematics at secondary level is the poor teaching methods adopted by mathematics teachers. 32.7 % are strongly agreed, 35.6 % agreed, 10.7 % undecided, 16.7 % disagreed and 4 % strongly disagreed that the major difficulty in teaching learning mathematics at secondary level is the lack of interest of mathematics teachers in the teaching of mathematics. 36.7 % respondents are strongly agree, 32.1 % agree, 7.4 % undecided, 18 % disagree and 4.9 % strongly disagree to the statement. 28.6 % respondents are strongly agree, 29.1 % agree, 13 % undecided, 20.4 % disagree and 8.9 % strongly disagree. 29 % teachers and students were strongly agreed, 25.7 % agree, 22 % undecided, 14.9 % disagreed and 8.4 % strongly disagreed to the statement that the major difficulty in the teaching and learning of mathematics in the exam focused teaching at secondary level.

**Table 2: Students' related difficulties in teaching and learning Mathematics**

S. No	Factors, Difficulties	% of Response				
		SA	A	UD	DA	SDA
	Automatic promotion of students to next class	38.0	30.7	16.3	9.3	5.7

1						
2	Unfavorable home environment of students	42.3	32.0	3.9	16.7	5.1
3	Frequent absenteeism of students	30.6	29.0	15.0	18.7	6.7
4	Individual differences among students	38.3	27.6	9.9	18.7	5.6
5	Students' inclination towards tuition	27.7	23.0	24.4	15.7	9.1
6	Students' negative attitude towards mathematics	33.7	29.9	7.6	20.3	8.6
7	Students disinterest in homework	36.4	29.0	11.3	16.9	6.4

In this table the second parameter illustrates students' related difficulties in teaching and learning mathematics at secondary level. The table displays that 38 % respondents are strongly agree, 30.7 % agree, 16.3 % undecided, 9.3 % disagree and 5.7 % strongly disagree to the statement that the major difficulty faced by teachers and students in the teaching and learning of mathematics at secondary level is the automatic promotion of students to next classes. In the same way, 42.3 % teachers and students are strongly agree, 32 % agree, 3.9 % undecided, 16.7 % disagree and 5.1 % strongly disagree to the statement that the major difficulty in teaching and learning of mathematics at secondary level is the un-favorable home environment of students. Moreover, 30.6 % are strongly agree, 29 % agree, 15 % undecided, 18.7 % disagree and 6.7 % strongly disagree that the main difficulty in teaching and learning of mathematics at secondary level is the absenteeism of students. In like manner, 38.3% respondents were strongly agreed, 27.6 % agreed, 9.9 % undecided, 18.7 % disagreed and 5.6 % strongly disagreed to the statement that the major difficulty faced by teacher in teaching and students in learning of mathematics at secondary level is the individual differences among students. 27.7 % respondents are strongly agree, 23 % agree, 24.4 % undecided, 16.7 % disagree and 9.1 % strongly disagree to the statement. Similarly, 33.7 % are strongly agree, 29.9 % agree, 7.6 % undecided, 20.3 % disagree and 8.6 % strongly disagree. 33.7 % are strongly agree, 29.9 % agree, 7.6 % undecided, 20.3 % disagree and 8.6 % strongly disagree. Finally, 36.4 % respondents are strongly agree, 29 % agree, 11.3 % undecided, 16.9 % disagree and 6.9 % strongly disagree to the statement.

**Table 3: Curriculum, Syllabus and Textbook related difficulties in Mathematics**

S. No	Factors, Difficulties	% of Response				
			A	UD	DA	SDA
1	Out dated mathematics curriculum	31.9	30.9	15.1	15.3	6.9
2	Lengthy syllabus of mathematics	37.0	28.3	9.3	19.0	6.4
3	Symbolic and difficult language of mathematics	37.4	33.0	9.1	14.6	5.9
4	Mathematics is a boring subject	33.1	35.6	8.1	11.6	11.6
5	Lack of relevancy of mathematics to real life	28.9	38.0	14.1	12.6	6.4
6	Subject-congested timetable, inadequate time to teach much content	44.4	34.0	5.1	12.3	4.1

Table No. 3 tabulates that the 31.9 % respondents are strongly agree, 30.9 % agree, 15.1 % undecided, 15.3 % disagree and 6.9 % strongly disagree to the statement that the major difficulty faced by teachers in teaching and learning mathematics at secondary level is the out-dated mathematics curriculum. Moreover, 37 % respondents are strongly agree, 28.3 % agree, 9.3 % undecided, 19 % disagree and 6.4 % strongly disagree to the statement that the lengthy syllabus of mathematics offers difficulty in teaching and learning mathematics. In addition, 37.4 % respondents are strongly agree, 33 % agree, 9.1 % undecided, 14.6 % disagree and 5.9 % strongly disagree to the statement. 33.1 % respondents are strongly agree, 35.6 % agree, 8.1 % un decided, 11.6 % disagree and 11.6 % strongly disagree. Furthermore, 28.9 % respondents are strongly agree, 38 % agree, 14.1 % undecided, 12.6 % disagree and 6.4 % strongly disagree. Finally, 44.4 % respondents are strongly agree, 34 % agree, 5.1 % undecided, 12.3 % disagree and 4.1 % strongly disagree to the statement that teachers faced difficulty in teaching and students in learning of mathematics at secondary level due to the subject-congested time timetable that is in-adequate time to teach much content.

**Table No. 4: Facility related difficulties in Mathematics**

S. No	Factors, Difficulties	% of Response				
		SA	A	UD	DA	SDA
1	Overcrowded classes	31.4	36.4	11.4	17.6	3.1
2	Shortage of instructional material and resources for teaching mathematics	39.3	37.1	10.4	9.7	3.4

3	Unsuitable learning environment	35.0	30.9	14.9	10.0	9.3
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Table No. 4 describes that 31.4 % respondents are strongly agree, 36.4 % agree, 11.4 % undecided, 17.6 % disagree and 3.1 % strongly disagree to the statement that the major difficulty faced by teachers and students in teaching and learning of mathematics at secondary level is the over-crowded classes. In the same manner, 39.3 % respondents are strongly agree, 37.1 % agree, 10.4 % undecided, 9.7 % disagree and 3.4 % strongly disagree to the statement that the main difficulty in teaching and learning mathematics at secondary level is the shortage of instructional material and resources. Last but not the least, 35 % are strongly agree, 30.9 % agree, 14.9 % undecided, 10 % disagree and 9.3 % strongly disagree that the un-suitable learning environment is the major difficulty faced by teacher in teaching and students in learning of mathematics at secondary level.

### Conclusions

- It is concluded that there are many factors that contribute to difficulty in teaching and learning mathematics at secondary level, which are connected to the frequent transfers of mathematics teachers, their weak academic background and lack of content knowledge for teaching mathematics.
- It is also concluded that mathematics' teachers have been assigned extra responsibilities rather than teaching of mathematics. They lack time for preparation before entering into the class. Owing to it they adopt poor teaching methods and teach from examination point of view. All these contribute to difficulties in teaching and learning of mathematics at secondary level.
- Moreover, it is concluded from the study that some factors are related to students' unfavorable home environment and frequent absenteeism which conclude to their dropout, failure and automatic promotion to next classes. All these make teaching and learning of mathematics difficult at secondary level.
- It is concluded that there prevail individual differences among students. Some students incline towards tuition and do not take interest in learning of mathematics in the classroom. Other students bear strong dislike for mathematics. These are all difficulties in the teaching and learning of mathematics at secondary level.



- Furthermore, it is concluded that the mathematics curriculum is out dated, it has lengthy syllabus and symbolic and difficult language due to which it is difficult to teach and learn it at secondary level.
- In like manner, it is concluded that mathematics lack relevancy to real life experiences therefore students consider it as a boring subject. It contributes to the smooth teaching and learning of mathematics at secondary level.
- There are over-crowded classroom at secondary level and serious shortage of instructional material and resources for teaching of mathematics. It is difficult to teach and learn it.
- There is unsuitable learning environment for teaching and learning mathematics is uncongenial.

### Recommendations

- The authorities should avoid frequent transfers of mathematics teachers at secondary level and formulate policy of quick promotion of mathematics teachers so the mathematics may be taught and learnt effectively at secondary level.
- The number of in-service trainings should be increased for the professional growth of mathematics teachers, increase their content knowledge and adoption of proper teaching methods for smooth teaching and learning of mathematics at secondary level.
- The Principals and Headmasters should be directed to avoid assignment of extra responsibilities to mathematics teachers so that they may have full time for teaching of syllabus, preparation of lessons and concentration on teaching of mathematics at secondary level.
- The automatic and illegal promotion of students should be discouraged through conduction of strict examinations.
- Principals and Headmasters should engage parents to discourage frequent absenteeism of students, creation of congenial environment at home for attempting of homework assignment, studying of mathematics.
- Mathematics teachers should teach mathematics while keeping individual differences in view. They should teach mathematics in an interesting way so that students take interest in learning of mathematics and regard it as a valuable subject at secondary level.

- The authorities should revise and update mathematics curriculum according to the international standards and include such experiences that are relevant and applicable in real life. The symbolic language of mathematics should be made as simple as possible.
- Additional classrooms should be constructed so that to cope with the issue of over-crowded classes and deploy double staff in secondary schools to address the issue of teacher-students ratio.
- Last but not the least, proper instructional material and teaching and learning resources should be provided for the creation of suitable environment for teaching and learning mathematics at secondary level.

### References

- Encyclopedia Britannica, 1974. Mathematics. Volume (11). Helen Hemingway Banton. PP639-670
- Government of Pakistan, (2000). National Education Policy in 1998-2010 Ministry of Education Islamabad Pakistan PP. 1-57
- Government of Pakistan (1959 a) "Report of the Commission on National Education, Ministry of Education, Karachi. PP 32-35
- Government of Pakistan (1960), "Report of the Curriculum Committee for the Secondary Education", Ministry of Education. p.312
- Government of Pakistan (1994), "National Curriculum in Mathematics" Ministry of Education, Curriculum Wing, Islamabad. p.156
- Government of Pakistan (2000), "National Curriculum in Mathematics (2000), Developed by the Department of Education Punjab" Ministry of Education, Curriculum Wing, Islamabad. p.165
- Iqbal, M. (2004). Effect of Cooperative Learning in Academic Achievement of Secondary School Students in Mathematics (Unpublished P.hD. thesis) University of Arid Agriculture Rawalpindi (Pakistan) PP. 2-3.
- Ministry of Education (2006). National curriculum for mathematics grades I-XII, 2006. Government of Pakistan Ministry of Education, Islamabad
- Ministry of Education (June, 2006). Press release, Education Ministry Notified New Scheme of Studies. NO F1-2/2006-DD. <http://www.moe.gov.pk/mediacell.htm>