# Problems of Students in Learning Mathematics at Public and Private Secondary Schools of District Swabi



**Nabi Gul [1] , Irfan Ali [2]**

***Abstract:*** *The study was sought to explore the problems of public and private school students in learning mathematics. Students from public and private secondary schools in the Swabi district make up the study's population. Ten students from each school were chosen at random to gather information, resulting in a total of 300+300= 600 sample students. The researcher personally gathered the data from respondents. Agree, Undecided, and Disagree are the three-point ratings on which the questionnaire was constructed. Utilizing percentage as a statistical technique, the data gathered from the questionnaire was calculated and examined. Based on finding it was concluded that systematic, social, and pedagogical issues are major factors that either directly or indirectly obstruct the teaching and learning process. These issues hinder the enhancement of secondary education quality since the teaching and learning process directly reflects the caliber of education. Students who struggle in mathematics have the power to negatively impact both the development of the entire country and the quality of secondary education.*

**Key Words:** Systematic problems, social problems, pedagogical problems.

## Introduction

Mathematical patterns are systematic attempts based on observation, analysis, and inspection to establish the nature or principle of regularities in a system. Mathematical scientists are community trained practitioners who engage in this intrinsically social activity. Abstractionism, symbolic manipulation, and symbolic representation are the instruments of mathematics. Still, mastery of shop tools makes one a craftsman; mastery of these skills no longer equates to mathematical thinking. Becoming proficient with the tools of the trade and applying them to the purpose of understanding are two aspects of learning to think mathematically. The first is forming a mathematical point of view that values the process of mathematization and abstraction and has a preference for applying them. Schoenfeld (1992) wrote about structure and mathematical scene making. Because it can be used to analyze data in so many other fields, including engineering, medicine, architecture, commerce, economics, and even the humanities, mathematics is known as the "queen of sciences." Mathematical knowledge is therefore crucial for understanding a wide range of other subjects. Modern professional development requires a strong foundation in mathematics. But before we can do any of them, we need to understand how people feel about math. An individual's attitude toward mathematics

[1] Ex-PhD Scholar, Qurtuba University of Science and Information Technology, Peshawar, Khyber Pakhtunkhwa Pakistan.
[2] M.Ed Student, University of Swabi, Khyber Pakhtunkhwa, Pakistan.
Corresponding Author's Email: nabigul492@gmail.com

indicates their level of interest or sentiment towards the subject. Individual preferences for or against the study of mathematics are based on personal dispositions, therefore these may differ. Either positive or depressing could be the outcome. An individual's aptitude, curiosity, and capacity to solve problems, evaluate ideas, and make decisions impact their attitude toward mathematics. An analysis of pertinent literature reveals differing perspectives and conclusions on students' performance and attitude toward mathematics. Research on students' attitudes toward mathematics has long been conducted, according to a review of the pertinent literature. According to certain research, students' average attitudes toward mathematics are consistent across national boundaries and throughout age groups within the same nation. The ten- and fourteen-year-olds' attitudes about mathematics, however, differ noticeably, the researchers find. Less favorable attitudes about mathematics are found in nations where academic achievement and student attitudes toward mathematics are becoming increasingly important for the advancement of industry and technology.

## Statement of the Problem

The present was designed to explore the "problems of students in learning mathematics at secondary level in public and private schools".

## Objectives of the Study

1. To explore the problems of students in learning mathematics at public sector secondary schools in Swabi
2. To discover the problems of students in learning mathematics at private sector secondary schools in Swabi.

## Research Questions

1. What are the problems of students in learning mathematics at public sector secondary schools in Swabi?
2. What are the problems of students in learning mathematics at private sector secondary school in Swabi?

## Significance of the Study

The issues that teachers and students have when studying and teaching mathematics will be examined in this study. It is evident that the majority of math teachers are unaware of simpler alternatives to traditional methods of teaching mathematics and alternate approaches to problem-solving. Therefore, it is necessary to thoroughly examine the challenges that teachers and students have when studying and teaching mathematics. Therefore, the only goal of this study is to identify the different issues that teachers and students encounter when learning mathematics.

## Delimitation of the Study

Due to certain constrains study was delimited to the public and private sector secondary school of district Swabi.

## Review of Related Literature

In the modern world, where knowledge is created and disseminated swiftly, education should produce people who can think critically, think entrepreneurially, solve problems in their daily lives, think critically, think critically, have communication skills, empathize, be hospitable to society and culture (MEB, 2018), and produce through creative thought (Tutak & Güder, 2014).

Many careers today involve some level of mathematics understanding and mathematical reasoning (Olkun & Toluk Uçar, 2020). Being an information society requires achieving an efficient and successful mathematics education in educational institutions (Ersoy, 1997). The goal of teaching mathematics is evolving in response to a changing society, and it is becoming more crucial than ever for people to apply their newly acquired mathematical knowledge to solve difficulties they face on a daily basis (Güler Selek, 2020). People will always encounter circumstances in which they must apply mathematics and make mathematical judgments (Yenilmez & Duman, 2008). These factors have led to the inclusion of mathematics instruction in all educational levels, ranging from early childhood education to postsecondary education (Baykul, 2021).

An educational system seeks to systematically and planned implement the values, attitudes, abilities, and knowledge that it wishes to impart to people (Aktan, 2020). As with many other professions, the curriculum changes with the times to suit the evolving social requirements. In line with this, there have been notable shifts in the way mathematics is viewed and taught (Olkun & Tokluk Uçar, 2020, p 30). In this context, Turkey's mathematics curriculum was updated, and the new curriculum went into effect in 2018. The primary objectives of the Mathematics Lesson Curriculum are to develop students with advanced mathematical literacy skills, the ability to apply mathematical ideas to real-world situations, accurate use of mathematical terminology and language, the capacity to apply their own ideas and reasoning to problem-solving, advanced metacognitive knowledge and skills, and the capacity to oversee their own learning processes, conduct research, produce, and use information. (MEB, 2018).

Conducting continual evaluation studies is necessary to determine the extent to which modifications made in curriculum development studies in education have led to the achievement of aims (Çobanoğlu & Kasapoğlu, 2010). In this context, international studies serve as a roadmap for the creation of educational objectives and approaches (MEB, 2016b) as well as a means for countries to view their own circumstances in a variety of disciplines and compare those of other countries with themselves (MEB, 2019). Studies that assess students' knowledge and skills in science and mathematics include the Trends in International Mathematics and Science Study (TIMSS) (IEA, 2020) and the Program for International Student Assessment (PISA) (OECD, 2019), which is conducted every three years with participation from 15-year-old students and assesses the degree to which students have acquired the fundamental knowledge and skills necessary for their full participation in social and economic life. According to PISA results, Turkey performs below average in mathematics In contrast, TIMMS results show that Turkey performs above average in mathematics only at the fourth grade level in 2019 and below average at the eighth grade level (MEB, 2020). Based on the outcomes of national and international examinations for Türkiye, it is evident that pupils' proficiency in mathematics is significantly lower than in other subject areas, and they lag well behind other nations in the global arena (İlgar & Gülten, 2013). As a result, pupils' nightmares become their math classes (Baykul, 2021) and their lives become a nightmare for the student who does poorly in arithmetic (Reusser, 2000). Students' failure in mathematics is caused by flaws and negativities in the subject matter and instruction. For this reason, a

thorough investigation of the causes of the shortcomings in mathematics education is necessary (Bütüner & Güler, 2017). To end students' mathematical failures, it is critical to expose the challenges that educators encounter when teaching mathematics (Baştürk, 2012).

The issues with teaching mathematics in primary schools have been the subject of numerous research. Research using various data gathering methods has indicated that there is no distinct policy, program, education, or comprehension for rural areas (Turan & Garan, 2008) or for regional variations (Çal şkan & Türkmen, 2016). Moreover, there have been findings regarding the use of technology (Sar & Akbaba Altun, 2015), the field of learning numbers (Aydoğdu İskenderoğlu & Uzuner, 2017), the concretization of mathematics through distance education (Ergen, Öz ş k Esranur, & Bülbül, 2022), problematic behaviors learning, difficulties, clarifying misconceptions, issues with physical conditions, equipment and a lack of time (Durmuş & Ergen, 2021). But in 2018, new teaching methods were introduced into Turkey's mathematics curriculum as part of a curriculum revision. Also, a lot of changes have occurred in the social and economic spheres as a result of the 2020 Covid 19 pandemic. New applications in the sphere of education are now on the agenda due to these modifications. As a result of new applications, possible issues have also surfaced.

## Method and Procedure

**Nature of Study:** Research methodology refers to conducting a thorough investigation of the present issue and identifying a suitable solution. Because it illustrates the different issues that teachers and students face when teaching and learning mathematics, the research was founded on a descriptive study.

**Population:** Students from public and private secondary schools in the Swabi district make up the study's population. The population of the study consisted of 10020 students in public secondary schools and 8006 students in private secondary schools, out of the 82 male secondary schools in the public sector and 70 in the private sector.

**Sample:** From each sector, thirty secondary schools were chosen at random. Ten students from each school were chosen at random to gather information, resulting in a total of 300+300= 600 sample students.

**Research Instrument:** As a research tool, a closed options questionnaire was employed. The researcher personally gathered the data from respondents. Agree, Undecided, and Disagree are the three point ratings on which the questionnaire was constructed. Twenty items on the questionnaire are meant to gather information from students.

**Data Analysis:** Utilizing percentage as a statistical technique, the data gathered from the questionnaire was calculated and examined.

## Problems Faced by Students: Systematic Problems

**Table 1**

*The mathematics contents are according to the level of the learners*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 246 | 0 | 54 | 232 | 10 | 58 |
| Percentage | 80% | 0 | 20% | 77.33 | 3.33 | 19.33 |

Table 1 indicates that 80% and 77.33% respondents of public and private sector were agreed that mathematics contents are according to the level of the learners.

**Table 2**

*The contents of the mathematics regarding their relevancy to the daily life*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 78 | 83 | 139 | 69 | 80 | 151 |
| Percentage | 26% | 27.66% | 46.3.% | 23% | 26.33 | 50% |

Table 2 demonstrates that 46.3% and 50% of respondents from public and private schools, respectively, disagree with the claim that the subjects covered in mathematics have application in real-world situations.

**Table 3**

*The consistency of the subject matter from the prior grade VIII*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 190 | 0 | 110 | 200 | 0 | 100 |
| Percentage | 63.33% | 0 | 36.66% | 66.66 | 0 | 33.33 |

Table 3 shows that 63.33% of public and 66.66% of private respondents, respectively, concurred that the grade VIII's curriculum will remain the same.

**Table 4**

*A high teacher-to-student ratio has an impact on math learning.*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 255 | 0 | 45 | 250 | 0 | 50 |
| Percentage | 85% | 0 | 15% | 83.33 | 0 | 16.67 |

Table 4 demonstrates that 83% and 85% of respondents from the public and private sectors, respectively, agreed that a high teacher-to-student ratio has an impact on math learning.

**Table 5**

*Students' opinions regarding private tutoring or coaching in mathematics*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 290 | 0 | 10 | 285 | 0 | 15 |
| Percentage | 96.66% | 0 | 3.34% | 95 | 0 | 5% |

Table 5 shows that 96% of public and private respondents agreed that students' opinions toward receiving private tutoring or coaching in mathematics.

## Societal Problems

**Table 6**

*The way that students view mathematics as a crucial subject*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 285 | 0 | 15 | 285 | 0 | 15 |
| Percentage | 95% | 0 | 5% | 95% | 0 | 5% |

Table 6 demonstrates that 95% of respondents thought that students' attitudes on mathematics as a subject of importance are crucial.

**Table 7**

*Students' view of liking Mathematics*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 180 | 0 | 120 | 190 | 0 | 110 |
| Percentage | 60% | 0 | 40% | 63.33% | 0 | 36.67% |

Table 7 shows that 60% and 63.66% respondents agreed that Students' view of liking Mathematics.

**Table 8**

*Subject difficulty according to students view*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 246 | 0 | 54 | 232 | 10 | 58 |
| Percentage | 80% | 0 | 20% | 77.33 | 3.33 | 19.33 |

Table 8 shows that 80% and 77.33% respondents agreed that Subject difficulty according to students view.

**Table 9**

*Students' attitude towards gender difference in mathematics achievements*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 180 | 0 | 120 | 190 | 0 | 110 |
| Percentage | 60% | 0 | 40% | 63.33% | 0 | 36.67% |

Table 9 shows that 60% and 63.33% respondents agreed that Students' attitude towards gender difference in mathematics achievements.

**Table 10**

*Boys are better at mathematics achievement*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 255 | 0 | 45 | 250 | 0 | 50 |
| Percentage | 85% | 0 | 15% | 83.33 | 0 | 16.67 |

Table 10 shows 85% and 83.33% respondents of public and private sector agreed that Boys are better at mathematics achievement.

**Table 11**

*The choice of stream can be influenced by one's attitude toward mathematics*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 190 | 0 | 110 | 200 | 0 | 100 |
| Percentage | 63.33% | 0 | 36.66% | 66.66 | 0 | 33.33 |

Table11 shows that 63.33% of public and 66.66% of private respondents agreed that a person's attitude toward arithmetic influences their decision to choose a stream.

**Table 12**

*Students' Achievement of other subjects is better than mathematics*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 246 | 0 | 54 | 232 | 10 | 58 |
| Percentage | 80% | 0 | 20% | 77.33 | 3.33 | 19.33 |

Table 12 reveals that 80% and 77.33% of respondents, respectively, concurred that pupils' performance in other disciplines is superior to mathematics.

**Table 13**

*Students' response about their parents encouraging to learn Mathematics*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 255 | 0 | 45 | 250 | 0 | 50 |
| Percentage | 85% | 0 | 15% | 83.33 | 0 | 16.67 |

Table 13 demonstrates that 83.33% and 85% of respondents from the public and private sectors, respectively, agreed that students' responses about their parents' encouragement to learn mathematics.

## Pedagogical Problems

### Table 14

*Teacher usually starts lessons start doing math in board directly*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 246 | 0 | 54 | 232 | 10 | 58 |
| Percentage | 80% | 0 | 20% | 77.33 | 3.33 | 19.33 |

Table 14 reveals that 80% and 77.33% of respondents, respectively, agreed that teachers typically begin lessons by having students complete math problems on the board.

### Table 15

*Lessons in mathematics are often introduced by the teacher either without any motivation or by going over mathematical phenomena or history*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 285 | 0 | 15 | 285 | 0 | 15 |
| Percentage | 95% | 0 | 5% | 95% | 0 | 5% |

Table 15 reveals that 80% and 77.33% of respondents concurred that the teacher of a mathematics class typically begins lectures without any motivation or by describing mathematical phenomena or history.

### Table 16

*The teacher of a math class typically begins by posing questions.*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 54 | 0 | 246 | 68 | 0 | 232 |
| Percentage | 20% | 0 | 80% | 23% | 0 | 77% |

Table 16 demonstrates that 80% of respondents and 77.33% disagree that the teacher of a mathematics class typically begins lectures by posing questions.

### Table 17

*Teacher use additional teaching aid materials while teaching Mathematics.*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 54 | 0 | 246 | 68 | 0 | 232 |
| Percentage | 20% | 0 | 80% | 23% | 0 | 77% |

Table 17 demonstrates that, respectively, 80% and 77.33% of respondents disagreed that math teachers should employ more teaching aids.

**Table 18**

*Teacher gives homework regularly*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 56 | 135 | 244 | 220 | 0 | 80 |
| Percentage | 20% | 0 | 80% | 73.33% | 0 | 26.66% |

Table 18 shows that 73.33% of respondents agreed and 80% disagreed that homework is regularly assigned by teachers.

**Table 19**

*Physical and psychological punishment is used by math teachers*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 255 | 0 | 45 | 250 | 0 | 50 |
| Percentage | 85% | 0 | 15% | 83.33 | 0 | 16.67 |

Table 19 reveals that 83.33% and 85% of respondents from the public and private sectors, respectively, concurred that math teachers use physical or psychological punishment.

**Table 20**

*When teachers punish their students, it makes them detest the subjects*

| | Public Sector | | | Private Sector | | |
|---|---|---|---|---|---|---|
| | A | U | DA | A | U | DA |
| Frequency | 285 | 0 | 15 | 285 | 0 | 15 |
| Percentage | 95% | 0 | 5% | 95% | 0 | 5% |

Table 20 demonstrates that 95% of respondents felt that students who receive punishment from their teachers end up detesting the courses.

## Findings

Analyzing the data gathered illustrates the different issues pupils have when learning mathematics.

## Systematic Problems

1. Table 1 indicates that 80% and 77.33% respondents of public and private sector were agreed that mathematics contents are according to the level of the learners.
2. Table 2 demonstrates that 46.3% and 50% of respondents from public and private schools, respectively, disagree with the claim that the subjects covered in mathematics have application in real-world situations.
3. Table 3 shows that 63.33% of public and 66.66% of private respondents, respectively, concurred that the grade VIII's curriculum will remain the same.

4. Table 4 demonstrates that 83% and 85% of respondents from the public and private sectors, respectively, agreed that a high teacher-to-student ratio has an impact on math learning.
5. Table 5 shows that 96% of public and private respondents agreed that students' opinions toward receiving private tutoring or coaching in mathematics.

## Societal Problems

6. Table 6 demonstrates that 95% of respondents thought that students' attitudes on mathematics as a subject of importance are crucial.
7. Table 7 shows that 60% and 63.66% respondents agreed that Students' view of liking Mathematics.
8. Table 8 shows that 80% and 77.33% respondents agreed that Subject difficulty according to students view.
9. Table 9 shows that 60% and 63.33% respondents agreed that Students' attitude towards gender difference in mathematics achievements.
10. Table 10 shows 85% and 83.33% respondents of public and private sector agreed that Boys are better at mathematics achievement.
11. Table 11 shows that 63.33% of public and 66.66% of private respondents agreed that a person's attitude toward arithmetic influences their decision to choose a stream.
12. Table 12 reveals that 80% and 77.33% of respondents, respectively, concurred that pupils' performance in other disciplines is superior to mathematics.
13. Table 13 demonstrates that 83.33% and 85% of respondents from the public and private sectors, respectively, agreed that students' responses about their parents' encouragement to learn mathematics.

## Pedagogical Problems

14. Table 14 reveals that 80% and 77.33% of respondents, respectively, agreed that teachers typically begin lessons by having students complete math problems on the board.
15. Table 15 reveals that 80% and 77.33% of respondents concurred that the teacher of a mathematics class typically begins lectures without any motivation or by describing mathematical phenomena or history.
16. Table 16 demonstrates that 80% of respondents and 77.33% disagree that the teacher of a mathematics class typically begins lectures by posing questions.
17. Table 17 demonstrates that, respectively, 80% and 77.33% of respondents disagreed that math teachers should employ more teaching aids.
18. Table 18 shows that 73.33% of respondents agreed and 80% disagreed that homework is regularly assigned by teachers.
19. Table 19 reveals that 83.33% and 85% of respondents from the public and private sectors, respectively, concurred that math teachers use physical or psychological punishment.
20. Table 20 demonstrates that 95% of respondents felt that students who receive punishment from their teachers end up detesting the courses.

## Conclusion

Despite certain limitations, this study succeeded in shedding light on the challenges associated with the teaching and learning of mathematics. There is a wealth of information available about the variables

influencing the mathematics teaching and learning process. Systematic, social, and pedagogical issues are major factors that either directly or indirectly obstruct the teaching and learning process. These issues hinder the enhancement of secondary education quality since the teaching and learning process directly reflects the caliber of education. Students who struggle in mathematics have the power to negatively impact both the development of the entire country and the quality of secondary education. Furthermore, this tool can be utilized in future studies to investigate these issues in the rural and urban sectors and to provide light on quality enhancement.

## Recommendations

The quality of mathematics education is diminishing as a result of all these issues, thus improving the current state of affairs is essential to improving the process of teaching and learning mathematics. Consequently, the advice that follows will aid in eliminating the issues that are impairing the process of teaching and learning mathematics.

1. It was recommended that for improving the quality, including hiring teachers with appropriate backgrounds in mathematics, particularly at the primary and foundation levels.
2. A favorable attitude toward learning mathematics must be developed, and in particular, parents, teachers, and students must alter their curious mindsets.
3. Students who are subjected to a "pass-fail" testing system tend to get anxious about math. Instructors suggested making several changes to this system, such as giving knowledge accomplishments more weight than results.
4. More practice or drill problems in mathematics should be included in textbooks and instructional materials.
5. To improve the standard of mathematics instruction, it is necessary to increase the physical facilities and the teacher-student ratio.
6. A balanced curriculum and greater mathematical involvement are necessary for the creation of textbooks.
7. The curriculum wing should create a system that incorporates instructors' feedback into the creation of the syllabus and textbooks. Problems with the curriculum, such fewer math to practice, relevance to the people's daily lives, redundancy, etc., can be resolved by this involvement.

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