

Study of Motivation Level in Mathematics Among Male and Female Students at Secondary School Level

¹FaizaShaheen, ²Mahvish Fatima Kashif, ³Dr. Nasir Mahmood

¹Lecturer Education at University of Education, Lahore

²Lecturer at Institute of Education, Lahore College for Women University, Lahore

³Professor at Allama Iqbal Open University

Abstract

Mathematics works as a vital device in academics as well as in practical life. One of the essential objectives for the education of Mathematics is to build up abilities among students to distinguish the relation between Mathematics and the facts of life, and to amass those relevant skills in recognizing the character of Mathematics in the human life. The current study was aimed to measure the difference of motivation level of male and female students in Mathematics at secondary school level. Nature of the study was descriptive and survey method was used for data collection. The sample was comprised of 200 students (100 female; 100 male) of 9th and 10th grade from randomly selected four schools of Lahore. A self-developed motivation measuring questionnaire was used as tool of the study. The data were analyzed by using t-tests. Difference of motivation with regard to gender was found significant whereas grade wise there was no significant difference. The recommendations did not relate only with the pedagogical cares to be adopted by trained teachers but it was also suggested to apply motivational techniques in teaching by using modern technology.

Key Words

Motivation, Mathematics, Secondary Education

I. Introduction

Mathematics is the queen and servant of the sciences. It can be described as an art of symbols and reasoning. It plays a vital role in the modernization of this civilization. It affects the everyday lives of people. Although it is abstract and theoretical knowledge, it emerges from the real world. The contribution of Mathematics in intellectual development and technological advancement is very much evident.

Motivation is defined as the control in emotions triggered by a force that shape behavior. The force of motivation is visible in the actions of an individual in form of behavior (Hannula, 2002).

Kjersti (2010) emphasized the utility of framework that can guide the behavior of students. Without sufficient availability of needs, goals and aspiration in actions, the tasks performed by students are likely hard to track with their direction.

It is an area that requires skills to amass economic means as well as other practical aspects of day to day life. Students are required to be motivated at this level of grades to only the importance of Mathematics in marks scoring perspective but also due to the contemporary needs of becoming a good problem solver. Abstract concepts whenever taught with conventional ways cause problems in understanding. The idea behind motivating students while teaching Mathematics is the approach, which teachers develop among their students to perceive problems accurately as well as to develop understanding of relating those problems with practical aspects.

James and Photini (1999) shared a critical review of the studies previously done in finding the effect of motivation in Mathematics that were found lacking in linking studies with the basic theories of motivation. They emphasized on the linkage of theory as well as to avoid the generalized use of findings over the studies of motivation in Mathematics.

The psychological aspect of students' efficacy beliefs in perceiving and solving a problem is necessary to deal by teachers while selecting teaching techniques. The reason of selecting secondary students for motivation in Mathematics is the sensitivity of their career decision afterwards. Most of the students make the obtained marks as base for their future decision of opting subjects in FSC.

Regardless of the contribution of the subject of Mathematics in polishing the skills of a student, this subject is considered as a score making subject among other compulsory subjects taught at secondary level.

Hutchison, Follman, Sumpter, & George (2006) identified the beliefs of boys and girls in a course. Their self-efficacy beliefs were found significant towards the progression of motivation level.

This idea is deemed specifically potent when the routine practice of teaching in our context is observed, contrary to the teaching pedagogies applied in subject specific ways, traditional methods of teaching are applied. It is the main reason that motivating students along teaching is essential in order to make them independent learners.

Reeve & Deci (1996) studied the contribution of inner motivation in comparison with self-determination. They explored the situation when no outside motivator triggers the interest and the task's accomplishment is only pushed by self-determination and inner self.

Mathematics is as important to a country as protein is to young ones. For better understanding and to keep in function of science and technology it works as a vital device, the discipline acts as the vital role of an initiate to the much desired technological development needed for the national development.

Mary, Dina & Carolin (2011) reported the findings of two qualitative studies disseminating the knowledge about the diverse classroom environments, use of instruments, and student-teacher relation in order to promote the interest and motivation level of students.

It has become an essential objective for the education of Mathematics to facilitate the students to build up abilities to distinguish the relation between Mathematics and the facts of life, and to recognize and realize the character of Mathematics performing in the human life. The performances of female and male students in mathematics are different by their physiological structures and varying intellectual ability. Even though the majority of the researchers have found the better performance of boys than girls particularly in higher education, a small number of other researchers found that girls performance better than boys and during early education, a number of other researchers found no

important difference.

Sunger&Tekkaya (2006) studied effect of problem solving method on conventional teaching techniques in increasing motivation of students. They found the conventional methods less motivating than the use of problem based learning.

Ainley, Buckley, & Chan (2009) explored the difference between self- efficacy and interest of student across varied domains of subjects. Jeffes, Jones, Wilson, Lamont, Straw, Wheater, & Dawson (2013) worked to explore the change that needs to occur whenever any change takes place in syllabus and curriculum. The impact of teaching methods with the change in syllabus is required to keep the interest and motivation of students high.

The importance of education is increasing day by day in the modern age. So education is much essential for human beings. Major purpose of education is to open our children upto the past, present and future wonders of our world in all its aspects and this objective can be accomplished with compassion, high motivation and curiosity. Even the skill subjects such as reading, writing, speaking language, arithmetic and Mathematics can be taught and learned in an enthusiastic and active way. Mostly teachers focus on learning of students rather than the motivation of students. Motivation is a force that energizes, sustains and directs behavior towards a goal. When students pay attention to their work and study for test, they will say that they are motivated (Eggen&Kauchak 1997).

The findings of the present study will be beneficial for parents, teachers, students themselves and the administration of school in order to higher the motivation level of students in Mathematics.

II. Objectives of the Study

The objectives of the study were as under to:

1. Compare the motivation of boys and girls in Mathematics.
2. Compare the motivation level of students in Mathematics at 9th and 10th grade level.

III. Methodology

Research Design

It was a descriptive type of research and survey method was adopted to conduct this study. The perceptions of male and female students regarding their motivation level in learning Mathematics subject at secondary school level were sought in a survey.

Sample

By applying random sampling technique four public schools were where secondary level education was in practice. 9th and 10th class students as strata were selected from those schools. Then the sample of 200 students (Boys=100, Girls=100) was drawn.

Instrumentation

On the completion of literature review of the study researcher developed an instrument later on the valuable suggestions of expert researchers some amendments in the instrument were made and then data were collected from school students at secondary level. Researcher used a close ended structured questionnaire to collect the required information as a tool of research. Questionnaire consisted of 15 questions. The respondents answered these questions on five point Likert type scale. Motivation of students in Mathematics has been assessed through the indicators of interest in subject, confidence in solving difficult questions, identifying conflict areas in content, learning strategies adopted by students

with their efficacy beliefs.

Validity of the Tool

The developed instrument was validated by the expert opinion on the scale.

Reliability of the Tool

In order make the instrument administrable, it was pilot tested on 24students. The reliability of the instrument was computed by using Cronbach alpha which showed strong reliability value i.e. 0.78.

Data Collection

The researcher collected data personally. All the questionnaires were returned properly after they were filled up.

Data Analysis

Test of inferential statistics was used in analyzing the data from this study by the use of SPSS16 version. The independent sample t-test was applied to find the mean differences between of motivation level between male, female and 9th, 10th grader students. The basic purpose of data analysis and interpretation was to find out the motivation level of male and female students in Mathematics at secondary level. The results were shown in tables followed by the findings after the analysis of the data.

IV. Results and Findings

Table 1 : Independent sample t-test for mean difference on the basis of gender

Variable	N	M	Df	t-value	Sig.
Female	100	57.67	198	-3.643	.002
Male	100	54.44			
N=200					

The table above indicates that there is significant difference (mean difference 3.23) between male and female students (Male mean score=54.4400, Female mean score=57.6700). Null hypothesis that there is no difference between male and female students in the mean score of motivation level in Mathematics is rejected. It is further explored that female students have more motivation in Mathematics (57.6700) as compared to male students (54.4400).

Table 2 : Independent sample t-test for mean difference on the basis of classes

Variable	N	M	Df	t-value	Sig.
9 th class	100	56.85	198	1.750	.761
10 th class	100	55.26			
N=200					

The table above indicates that there is no significant difference between 9th class and 10th class students (9th class mean score =56.8500, 10th class mean score =55.2600)(mean difference1.59). So null hypothesis is accepted it means that there is no significant difference in the motivation level of 9th class and 10th class students.

V. Discussion

The objective of the present study was to explore the difference of motivation level of boys and girls at secondary level in the subject

of Mathematics. The importance of the subject of Mathematics is understood. The auxiliary skills that are attached with the learning of Mathematic polish certain other skills among students like reasoning, understanding logic, and computing etc. with regard to the importance of Mathematics in the overall achievement scores of students, this subject occupies significant teaching value. Motivation of students in Mathematic has been assessed through the indicators of interest in subject, confidence in solving difficult questions, identifying conflict areas in content, learning strategies adopted by students with their efficacy beliefs.

One finding of the present study showed that female students have more motivation in Mathematics than the male students. It was somewhat not assumed at the start of the study because boys are usually found proficient in computing and analytical skills when compared with female students. The reason behind this finding is the carelessness and time given to practice the sums of Mathematics by male students. It is generally observed that girls have serious attitude towards their studies at this level. It implies that the Mathematic teacher should use modern methods for teaching Mathematics. More Competent and trained teacher can teach Mathematics that motivates students equally by providing reinforcement and realize them the importance of Mathematics. By increasing the time duration for Mathematic teaching and learning and by rewarding students, their motivation level can be raised.

The other finding of the study revealed the difference between motivation level of 9th class and 10th class students as non-significant. It might occur due to the syllabus of Mathematic at both grade levels that is compulsory. The score in Mathematics at 9th grade level equally contribute to the total score as 10th grade Mathematic scores contribute. The motivation of students does not differ due to their grade levels. The implication of this finding is the consistent hard work put by teachers to provoke the interest of students. The teacher should keep in mind the individual differences of students and guide them according to their mental age. The teacher should present the lessons with the help of examples and use of varied teaching methods according to the content and complexity of concepts being taught.

It is recommended to study the motivation of students with other variables like readiness and interest in subject. The effects of ability and teaching technique adopted by teachers can also be studied with motivation level of students.

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