

Effect of gender on mathematics achievement in Class Eight at Khotang District.

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Abstract

This study was undertaken to assess gender differences in mathematics achievement. Data was collected by questionnaire, interview schedules and class examination administered previously on 2075. The accessible population was teachers of mathematics, class eight students from selected secondary schools in Diktel Rupakot Majhuwagadhi Municipality in Khotang District and their Parents. Two community school and one institutional school were selected by purposively. 18 boys and 18 girls' progress report were selected from each school six boys and six girls by random sampling. six parent two from each school representing one boy and one girl were selected purposively. Three mathematics teachers were selected. Data were collected from teacher and parents by questionnaire and interview schedules. It is found that there is gender difference in mathematics achievement in class eight. Specially, boys' achievement in mathematics is better than girls' achievement in mathematics. It is also found that causes of comparatively poorer achievement of girls are rapid physical growth, over responsibility at home and at school.

Key words: achievement in mathematics, gender, Basic Level Examination (BLE)

Introduction

Gender refers to the characteristics of women, men, girl and boys that are socially constructed. This includes norms, behaviours and roles associated with being a woman, man, girls or boy as well as relationships with each other. As a social construct gender varies from society to society and can change over time. Gender is the characteristic distinguishing between male and female. Gender play important role in every aspect of life. It also play important role in teaching and learning. Gender differences may play significant role in meaningful understanding of subject matter. In teaching learning process student achievement is more or less affected by gender.

According to dictionary of mathematic, mathematic is the logical study of shape, arrangement, quantity, and many related concepts. Mathematic is the science of structure, order, and relating that has evolved from elemental practices of counting, measuring, and describing the shapes of objects. It deals with logical reasoning and quantitative calculation. Mathematic is considered as a queen of science. It is also daily uses subject. We are using mathematic in every movement of our life. It is non-separable subject of human being. Mathematics is an important subject in school education curriculum. Many people do not know that mathematics is more than what is taught at school and different from what most people think it is. The students have a wrong image of mathematics that mathematics consists of many formulae to learn without understanding why it is never meaningful, not lively subject. "Achievement test measures the current status of individuals with respect to proficiency in given areas of knowledge or skill "(Gay 1997). This paper is concerned with the effect of gender difference in achievement of mathematics in Khotang district. The study explores the effects of the factor of gender difference in mathematics achievement in the student of class Eight.

Literature review

Globally, mathematics has been viewed as a subject favouring male students (Gilah & Fennemma, 1990).

Majority of the students (boy and girls) had a positive attitude towards learning mathematics. However, when comparing the attitude of boys and girls, the results have demonstrated that boys were more inclined to positive attitudes than girls (Kiptum et al., 2013).

John and Benjamin (2015) carried out an experimental research on the topic ‘Gender difference in mathematics achievement and Retention scores’ and found that male and female student taught algebra using problem based learning did not significantly difference in achievement and retention scores. This finding showed that performance is a function of orientation, not gender.

Nepal (2016) carried out an experimental research on the topic “Impact of Gender and location on mathematical thinking and mathematical achievement” and found there is no significance difference on mathematical achievement between male and female students in Nepal and another finding was that there is significant difference between rural and urban student on mathematics achievement.

Panthi (2012) carried out “A comparative study of the Eighth Grades Achievement in Geometry in terms of gender and rural and urban area” and found that the achievement of male was better than that of female. Similarly, he found that there was poor achievement of the students of rural area than that of urban area. He has concluded that home environment at rural area and more responsibility for girls at household chore are the main causes for this result.

Raut (2000) carried out an experimental research on the topic “A study on the effectiveness of inductive-deductive teaching learning approach in secondary schools” and found that the performance of the pupils of secondary level taught by inductive-deductive approach with teaching material affects on mathematics achievement as compared to the performance of them taught by traditional approach.

Lamsal (2004) carried out an experimental research on “A study on the effectiveness of problem solving approach in menstruations at secondary level mathematic”. The aim of the research was to compare the achievement scores of student taught by problem solving approach and traditional approach and determine effective approach for suitable classroom teaching learning in secondary school in teaching menstruation. His research concludes that the achievement score of students taught by using problem solving approach was better than students taught by using traditional approach.

A study through a meta-analysis reveals that male tend to do better on mathematics tests that involve problem-solving (Hyde et al., 1990). Females tend to do better in computation, and there is no significant gender difference in understanding mathematics concepts. Another study shows that females tend to earn better grades than male in mathematics (Kimball, 1989). Some recent studies have revealed that gender differences in mathematics education seem to be narrowing in many countries. However, studies indicate that as students reach higher grades, gender differences favor increase in mathematics achievement by males (Campbell, 1995 and Gray, 1996)

Subedi (2013) carried out a comparative study of the class 8 boys and girls achievement in mathematic on the topic “Achievement in mathematics in Ilam District”. He found that gender play an important role in mathematics achievement. Specifically, the achievement of boy is found to be higher than that of the girl students.

Gautam (2017) carried out a research on the topic “ Parental occupation and academic achievement of their children”. In his research, he has taken achievement of mathematics at

S.L.C. level. He concludes that the job holder parents were more concerned about their children's study moreover their children have healthy competition on study. He also finds that parents' occupation determines about availability of mathematics private coaching, separate study room and parental inspiration to the children to study mathematics.

The key Research Question

Is there a gender gap in mathematics achievement in Class Eight in Khotang district? The study is tested the following hypothesis at 0.05 level of significance.

Null Hypothesis (H₀): There is no significant difference between the mean achievement of boys and girls in mathematics in grade Eight.

Alternative Hypothesis (H₁): There is significant difference between the mean achievement of boys and girls in mathematics in grade Eight.

Delimitations of the Study

This study is limited on the result of class eight Basic Level Examination (B.L.E.) 2075 of selected school. Therefore, it has limited respondents. The achievement of the child is not determined by only a single factor. The variable like age level of students, their order of birth, students' capabilities on I.Q., teachers' personality, teaching method, parents' education, exam environment etc are not controlled in this study.

Objectives

The objectives of this study are

- (i) To compare the mathematical achievement of boys and girls in class eight in Khotang district.
- (ii) To find out factors to increase achievement in mathematics.

Methodology

All students studying in grade Eight in Khotang district in academic year 2075 are population of the study. In collecting data concerning the characteristics of a group of individuals or objects. It is often impossible or impractical to observe the entire group called the population. Instead of examining the entire group, one examines a small part of the group called a sample (Kothari, 2009). In Khotang district there are 10 local level governments. Among them two are municipalities remaining eight are rural municipalities. Among them Diktel Rupakot Majhuwagadhi Municipality is selected purposively. There are 31 Basic level community school and four Basic level institutional schools in Diktel Rupakot Majhuwagadhi Municipality. Two community school Shree Saraswati Ma. Vi. and Pancha Ma. Vi. schools and one institutional school Diktel English Secondary School were selected purposively. Six boys' and six girls' marks sheet of 2075 B.S. from each school is selected by simple random sampling method. BLE was conducted by Diktel Rupakot Majhuwagadhi Municipality. Items of the question were collected in both English and Nepali medium from mathematics teacher of different school and compiled in one. Questions were piloted in small group before conducted exam in all school. And necessary modifications were made depending on the results of the pilot tests. Three mathematics subject teachers of class eight of each school were selected for interview and filling questionnaire. Six parents two from each school one from boy and one from girls were selected purposively for interview and filling questionnaire. By nature it is mixed design.

Questionnaires was given to the selected six parents and three teachers. Questionnaire contains mainly three questions. First question is, who is affected more by rapid growth changes

boy or girls or both equal? Second question is, who has more responsibility at home and school at this class eight boy or girl or both equal? Third question is, who does misuse their mobile boy or girl or both? Interview is also conducted to the parents and teacher concerning on the same questions.

Analysis and Interpretation

The mean and standard deviation of the scores of 36 students were calculated. Then the t-value was calculated to facilitate the comparison between the scores of two groups of students. Through the analysis, the statistical values obtained are shown in the table 1 and 2.

Table 1 Mean achievement score, standard deviation, t-test value, and degree of freedom.

Groups	Size	Mean	S.D	t-value	Df
Boys	18	70	11.46	2.92	34
Girls	18	60	8.92		

The table shows that mean marks of boy is 70 and mean marks of girls is 60. Difference of their mean marks is 10. It shows that boys are better than girls. Standard deviation of boys' marks is 11.46 where as standard deviation of girls' marks is 8.92. Standard deviation of girls' marks is 2.54 less than standard deviation of boys' marks. From the t-table, the t-value at 5% level of significance at 34 degree of freedom is 1.96 in two tailed test. Analyzing statistically, the computed value is 2.92. Computed value 2.92 is more that tabulated value 1.96. It indicates that the null hypothesis is rejected at 5% level of significance. It means that there is a significant difference between the mean achievement of boys and girls students.

From this study, it is found that there is significance different between mean marks of boys and mean marks of girls in class eight in Khotang District. Specially, the achievement of mathematics of boy is found to be higher or better than the achievement of mathematics of girls.

Table 2 Result of questionnaire and interview

	Teacher			Parents						mode
	1	2	3	1	2	3	4	5	6	
Who is affected more by rapid growth change?	g	g	e	g	G	g	g	e	e	g
Who takes more responsibilities?	g	b	e	g	E	g	g	g	g	g
Who misuse their mobile more?	n	g	b	b	G	g	b	b	g	b & g

In the table g means girl, b means boy , e means equal and n means no ideas.

Table shows that causes of weak achievement of girls are rapid growth changes on their body and work load at home. Boys and girls equally misuse their mobile.

Conclusion

It concluded that the gender has a significant role in the mathematics achievement in Class Eight in Diktel Rupakot Majhuwagadhi Municipality. Boys' achievement in mathematics is better than girls' achievement in mathematics. One causes of weak performance of girl is rapid growth changes occur at this age and other cause is more duties/ responsibilities at home.

To increase girls achievement in mathematics awareness program necessary for students. They must be prepared ahead of time about their growth and development and adjustment about it.

Their shyness and hesitation should be minimized by education and developing friendship relationship among students, parents and teacher. Parent should know it is period of unrealism, period of fatigue and antagonism. So, more duties and responsibilities should not impose to the girls.

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