A study on the students' perception in Mathematics in relation to Gender of the students and medium of school

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ABSTRACT

The student's performance of mathematics at the Upper Primary level is of great concerned for the state holders. After passing eight standards, students enter into secondary level which is the bridge between the primary and the higher secondary levels because secondary level mainly decides the track in which the student will go. Therefore, it has a great impact on students' future life. The study intends to investigate the effect of gender and medium of school on perception of mathematics among the upper primary students. A descriptive survey design was adopted for the study and the data was largely descriptive by nature. Questionnaires were used to collect the data from the students of 7th and 8th standard. These were administered on a sample of 780 students selected from 39 upper primary schools of Guwahati city. The internal reliability was examined. The data collected were coded and submitted to a Statistical Package for Social Science (SPSS) analysis which indicates overall that students' perception of mathematics and the gender of the students are significantly correlated. Different statistical tools were used to analyze and interpreted of numerical data.

ORIGINAL RESEARCH ARTICLE

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CITATION OF THE ARTICLE

I. INTRODUCTION

Different thinks about have revealed that young men are more intrigued by mathematics than young ladies (Eccles et al., 1985; Fredricks and Eccles, 2002; Hoffmann et al., 1998; Jacobs et al., 2002; OECD, 2004; Watt, 2004) (Jacob Brian A., Lars Lefgren (2002)). Kaiser Messmer (1944) reasoned that young men executions in mathematics are superior to young ladies in mathematics in Germany (Corcoran, Thomas B (1995). Once more, an examination done by Fennema (2000) demonstrated that sexual orientation contrasts still existed in learning complex numerical assignments in center and optional schools in America [Brown Byron W (1991)]. An examination of mathematics accomplishment of twelfth grade young ladies in 15 nations uncovered that with the exception of 3 nations, young men were more effective than young ladies (Hanna, Kundiger, and Larouche, 1990). It was communicated that young ladies turn out to be more captivated to take the courses other than mathematics as they progress through schools (Pallas and 82 Alexander, 1983). Then again, as per Callahan and Clements, 1984 and ossey et al, 1988, in the basic stage, no distinction was come about with respect to mathematics accomplishment of both young men and young ladies [Basavayya D, Basti B C and Ravindra G(2004)]. Boswell, 1985 and Goddar-Spear, 1989, presumed that sexual orientation contrasts in 'mathematics interest' may be because of the general population who trusted that mathematics was a subject for the guys and young men perform much superior to young ladies [Austin J D (1980)]. Then again, as per some others it may be from family impacts and financial status of guardians [Collier's

Encyclopedia, Vol 13]. Marope (1992) examined in Botswana junior optional schools and inferred that young ladies had more negative states of mind towards mathematics than young men [Ekstrom, R.B., M.E. Goertz and D. Shake. (1988.)]. In actuality, the discoveries of L. M. Kaino on Botswana schools assumed that students' enthusiasm for mathematics were normal and most students apparent mathematics as a troublesome subject to learn and furthermore there were no noteworthy sexual orientation contrasts in students' enthusiasm for the subject [Cooper, H. and Good, T. L. (1983)]. Various examinations on sex contrasts have insisted the presence of sex contrasts. Subsequently, in the present examination an undertaking has been made to analyze the 'mathematics interest' of class VII and VIII students of different schools of Guwahati and related effects of sex contrasts in this particular situation.

The factors which we have considered are the gender and medium of school, which includes English, Assamese, Hindi and Bengali medium schools managed by different authorities.

II.   MATERIALS AND METHODS

Objectives

1. To analyze 'mathematics perception' of upper primary school students.

2. To study the effect of gender differences in 'mathematics perception' of students of class VII & VIII of different medium of upper primary schools such as English, Assamese, Hindi and Bengali.

Hypothesis

There is no significant difference between mean 'mathematics perception' score of male and female students.

1. There is no significant difference between mean 'mathematics perception' scores of English medium schools.

2. There is no significant difference between mean 'mathematics perception' scores of Assamese medium schools.

3. There is no significant difference between mean 'mathematics perception' scores of Hindi medium schools.

4. There is no significant difference between mean 'mathematics perception' scores of Bengali medium schools.

Samples

All the 200 upper primary schools of Guwahati city, irrespective of types of management (Government, Govt. provincialized and Private) and types of affiliation (SEBA, CBSE, CISCE and ISC), have been stratified in accordance with their medium of instruction such as English, Assamese, Bengali, Hindi, Bodo, Nepali and different able schools. 20% of 85 English, 76 Assamese, 20 Bengali and 13 Hindi schools medium wise (except Bodo, Nepali and different able) have been randomly selected as sample schools for intensive study. Lottery method of selective sample (20%) for each category has been followed. Total sample schools for detail investigation are 39. 10 students from each class VII and VIII (irrespective of sections, if any) 5 having good understanding of mathematics and 5 having less than averages understanding of mathematics identified by the mathematics teacher/s, of the classes, have been selected as sample students.

At 90% confidence level with +_5% level of precision the estimated sample size was found to be 780. The sample sizes of 780 students from 39 schools are considered to be representative of student population of Guwahati.

Table 1 : The distribution of samples size for class VII and VIII students of different schools of Guwahati

M.S*	P	S*	Allotted Sample size		
			B*	G*	Total
English	85	17	176	164	340
Assamese	76	15	154	146	300
Hindi	13	3	33	27	60
Bengali	20	4	42	38	80

(M.S"Medium of School, P "Population" S*"Sample size" B*"Boys" G*:Girls)*

Delimitation of the study

1. The study is limited to the Assamese, English, Bengali and Hindi medium schools of Guwahati City only. Other medium like Bodo, Nepali etc are excluded.
2. No 'special schools' like 'Blind School', 'deaf and dumb school' Medrassa schools etc. were included.
3. Data analysis was confined to measures of central tendency (mean), measures of dispersion (standard deviation), t-test, Chi- square analysis.

Different variables in the study

Two types of variables, viz. independent and dependent variables were introduced in the study.

1. Independent variable: Gender of students and medium of schools.
2. Dependent variable: 'Mathematics Perception' of students.

Tools of the study

A descriptive survey design was adopted for the study and the data was largely descriptive by nature. Questionnaires were used to collect the data. It was designed to measure the perception of mathematics of boys and girls students of 7th and 8th standard. Besides, the finding will enable the teacher to build up Perception on those students who lack in it.

The Cronbach's Alpha for the questionnaire used for our study was found to be 0.76: which is greater 0.70 agreeing with the recommendation that for an instrument to be used, its internal co-efficient Cronbach's Alpha must be at least 0.70.

There are 30 items in the Question. Each item has five options strongly agree (SA), Agree (A), Unsure (U), Disagree (D) or Strongly Disagree (SD). For each (SA) 1 point,(A) 2 points, (U) 3 points, (D) 4 points and (SD) 5 points are allotted. In the end, total marks obtained were added. After the scoring was done, the subjects (the students of the sample) were classified into the following three categories in accordance with the raw scores obtained by them on the questionnaires.

Table 2: Classification of subjects according to their perception

Levels of Perception	Scores
High Perception	81 and above
Moderate Perception	61-80
Low Perception	40-60

Administration of the tool:

First of all we visited the selected schools. With the due permission from the school authority gave the questionnaire to the randomly selected students of the sample with the cooperation of the respective class teacher. Instructions were given to the students to fill up the questionnaire properly. Students were asked to do this at the school in front of the investigators only. The instrument was administered within six consecutive months of a school year.

Strategy of data analysis:

Different statistical techniques were used in the analysis and interpretation of numerical data of the present study [11].

1. The measures of central tendencies (mean) and the measures of dispersion (standard error) were used to study the nature of the data.

2. The sample size is 780, which is greater than 30. Hence it is a large sample and can assume to be normally distributed sample. It satisfies the assumptions of t-test and therefore, to study the significant difference between the two groups (i.e. between male and female students) in the 'mathematics perceptions'-test was applied.

The t-test is probably the most commonly used statistical data analysis procedure for hypothesis testing. Actually, there are several kinds of t-tests, but the most common is the 'two sample t-test' which is also known as the 'Student's t-test' or the 'independent samples t-test'. The t-test simply tests whether or not two independent populations have different mean values on some measure.

III. STATISTICAL ANALYSIS AND GRAPHICAL PRESENTATION

Table 3: Classification of the sample schools according to the level of perception in Mathematics

Gender	Level of Perception						Total
	High Perception		Moderate Perception		Low Perception		
	n	%	n	%	N	%	
Male	37	9.1	309	76.3	59	14.6	405
Female	36	9.6	278	74.1	61	16.3	375
Total	73	9.4	587	75.3	120	15.4	780

From the analysis of the above data, it is observed that 76.3% of Male students have moderate perception in mathematics and in case of girl students, it is 74.1%. Again, 16.3% of female students have low perception in mathematics, whereas, it is 14.6% in case of boy students. More over 9.6% of girl students have high perception in mathematics, whereas, 9.1% in case of boys.
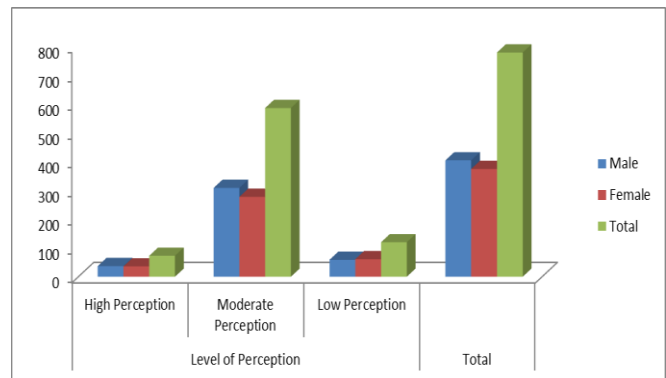

Fig 4.1 Bar diagram showing levels of perceptions of male and female students

Table 4: Classification of the sample in different medium of schools according to the level of perception in mathematics

Levels of Perception	Gen der	English		Assamese		Hindi		Bengali		All the schools	
		N	%	N	%	N	%	N	%	N	%
High Perception	M	6	3.4	26	16.9	0	0	5	12	37	9.1
	F	10	6.1	17	11.6	1	3.7	8	21	36	9.6
Moderate Perception	M	159	90	96	62.3	26	79	28	67	309	76.3
	F	143	87	95	65.1	14	52	26	68	278	74.1
Low Perception	M	11	6.3	32	20.8	7	21	9	21	59	14.6
	F	11	6.7	34	23.3	12	44	4	11	61	16.3

* at 0.05 level of significance.
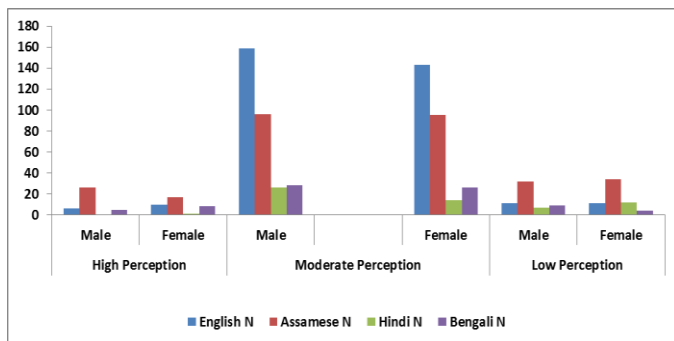*** at 0.01 level of significance.*

Fig 4.2 : Bar diagram showing mean mathematics interest score of students of different medium of schools

Table 5: Significant differences between means of mathematics interest scores of male and female students of different medium of schools.

Medium of school	Gen der	Sample size	Mean	Standar d Error	Degrees of Freedo m	t-value (calculat ed)	p-value	decisi on
English	M	176	70.4	6.45	338	-0.057	0.954	NS*
	F	164	70.4	6.84				
Assamese	M	154	70.3	0.99	298	1.193	0.234	NS*
	F	146	68.7	0.99				
Hindi	M	33	67.8	1.43	58	2.432	0.018	S**
	F	27	62.3	1.78				
Bengali	M	42	67.4	1.81	78	-1.46	0.149	NS*
	F	38	71	1.59				
Total	M	405	69.9	0.49	778	Z-test	0.352	NS*
	F	375	69.2	0.51		-0.931		

* at 0.05 level of significance.
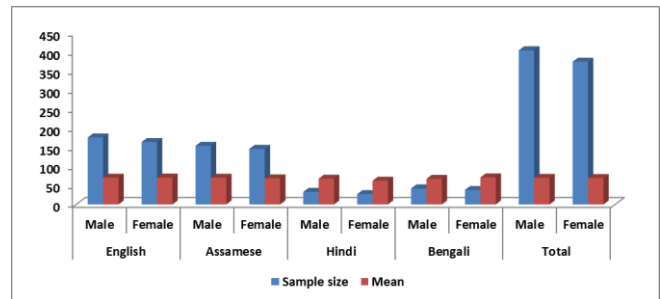*** at 0.01 level of significance.*

Fig 4.3 : Bar diagram showing mean mathematics interest score of students of different medium of schools

IV. RESULTS

The analysis of table 5 reveals that-

1) The calculated *t*-value of English medium schools is - 0.057 and the p value is 0.954 at 0.05 levels of significance the test is not significant.

    Therefore, no significant difference is observed between the 'mathematics interest' of male and female students studying in English medium schools at 0.05 levels of significance.

2) The calculated *t*-value of Assamese medium schools is 1.193 and the p value is 0.234 at 0.05 levels of significance the test is not significant.

    Therefore, no significant difference is observed between the 'mathematics interest' of male and female students studying in Assamese medium schools at 0.05 levels of significance.

3) The calculated *t*-value of Hindi medium schools are 2.432 and the p value is 0.018 at 0.05 levels of significance the test is significant.

    Therefore, significant difference is observed between the 'mathematics interest' of male and female students studying in Hindi medium schools at 0.05 levels of significance.

4) The calculated *t*-value of Bengali medium schools is – 1.46 and the p value is 0.149 at 0.05 levels of significance the test is not significant.

    Therefore, no significant difference is observed between the 'mathematics interest' of male and female students studying in Bengali medium schools at 0.05 levels of significance.

5) However, the calculated p-value for all the male and female students of all medium of schools is 0.352 at 0.05 levels of significance the test is not significant and 778 degrees of freedom.

    Therefore, it is not significant. It provides adequate number of evidences to accept the null hypothesis.

It can, therefore, be concluded that there is no significant difference between the 'mathematics interest' of male and female students of upper primary schools of Guwahati.

V.   DISCUSSION

The main findings on the basis of the results from analysis of data are as follows:

1) Gender of understudies does not impact 'enthusiasm for mathematics' among school posterity of English, Bengali and Assamese medium schools.

2) There is effect of gender on 'enthusiasm for mathematics' of Hindi medium school kids. The girl's students for the Hindi medium schools are found to be marginally less interest in mathematics. It might be due to the fact that most of the girls of the Hindi medium schools belong to BPL families engaged as daily wage earners and therefore their parents cannot afford to give a proper learning environment at home.

3) Enthusiasm for mathematics' of Upper Primary School understudies with everything taken into account isn't reliant on gender of the understudies.

VI. DISCUSSIONS AND CONCLUSIONS

Distinctive strategies and methodology associated in the training – learning method of mathematics may be steady of both the boy's and the girl's students. In this way, the instructive modules coordinator may advance up with respect to outline the instructive projects so as to make both young fellows and young women fascinated by learning of the subject.

VII.   REFERENCES

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