



RELATIONSHIP OF MATHEMATICS ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS WITH PARENTAL VARIABLES

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Abstract

In the present investigation an attempt has been made to reveal the role of parents in affecting the achievement of students in trigonometry. Three variables connected with parents viz. Socio-Economic status of Parents, Education of Parents and Maternal Employment were taken up to study the effect on student achievement. The sample of study consisted of 500 (250 boys and 250 girls) of tenth class students drawn from government and private schools of Amritsar district. The results of the study revealed that there was significant difference in the attainment of concepts in trigonometry between high Socio-economic status group and low Socio-economic status group, also a positive relationship between maternal employment and attainment of students was found on the other hand attainment in trigonometry was found to be independent of level of education of parents.



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Introduction

Mathematics is of paramount importance in all walks of human life. The nature of mathematics in terms of abstraction, generality, structure and patterns, consistency and independence led to believe that the entire world phenomena can be interpreted mathematically. Mathematics helps to

develop intellectual habits such as accuracy, training for simplification, certainty, verification of results, persistence, patience, neglect of necessary comfort, open mindedness, originality and reasoning. It helps the child to develop mathematical skills and attitudes to meet the demands of the daily life. There are various branches of mathematics like arithmetic, algebra, statistics, geometry, trigonometry etc. Conceptual understanding of trigonometry, an important branch of mathematical studies which is introduced in ninth class in our country is the gateway to advanced mathematics and science in higher education. It is easy to explain in word-terms what trigonometry means, but it is more important to understand what mechanisms of thinking will help to understand not only trigonometry, but everything in life in a much more vivid way.

Home plays a prominent role in the education of the child. Our behaviour patterns are guided by home. Some homes foster the behavioural pattern necessary for academic learning while others fail to do so. Preschool environment that is home should be able to develop in the child the readiness to profit from the educational opportunities which are generated in the formal classroom. Family is a group of people affiliated by consanguinity, affinity or co-residence. It is the first basic institution which serves to locate children socially and plays a major role in their enculturation, socialization and education. Child's abilities to achieve success in school are stimulated by parents who act as primary agents in doing so. What parents are and what they do are important predictors of academic achievement.

Objective Of The Study

- (i) To discover whether attainment in trigonometry has any relationship with Socio-Economic status of Parents, Education of Parents and Maternal Employment.

Hypotheses

- (i) High socio economic status students perform significantly better in the attainment of concepts in trigonometry from low socio economic status students.
- (ii) Attainment of concepts in trigonometry is independent of maternal employment.
- (iii) Attainment of concepts in trigonometry is independent of level of education of parents.

Method

Sample

The sample consisted of 500 students of tenth class selected from the different schools of Amritsar district, out of which 250 were boys (125 government and 125 private) and 250 were

girls (125 government and 125 private). The sample was collected by using stratified random sampling technique.

Tools

In the present study (a) Socio Economic Status Scale (Urban) (Srivastava ,1991) modified by the Investigator and Socio Economic Status Scale (Rural),(Trivedi and Pareek, 1965) modified by the investigator has been used and also the test of trigonometry constructed and standardized by the investigator has been used.

Statistical Technique

To investigate the role of SES the students were first measured on SES, two groups were formed by using Kelley's dichotomy; one High SES group and other low SES group. Education of parents was studied at three levels namely below matric, graduation and post graduation. The higher level of education of either of the parents was considered for data analysis. Maternal employment was varied in two ways—working or non working mothers. The information regarding education of parents and maternal employment was sought from the information schedule given on the title page of TCT constructed and standardized by the investigator. T-test was employed to find whether significant differences existed between different groups viz. high SES vs low SES; children of working vs non working mothers. Analysis of Variance was employed to study the differences in attainment of concepts in trigonometry in relation to Education of parents.

Results and Discussion

Hypothesis 1: High socio economic status students perform significantly better in the attainment of concepts in trigonometry from low socio economic status students.

This hypothesis studies comparison of students from High SES and Low SES in attainment of concepts in trigonometry. The results are presented in Table I.

Table I: Comparison between high socio economic status and low socio economic status students on scores of Trigonometric Concept Test

SES	N	Mean	S.D.	t- ratio	
High	135	25.53	8.57	4.876	Significant at .01 level
Low	135	20.56	8.15		

Discussion based on Table I

As observed from the Table, the difference in attainment of concepts in trigonometry between students having high SES and those having low SES was found to be significant. The obtained t-value of 4.876 is statistically significant at 0.01 level, which shows that our hypothesis, that high socio economic status students perform significantly better in the attainment of concepts in trigonometry from low socio economic status students was accepted. The better attainment of high socio economic status students in trigonometry may be attributed to the fact that generally children coming from socially and economically sound families take admissions in elite schools and such schools make all efforts to sharpen the child’s intelligence which may help them perform better.

This finding is supported by research studies conducted by Russel(1999), Koutsoulis(2001), Lan(2004), Wilkins (2006) and Leonard and Box (2009), Theodosiou-Zipiti et al.(2010) and Lobban (2012).

Hypothesis 2: Attainment of concepts in trigonometry is independent of maternal employment.

This hypothesis deals with the comparison of children of working and non working mothers with regards to attainment of concepts in trigonometry. The result are presented in Table II .

Table II: Comparison between children of working and non working mothers on scores of Trigonometric Concept Test

Mother	N	Mean	S.D	t-ratio	
Non working	415	21.949	8.018	3.734	Significant at .01 level
Working	85	25.553	8.522		

Discussion based on Table II

When scores on TCT obtained by children were compared with respect to maternal employment, the obtained ‘t’-value was found to be 3.734 which is statistically significant at 0.01 level. This implies that there exists significant difference in achievement on Trigonometric Concept Test between children of working and non working mothers. It could also be observed from Table II that mean scores on Trigonometric Concept Test were in favour of children of working mothers. This indicates that children of working mothers showed greater achievement on Trigonometric Concept Test in comparison to children of non working mothers and hence our hypothesis, that

attainment of concepts in trigonometry is independent of maternal employment was rejected. Maternal employment appeared to have a positive effect on achievement of children. It may be attributed to the fact that employed mothers are in direct contact with the world of work and hence more aware and informed. They make all possible efforts to help their children keep pace with the changes which occur at educational front time and again and thus help them perform better. Muni and Panigrahi (1998) found maternal employment to be an asset rather than burden for children. The children were found to be better adjusted in the classroom setting.

Hypothesis 3: Attainment of concepts in trigonometry is independent of level of education of parents.

Analysis of variance was employed to study the differences in attainment of concepts in trigonometry with respect to education of parents. Education of parents was classified at three levels namely below matric, upto graduation and post graduation. Table III (a) shows number and mean score of students on TCT corresponding to level of education of parents. The interaction of education of parents and attainment of concepts in trigonometry has been studied by applying ANOVA and results are presented vide Table III (b).

Table III (a): Level of education of parents, number and mean score of students on TCT

Level of Education of Parents	N	Mean Score
Below Matric (G_1)	121	22.6116
Upto graduation (G_2)	261	22.3465
Post graduation (G_3)	118	22.6667

Table III (b): Results of ANOVA applied to study the interaction of level of education of parents and attainment of concepts in trigonometry

Source of variance	Sum of squares	df	Mean square	F	Level of Significance
Between groups	5.975	2	2.988	0.044	Insignificant at .01 level
Within groups	33625.103	497	67.656		
Total	33631.078	499			

Discussion based on Table III(a) and III (b)

A look at the table III (b) shows that magnitude of calculated F-value is 0.044 while the table value at .01 level of significance for degree of freedom (2, 497) is 4.65. The calculated value is less than the table value which shows that magnitude of F-value is insignificant. This clearly

indicates that the impact of level of education of parents on attainment of concepts in trigonometry is insignificant. That is, irrespective of level of education of parents all the subjects were equivalent in their ability to attain on TCT. The mean score of students on TCT as observed from table III (a) also shows that the performance of all the three groups G_1 , G_2 , G_3 on TCT is almost same (Mean score of $G_1 = 22.6116$, Mean score of $G_2 = 22.3465$ and Mean score of $G_3 = 22.6667$).

Studies by Vyas (1983), Nalayini (1991), Torresvilla (1995) and Alanizi (2010) revealed that parental education level had no effect on academic achievement of pupils which supports our finding that attainment of concepts in trigonometry will be independent of level of education of parents.

Hence, the hypothesis that attainment of concepts in trigonometry is independent of level of education of parents was accepted.

Conclusions

On the basis of above findings it can be concluded that in the present investigation, student from high SES performed significantly better in attainment of concepts in trigonometry from low SES. Also attainment of concepts in trigonometry was found to be dependent on maternal employment and independent of level of education of parents.

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