Electronic Interdisciplinary International Research Journal (EIIRJ)
A Peer Reviewed Interdisciplinary Journal UGC Approved Journal No 48833
Impact Factor 5.20 ISSN 2277-8721

ACADEMIC ACHIEVEMENT IN MATHEMATICS OF HIGHER SECONDARY STUDENTS IN PUDUCHERRY REGION

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ABSTRACT

The present study has been carried out to examine the academic achievement in mathematics of higher secondary students. Normative survey method was adopted on a sample of 927 higher secondary students from Puducherry region using stratified random sampling technique. To measure academic achievement in mathematics, the investigator developed the achievement test based on Bloom's Taxonomy (1956). The study revealed that there exists significant difference in academic achievement in mathematics with respect to Type of management and Type of school and not significant in the case of gender and locality.

Key words: Academic achievement in mathematics, higher secondary students

INTRODUCTION

In contemporary education, the place of mathematics needs to be determined by an investigation of the modern society. The Kothari Commission Report (1964-66) correctly highlighted that study of mathematics plays a high-flying role in modern education. Mathematics without any uncertainty seems to the needful and application oriented subject for exactly all vocations and also in the course of higher learning. Application of mathematics is widely required in the higher secondary and university stages. There cannot be any subject that can be hardly substituted for mathematics. The function of mathematics not only gives new experiences to the child but also it promotes the organization of ideas that have already been developed from perceptual experience. Today it is need of everyone who intends to enter the infinite world of science must have to be familiar with mathematics. The way in which the world runs today really makes one feel that world has followed the

instruction of mathematics and as a result received strongly made the necessity of mathematics to praise the person who had created this world. The educational achievement is influenced by quite many factors. Mathematics achievement is much important and valuable aspects of students‟ academic career. Not only it shapes one's vocational career but also it determines the pattern of one's living.

Basic Mathematics is considered as a pre-requisite for success not only in school but also for everyday life. Mathematics, by nature is abstract and it is not possible for all the students to comprehend it in traditional instruction. It is the pressure of failure in Mathematics tests and thereby public embarrassment of the students' results in some kind of tension in them. It is the duty of each and every mathematics teacher to make the concept simple, lucid and easily understandable. Students' prior negative experiences in mathematics class and at home when learning mathematics are often transferred and cause a lack of understanding of mathematics. For learning mathematics without anxiety, students must be engaged in exploring, conjecturing, and thinking rather than, engaged only in rote learning of rules and procedures that is learning should be more interesting and enjoyable. It should be an intellectual excitement rather than a cumbersome process.

NEED FOR THE STUDY

The vital role which mathematics plays in education is derived from the cultural, utilitarian and interdisciplinary values which the subject seeks to inculcate in the learner. Mathematics education is to a nation what protein is to a young human organism. It is a vital tool for understanding and application of science of technology. Mathematics further on the other hand is the capacity to use or manipulate numbers effectively in clerical administrative, scientific and other areas of application of numbers. It is the ability to understand and work with numbers with ideas related to numbers. This role of mathematics is highly important for an individual to be successful in their mathematical ability and achievement in mathematics. To be successful in mathematics involves the aptitude to appreciate one's existing state of knowledge, construct on it, progress it, and we can make changes or decisions in the face of conflicts. It is important because they assess the

primary analysis of learning process. At this context, the researcher felt a need to conduct the study.

STATEMENT OF THE PROBLEM

The problem of the present investigation is stated as Academic achievement in mathematics of higher secondary students in puducherry region

OBJECTIVES OF THE STUDY

1. To study the Academic Achievement in Mathematics of Higher Secondary students.
2. To study the difference in Academic Achievement in mathematics with respect to Gender, Locality, Type of management and Type of school.

HYPOTHESES OF THE STUDY

1. There exists significant difference in Academic Achievement in mathematics with respect to Gender, Locality, Type of management and Type of school.

METHOD OF STUDY

For the collection of data, descriptive survey method of investigation was employed by the investigator. The total sample consists of 927first year higher secondary students from Puducherry region which consists of 508 boys and 419 girls. As the population from which these samples are to be drawn does not constitute a homogeneous group, stratified sampling technique was applied by the investigator to obtain the representative sample for the present study. Due representation was given to characteristics such as Zone, Locality, Category and Level of Schooling, in collecting the sample for the study. The sample was collected from the Puducherry region. The sample was selected in such a manner that the investigator could get an equal size of data from the various zones, localities, categories and levels of schooling.

INSTRUMENTS USED

1. Achievement Test in mathematics. The investigator developed the achievement test based on Bloom's Taxonomy (1956): (1) Knowledge (K) (2) Understanding (U) and (3) Application (A).

2. Personal data sheet prepared by the investigator was used to collect information on personal and school related demographic variables.

STATISTICAL TECHNIQUES USED IN THIS STUDY

a) Descriptive Analysis

b) Differential Analysis

DATA ANALYSIS

Table-1

Significant Difference in Academic achievement in Mathematics of Higher Secondary Students with respect to Gender, Locality and Type of Management

Variable	Group	Sub group	N	Mean	SD	't'	p value
Academic achievement in Mathematics	Gender	Male	508	40.25	8.788	0.213	0.83 (NS)
		Female	419	40.13	8.761		
	Locality	Rural	503	40.55	9.147	1.333	0.18 (NS)
		Urban	424	39.78	8.294		
	Type of Management	Private	429	38.91	8.561	4.863	0.00** (S)
		Government	498	41.69	8.786		

On comparing Mean Academic achievement in Mathematics scores significant differences are observed in the sub variable type of management alone as calculated 't' value are significant. Therefore, there exists significant difference in Academic achievement in Mathematics with respect to type of management and significant in the case of gender and locality.

Table-2

Mean difference of Academic achievement in Mathematics with respect to Type of Schools

	Source of Variance	Sum of Squares	df	Mean Squares	F Value	p
Type of Schools	Between Groups	2475.549	2	1237.775	16.633	0.00** (S)
	Within Groups	68761.499	924	74.417		
	Total	71237.049	926			

The variable 'academic achievement in mathematics' found significant mean difference at 0.05 level for the respective F- value 16.633. (df: 3, 923). Hence it is concluded that academic achievement in mathematics differs significantly with respect to their Type of schools.

For the dimensions of Academic Achievement in Mathematics that differ significantly, follow up (post hoc) test were performed to see which groups differ within the sub samples.

Table-3

Post hoc analysis for the academic achievement in mathematics that differ significantly with respect to the demographic variable type of school

Dependent variable	(I) Type of School	(J) Type of School	Mean difference (I-J)	Std. Error	p
Academic achievement	Boys	Girls	3.843*	.667	0.00
		Co-Ed	1.501	.704	0.08
	Girls	Co-Ed	2.342*	.740	0.00

In careful observation of table shows test for the Type of schools in Academic achievement, there was a significant difference between Boys and Girls in the study. Mean values revealed that Girls scored higher than Boys. Also post hoc statistics revealed significant difference between Girls and Co Ed. Co Ed is found to have higher score than Girls which means Co Ed has performed better than the Girls.

DISCUSSION

The findings of the present study revealed that boys were little bit higher in academic achievement when compared to girls. This may be due to the personal interest, ambition and they will be having higher inspiration. This is also possible because of their determined commitment and hard work towards the goal. Similarly it was already established by Vijayalaxmi and Natesan (1992) that the academic achievement of girls was higher when compared to boys. Though, Mundaragi (1999) established that girls were lower in academic achievement when compared to boys

whose performance is higher. Similarly Pattnaik (1993) established with reference to academic achievement. It was observed that in subjects like mathematics, English and in overall percentage of marks, boy‘s performance was better than the girls. Significant difference was not observed between boys and girls with respect to academic achievement in mathematics. The null hypothesis was accepted. The above results were with the studies Khatoon (1988), Singh (2004) stating that significant differences was not found between boys and girls. The reasons for the above results may be due to the fact that student’s anxiety towards mathematics in these days. Significant difference was not observed between rural and urban school students with respect to academic achievement in mathematics. The null hypothesis was accepted. Similarly Bhavsar S J (1970) reported that differences was found between rural and urban students. School authorities and parents from both areas need to equip and mould their students with new strategies and methods so as to make them excel. Significant difference was observed between government and private school students with respect to academic achievement in mathematics. The null hypothesis was rejected. Similarly Neetu sethi (2011) reported that there exist significant differences between government and private school students with respect to academic achievement in mathematics. The reasons may be that in private schools generally the students come from rich well-to-do families. Moreover in private schools, environment is more congenial. Therefore such students have varied interests. The study also revealed that there is significant difference with regard to type of schools. Similarly Sadia Mahmood and Tahira Khatoon (2011) also showed that the type of schools had the greatest influence on mathematics achievement.

EDUCATIONAL IMPLICATIONS OF THE PRESENT STUDY

Significant difference in mathematics achievement was observed among the students of varying school locations. Necessary steps should be taken by the schools to make the students feel good about mathematics since there is a strong belief in students community in general that mathematics is a difficult subject in nature. Through the recent innovations in technology, school management has to bring forth necessary arrangements to teach mathematics through power point, through slides or through

projector so as to make the students to feel learning of mathematics is enjoyable. Further schools should also to come up with good academic records, so that students also get motivated and develop their skills and aptitude.

CONCLUSION

The present study clearly emphasized the various aspects regarding the mathematics achievement. From this study the investigator concludes that Skills and general mathematical aptitude plays a vital role in the development of academic achievement and also in the development of personality in life. There should be good aptitude knowledge in one student so as to compete and succeed in good career.

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