



ISSN Print: 2394-7500  
ISSN Online: 2394-5869  
Impact Factor: 5.2  
IJAR 2016; 2(11): 173-177  
www.allresearchjournal.com  
Received: 28-09-2016  
Accepted: 29-10-2016

**L Lyla Elizabeth**  
Research Scholar, Department  
of Education, Annamalai  
University, Tamil Nadu,  
India

**PN Nataraj**  
Associate Professor,  
Department of Education,  
Annamalai University,  
Tamil Nadu, India

## Relationship between achievement in mathematics and creativity among higher secondary students

**L Lyla Elizabeth and PN Nataraj**

### Abstract

Education is playing a crucial role by bringing change in the individual and understands which path to choose. Our education system rarely rewards and often deserves highest academic achievers. There is a need in Testing and marking systems to identify original contributions in the form of creativity, problem solving, etc. A lot of weight age has been given to the mathematics subject from time immemorial and it has acquired even greater value today with its linkage to diverse fields of physical and social science. From the very beginning, the children's education starts with both language and numerical skills. This study examined the achievement in mathematics and creativity among higher secondary students. It was administered to 768 higher secondary first year students. Differences were compared for gender and type of school. Results indicated that achievement in mathematics and creativity of higher secondary first year shows average level and both achievement in mathematics and creativity shows significant relationship and significant difference towards higher secondary students. Further it shows achievement in mathematics towards gender and type of school have significant difference and gender, aided and private, government and private shows significant difference towards creativity and aided and government do not differ significantly towards creativity of higher secondary students.

**Keywords:** Mathematics, higher secondary students, education

### Introduction

Education mould the character and personality of an individual by its processes and makes him creative socially and economically useful. While thinking about the importance of education, we have to know that schools become the most important way of transforming wealth of knowledge and skills from one generation to another. Mathematics is as old as the human evolution for that only mathematics is called as the queen of all sciences. Mathematics has always been a central part of any school curriculum. The learning of mathematics equips students with knowledge, skills and habits of mind that are essential for successful and rewarding participation in a society. Most of the inventions in physics, chemistry, astronomy, biology are due to those scientists who are actually great mathematicians. Mathematics relies on logic and creativity; and it is pursued both for a mixture of practical purposes and for its inherent interest.

### Significance of the Study

Achievement mathematics and creativity informs us about creative cognition and its implication for learning. Being able to embrace our creativity as part of our learning experience, it seems, offers great benefits because we are more open to exploring different ideas and concepts, and thus we are more actively engaged. Though the achievement is low compared as the problem questions may be made in attempting only by frequent drill in classes. Avoidance of problem questions now the attempt in this study for attending problem questions by using inductive approach method. This study will be of much more helpful to solve the problem questions to achieve remarkable high level achievement in mathematics.

### Objectives of the study

1. To find out the level of Achievement in Mathematics and creativity among Higher secondary students.

**Correspondence**  
**L Lyla Elizabeth**  
Research Scholar, Department  
of Education, Annamalai  
University, Tamil Nadu,  
India

2. To find out the relationship between Achievement in Mathematics and Creativity towards higher secondary students.
3. To find out the significant difference between Achievement in Mathematics and Creativity towards higher secondary students.
4. To find out the significant difference between Achievement in Mathematics with respect to the gender towards higher secondary students.
5. To find out the significant difference between Achievement in Mathematics with respect to the aided and government towards higher secondary students.
6. To find out the significant difference between Achievement in Mathematics with respect to the aided and private towards higher secondary students.
7. To find out the significant difference between Achievement in Mathematics with respect to the government and private towards higher secondary students.
8. To find out the significant difference between creativity with respect to the gender towards higher secondary students.
9. To find out the significant difference between creativity with respect to the aided and government towards higher secondary students.
10. To find out the significant difference between creativity with respect to the aided and private towards higher secondary students.
11. To find out the significant difference between creativity with respect to the government and private towards higher secondary students.

**Hypotheses of the study**

1. The level of Achievement in mathematics and creativity of higher secondary students is low.
2. The relationship between Achievement in Mathematics and Creativity is do not differ significantly towards higher secondary students.
3. There is no significant difference between Achievement in Mathematics and Creativity towards higher secondary students.
4. There is no significant difference between Achievements in Mathematics with respect to gender towards higher secondary students.
5. There is no significant difference between Achievements in Mathematics with respect to aided and government towards higher secondary students.
6. There is no significant difference between Achievements in Mathematics with respect to aided and private towards higher secondary students.
7. There is no significant difference between Achievements in Mathematics with respect to government and private towards higher secondary students.
8. There is no significant difference between creativity with respect to gender towards higher secondary students.
9. There is no significant difference between creativity with respect to aided and government towards higher secondary students.
10. There is no significant difference between creativity with respect to aided and private towards higher secondary students.

11. There is no significant difference between creativity with respect to government and private towards higher secondary students.

**Operational definitions terms used in the present study**

- Achievement in Mathematics refers to the scores obtained in the mathematics achievement test constructed and standardized specially for the present study.
- Creativity Student’s having novel ideas and capable of thinking or doing different from others.

**Demographic variables**

- Gender ( Boys/ girls )
- Type of school ( Aided / Govt / Private )

**Tools used in the study**

- Achievement test in mathematics of higher secondary first year students standardized and validated by the investigator
- Construction and Validation of tests of creativity by the investigator

**Sample of the study**

Stratified random sampling technique was used for the present study of 768 higher secondary first year students in Thucklay Educational district, Kanyakumari district, Tamil Nadu, India.

**Statistical techniques**

Mean and standard deviation for the entire sample and the demographic variables were computed for Achievement in Mathematics and Creativity. The test of significance ‘t’- test was used to find out the significance difference between the means. The correlation coefficient has been found out to determine the relationship between the achievement in Mathematics and creativity.

**Scoring procedure of the tools**

Maximum score of achievement in Mathematics = 100  
 Maximum score of creativity = 97

**Analysis of Data**

**Hypothesis 1**

The level of Achievement in mathematics and creativity of higher secondary students is low

**Table 1:** Mean and Standard deviation of the scores of Achievement in mathematics and Creativity

Variables	N	Mean	SD
Achievement in Mathematics	768	76.4	11.2
Creativity	768	61.4	6.9

From the table 1, conclude that the higher secondary first year students achievement in mathematics and creativity shows average level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore, it is found that both achievement in mathematics and creativity of higher secondary first year students shows average level.

**Hypothesis 2:** The relationship between Achievement in Mathematics and Creativity do not differ significantly towards higher secondary first year students.

**Table 2:** Relationship between Achievement in Mathematics and Creativity

Variables	N	Correlation coefficient	Significant level
Achievement in Mathematics	768	0.13	NS
Creativity	768		

From the above table 2, the calculated 'r' value is 0.13, which is not significant at 0.05 level, The framed null

hypothesis is accepted and alternate hypothesis is rejected. Therefore, it is concluded that there is no significant relationship between Achievement in Mathematics and Creativity of higher secondary students.

**Hypothesis 3:** There is no significant difference between Achievement in Mathematics and Creativity towards higher secondary first students.

**Table 3:** Mean difference between Achievement in Mathematics and Creativity

Variables	N	Mean	SD	t- value	Significant at 0.05 level
Achievement in Mathematics	768	76.4	11.2	2.92	S
Creativity	768	61.4	6.9		

From the above table 3, the calculated 't' value is 2.92, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between Achievement in Mathematics and Creativity of higher secondary first year students.

**Hypothesis 4:** There is no significant difference between Achievements in Mathematics with respect to gender towards higher secondary first year students.

**Table 4:** Mean and SD scores of Achievement in Mathematics towards gender

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Achievement in Mathematics	Boys	345	78.6	18.4	2.39	S
	Girls	423	84.7	8.6		

From the above table 4, the calculated 't' value is 3.39, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between achievement in Mathematics of higher secondary first year students towards gender.

**Hypothesis 5:** There is no significant difference between Achievements in Mathematics with respect to aided and government towards higher secondary first year students.

**Table 5:** Mean and SD Scores of Achievement in Mathematics towards aided vs government

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Achievement in Mathematics	Aided	346	74	13.3	2.26	S
	Government	268	48	21.4		

From the above table 5, the calculated 't' value is 2.26, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards aided and government.

**Hypothesis 6:** There is no significant difference between Achievements in Mathematics with respect to aided and private towards higher secondary first year students.

**Table 6:** Mean and SD Scores of Achievement in Mathematics towards aided vs private

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Achievement in Mathematics	Aided	346	74	13.3	2.92	S
	Private	154	96	7.2		

From the above table 6, the calculated 't' value is 7.92, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards aided and private.

**Hypothesis 7:** There is no significant difference between Achievements in Mathematics with respect to government and private towards higher secondary students.

**Table 7:** Mean and SD Scores of Achievement in Mathematics towards government and private

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Achievement in Mathematics	Government	268	48	21.4	2.13	S
	Private	154	96	7.2		

From the above table 7, the calculated 't' value is 2.13, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between achievement in Mathematics of higher secondary first year students towards government and private.

**Hypothesis 8:** There is no significant difference between creativity with respect to gender towards higher secondary first year students.

**Table 8:** Mean and SD scores of Creativity towards gender

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Creativity	Boys	345	65.1	4.6	2.6	S
	Girls	42.3	58.3	8.3		

From the above table 8, the calculated 't' value is 5.6, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between creativity of higher secondary first year students towards gender.

**Hypothesis 9:** There is no significant difference between creativity with respect to aided and government towards higher secondary first year students.

**Table 9:** Mean and SD Scores of creativity towards aided and government

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Creativity	Aided	346	86.4	4.4	1.73	NS
	Government	268	83.7	3.1		

From the above table 9, the calculated 't' value is 1.73, which is not significant at 0.05 level. The framed null hypothesis is accepted and research hypothesis is rejected. Therefore it is found that there is no significant difference between creativity of higher secondary first year students towards aided and government.

**Hypothesis 10:** There is no significant difference between creativity with respect to aided and private towards higher secondary first year students.

**Table 10:** Mean and SD Scores of creativity towards aided and private

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Creativity	Aided	346	86.4	4.4	2.96	S
	Private	154	40.2	7.3		

From the above table 10, the calculated 't' value is 2.96, which is significant at 0.05 level. The framed null hypothesis is rejected and alternate hypothesis is accepted. Therefore it is found that there is significant difference between creativity of higher secondary first year students towards aided and private.

**Hypothesis 11:** There is no significant difference between creativity with respect to government and private towards higher secondary students.

**Table 11:** Mean and SD Scores of creativity towards government and aided

Variable	Type of school	N	Mean	SD	t- value	Significant at 0.05 level
Creativity	Government	268	83.7	3.1	2.14	S
	Aided	154	40.2	7.3		

From the above table 11, the calculated 't' value is 2.14, which is significant at 0.05 level. The framed null hypothesis is rejected and research hypothesis is accepted. Therefore it is found that there is significant difference between creativity of higher secondary first year students towards government and private.

**Major findings of the study**

1. Therefore, it is found that both achievement in mathematics and creativity of higher secondary first year students shows average level.
2. Therefore, it is found that there is no significant relationship between Achievement in Mathematics and Creativity of higher secondary first year students.

3. It is found that there is significant difference between Achievement in Mathematics and Creativity of higher secondary first year students.
4. It is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards gender.
5. It is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards aided and government.
6. It is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards aided and private.
7. It is found that there is significant difference between Achievement in Mathematics of higher secondary first year students towards government and aided.

8. It is found that there is significant difference between creativity of higher secondary first year students towards gender.
9. It is found that there is no significant difference between creativity of higher secondary first year students towards aided and government.
10. It is found that there is significant difference between creativity of higher secondary first year students towards aided and private.
11. It is found that there is significant difference between creativity of higher secondary first year students towards government and private.

### **Conclusion**

Students' mathematics achievement is often related with the future financial power and competitiveness of a country. Therefore, the necessary to understand and identify factors that may have significant and steady relationships with mathematics achievement has been shared among national policy makers and educators around the world. Children who display higher quality of creativity have also been found to have better academic achievement than children with poor creativity. Building better and strong mutually understandings and relationships will be very important for children in the beginning itself. Being in an ordinary school as all other children, may mould their thinking in a positive way and make creativity better. It may give them strong personality and mental strength to prepare and face world tomorrow.

### **References**

1. Amabile TM. The motivation to be creative. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics*, 1987, 223-254
2. Best John W, Khan James V. *Research in Education*, Tenth Edition, New Delhi. Prentice Hall of India Private Ltd, 2008.
3. Ercikan K, McCreith T, Lapointe V. Factors associated with mathematics achievement and participation in advanced mathematics courses: an examination of gender differences from an international perspective. *School Science and Mathematics*. 2005; 105(1):5.
4. Fierros EG. Examining Gender Differences in Mathematics Achievement on the Third International Mathematics and Science Study (TIMSS), 1999.
5. Garrett Henry, Wood Worth RS. *Statistics in Psychology and Education*, Surjeet Publications Ltd, New Delhi, 2008.
6. Guilford JP. *Fundamental Statistics in Psychology and Education* New York, Mc Graw Hill Book Company Inc. 1956.
7. Hanushek EA, Rivkin SG. School quality and the black-white achievement Gap: NBER Working Papers, 12651. National Bureau of Economic Research, Inc. 2006.
8. Koenig J. Encouraging mathematical thinking. The Math Forum.org, last accessed 2001, 2006.
9. Lokesh Koul. *Methodology of Educational Research* (2<sup>nd</sup> Ed) New Delhi, Vikas Publishing house Pvt. Ltd. 1990.