

## DEVELOPMENT OF MATHEMATICAL INTEREST IN SECONDARY SCHOOL STUDENTS

*J. Mangeswari<sup>1</sup> & Dr B. Srilatha<sup>2</sup>*

<sup>1</sup>Research Scholar, St. Josephs's College of Education, for Women, Guntur, Andhra Pradesh, India

<sup>2</sup>Associate Professor, St. Josephs's College of Education, for Women, Guntur, Andhra Pradesh, India

Received: 16 Jan 2019

Accepted: 23 Jan 2019

Published: 31 Jan 2019

### ABSTRACT

*Mathematics is beneficial in aiding students' comprehension of other subjects and their ability to think logically, analytically, systematically, critically, and creatively. Mathematics is inextricably linked to the advancement of science and technology. The more advanced a nation's science and technology is, the more advanced the state is. Furthermore, because science and technology make such a significant contribution to the nation's economic development and prosperity, advancements in science and technology will decide the nation's well-being. Nowadays, many professions require mathematical analysis and anticipate mathematical ability to solve innovative difficulties. As a result, the current study is titled A Study of Secondary School Students' Interest Attitudes and Academic Achievement in Mathematics. The researcher randomly picked 800 secondary school students from Palnadu and Guntur districts in Andhra Pradesh. Dr Uma Tandon and Ashok Pal administered the Mathematics Interest Inventory. Dr Ali Imam and Dr Tahira Khatoon developed and standardized a mathematical attitude scale. The descriptive statistical analyses revealed that secondary school students' Interest in mathematics and attitudes toward mathematics have a strong relationship. Interest in mathematics and attitudes toward mathematics are positively associated. The second correlation is a significant positive relationship between Interest in mathematics and mathematical achievement. The third correlation is a favorable relationship between secondary school pupils' attitudes toward mathematics and their achievement in mathematics.*

**KEYWORDS:** *Interest, Attitudes, Mathematics, Achievement in Mathematics*

### INTRODUCTION

We live in a world of mathematics and technology; each of us must have a basic understanding of mathematics to be aware of scientific progress and use it in our daily lives. In India, 80% of students come from rural villages. Therefore they may be unaware of mathematical progress and Interest, among other things. However, due to the impact of their parents and their surroundings, students from metropolitan areas are more conscious of mathematical development and Interest. According to N.C.E.R.T. recommendations, mathematics disciplines should be taught at the school level, with special attention to curriculum development to encourage mathematical creativity, establish a rational outlook, and remove superstition in children. Even though all students are taught the same science courses, there are some discrepancies between boys and girls, urban and rural locations, students in government and private schools, residence and non-residence schools, siblings, parental income, and parental educational background. Such factors may impact the present study: A Study on Interest Attitude and academic Achievement in mathematics of Secondary School students.

**Title of the Study**

"A Study on Interest Attitude and academic Achievement in mathematics of Secondary School students"

**SCOPE OF THE STUDY**

The scope of the present study pertains to A Study on Interest, Attitude, and Academic Achievement in mathematics of Secondary School Students. The basis of data is the response to tools given by the 9Th standard pupils.

**OPERATIONAL DEFINITIONS OF THE KEY TERM**

An operational definition is a statement that describes how to measure a certain variable or how to define a certain term. It is intended to be practical and workable under the conditions of the study, although it may not be a scientifically valid definition. The operational definition is used extensively for abstract as well as physical concepts. A Study on Interest, Attitude and academic Achievement in mathematics of Secondary School students is discussed here.

**Interest in Learning Mathematics**

The state of wanting to know about mathematics. It is the liking of the students to learn mathematics content and participate in mathematics activities, which is indicated by example, solving, studying and getting involved in the mathematical activity as a leisure-time pursuit.

**Attitude towards Mathematics**

It is a generalized attitude toward the universe of mathematics content and is measured in terms of its emotional content opinion, beliefs, prejudices, tendencies and evaluations. Attitude tendencies, either positive or negative about a person or behaviour, can be learned through either our observations or acquired knowledge of mathematics. An attitude is a dispositional readiness to consistently respond to certain situations, persons, or objects, which has been learned and has become one's typical response mode.'

**Mathematical Achievement**

It refers to the progress achieved by 9th standard students during the particular teaching period in particular lessons in a mathematics subject. Knowledge attained or skills developed by pupils usually in the school subjects, measured by test scores or by marks assigned by teachers or by both. Achievement connotes the final accomplishment of something noteworthy, after much effort and often despite obstacles and discouragements. Though achievement covers learning in other areas of life in school and the variety of activities children and young people are involved in developing academic-oriented knowledge and skills, in the present study, it stands for those related to performance in mathematics.

**METHODOLOGY OF THE STUDY**

The descriptive survey approach was used to collect data from the available cases at this inquiry. When the study problem was determined, the research plan was created. A survey technique is a research method, tool, or approach that involves asking a set of questions to a predetermined group of people. It usually makes it easier to convey information between study participants and the person or organization conducting the research. Survey approaches can be qualitative or quantitative, depending on the study and the data you want to collect. For instance, Form Plus can be used to create and administer an online survey that collects statistical data from participants.

## VARIABLES OF THE STUDY

As the name implies, a variable is anything that changes. Variable refers to measurable characteristics of objects, events, things, and beings. In other words, variables are characters or candidates that the experimenter or investigator can modify, control, or watch. Variables are a prerequisite for doing worthwhile comparative research. The following variables are taken into account in this study.

**Table 1: Classification of the Variables**

S. NO.	Dependent Variables	Independent Variables
1	Academic Achievement	A. Interest in mathematics B. Attitude in mathematics <b>Demographical variables</b> <b>1. Gender</b> ( Boys / Girls) <b>2. Residential area</b> (Rural / Urban) <b>3. Type of management</b> (Government / private) <b>4. Type of school</b> (Residential /non Residential schools) <b>5. Medium of instruction</b> (Telugu / English) <b>6. Parental income</b> (below 1 lakh/above 1 lakh) <b>7. Type of family</b> ( joint family/nuclear family) <b>8. Siblings.</b> (Sibling YES / Sibling NO). <b>9. Parental education background</b> (Below 10/above 10, degree, PG or above)

## OBJECTIVES OF THE STUDY

The objectives of the present study entitled are: "A Study of Interest in mathematics, Attitude towards mathematics, and Achievement in mathematics of Secondary School pupils in Guntur district of Andhra Pradesh".

- To find out the level of interest in mathematics of secondary school pupils and classify them.
- To find out the level of interest in mathematics with respect to the following components.
  - Objectives of Mathematics study.
  - Importance of Mathematics as a subject.
  - Individual liking for the subject.
- To find out the influence of the following variables on the interest in mathematics of secondary school pupils.
  - Gender
  - Residential Area
  - Type of Management
  - Type of School
  - Medium of Instruction
  - Parental Annual Income
  - Type of Family
  - Siblings

- Parental Education Qualifications
- To find out the level of attitude in mathematics of secondary school pupils, and classify them
- To find out the level of attitude in mathematics with respect to the following components
  - Usefulness of mathematics
  - Confidence in learning mathematics
  - Enjoyment of mathematics
- To find out the influence of the following variables on the attitude in mathematics of secondary school pupils.
  - Gender
  - Residential area
  - Type of management
  - Type of school
  - Medium of instruction
  - Parental annual income
  - Type of Family
  - Siblings
  - Parental education qualification
- To find out the level of achievement in mathematical of the secondary school pupils and classify them.
- To find out the influence of the following variables on the achievement in mathematics of secondary school pupils.
  - Gender
  - Residential area.
  - Type of management
  - Type of school
  - Medium of instruction
  - Parental annual income
  - Type of Family
  - Siblings
  - Parental education qualifications

- To find out the relation between interest in mathematics and attitudes in mathematics
- To find out the relation between interest in mathematics and achievement in mathematics
- To find out the relation between attitudes in mathematics and achievement in mathematics

## HYPOTHESES OF THE STUDY

The hypothesis is a guess, a supposition or a tentative inference as to the existence of some fact, condition or relationship relative to some phenomenon which serves to explain such facts as already are known to exist in a given area of research and to guide the search for the new truth.

A hypothesis may be defined as a proposition or a set of propositions set forth as an explanation for the occurrence of some specified group of phenomena, either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of facts.

### The Following Hypotheses were Formulated for the Present Study

- **Hypothesis 1:** The secondary school students possess a high Interest in Mathematics.
- **Hypothesis 1A:** There would be no significant difference between boys' and girls of secondary school students' interest in mathematics.
- **Hypothesis 1B:** There would be no significant difference between rural and urban secondary school students' interest in mathematics.
- **Hypothesis 1C:** There would be no significant between Government and private secondary school students in their interest in mathematics.
- **Hypothesis 1D:** There would be no significant difference between residential and non-residential secondary school students' interest in mathematics.
- **Hypothesis 1E:** There would be no significant difference between Telugu and English mediums in the secondary school students' interest in mathematics.
- **Hypothesis 1F:** There would be no significant difference between parents with annual income below Rs.100.000 and above Rs.100 000 in the secondary school students' interest in mathematics.
- **Hypothesis 1G:** There would be no significant difference between joint family and nuclear family of the secondary school students in their interest in mathematics.
- **Hypothesis 1H:** There would be no significant difference between siblings 'YES' and sibling 'NO' in the secondary school students' interest in mathematics.
- **Hypothesis 1I:** There would be no significant difference between below 10th, above 10th, degree, P.G. and above, of parental educational qualification of the secondary school students in their interest in mathematics.
- **Hypothesis 2:** The secondary school students possess a high attitude toward mathematics.

- **Hypothesis 2A:** There would be no significant difference between boys' and girls' secondary school students' attitudes toward mathematics.
- **Hypothesis 2B:** There would be no significant difference between rural and urban secondary school students' attitudes toward mathematics.
- **Hypothesis 2C:** There would be no significant between Government and private secondary school students in their attitude toward mathematics.
- **Hypothesis 2D:** There would be no significant difference between residential and non-residential secondary school students' attitudes toward mathematics.
- **Hypothesis 2E:** There would be no significant difference between Telugu and English medium of the secondary school students in their attitude toward mathematics.
- **Hypothesis 2F:** There would be no significant difference between parents with annual income below Rs.100.000 and above Rs.100 000 of the secondary school students in their attitude toward mathematics.
- **Hypothesis 2G:** There would be no significant difference between joint family and nuclear family of the secondary school students in their attitude toward mathematics.
- **Hypothesis 2H:** There would be no significant difference between siblings 'YES' and sibling 'NO' in the secondary school students' attitudes toward mathematics.
- **Hypothesis 2I:** There would be no significant difference between below 10th, above 10th to a degree, P.G. and above, of parental educational qualification of the secondary school students in their attitude in mathematics.
- **Hypothesis 3:** The secondary school students possess high achievement in mathematics.
- **Hypothesis 3A:** There would be no significant difference between boys' and girls' secondary school students in their achievement in mathematics.
- **Hypothesis 3B:** There would be no significant difference between rural and urban secondary school students in their achievement in mathematics.
- **Hypothesis 3C:** There would be no significant between Government and private secondary school students in their achievement in mathematics.
- **Hypothesis 3D:** There would be no significant difference between residential and non-residential secondary school students in their achievement in mathematics.
- **Hypothesis 3E:** There would be no significant difference between Telugu and English medium of the secondary school students in their achievement in mathematics.
- **Hypothesis 3F:** There would be no significant difference between parents with annual income below Rs.100.000 and above Rs.100 000 of the secondary school students in their achievement in mathematics.
- **Hypothesis 3G:** There would be no significant difference between joint family and nuclear family of the secondary school students in their achievement in mathematics.

- **Hypothesis 3H:** There would be no significant difference between siblings 'YES' and sibling 'NO' of the secondary school students in their achievement in mathematics.
- **Hypothesis 3I:** There would be no significant difference between below 10th, above 10th to a degree, P.G. and above, of parental educational qualification of the secondary school students in their Academic Achievement in mathematics.
- **Hypothesis 4** There would be no significant relationship between Interest in mathematics and attitudes toward mathematics of secondary school students.
- **Hypothesis 5** There would be no significant relationship between Interest in mathematics and achievement in mathematics of secondary school students.
- **Hypothesis 6** There would be no significant relationship between achievement in mathematics and attitudes in mathematics of secondary school students.

### **TYPE OF HYPOTHESIS**

The null hypothesis is selected for the present study

### **Geographical Area of the Study**

Out of the 26 districts in Andhra Pradesh, palnadu district and Guntur District is conveniently selected for this study.

### **Population for the Study**

The population for the study consisted of secondary school students studying in the 9th class in high schools in the Guntur district. As per the information received by the Andhra Pradesh government from the 9 class populations, 59.655 students are studying in the year 2021–2022.

### **Sampling Techniques**

A stratified random sample of 800 secondary school students in the Palnadu District the Guntur District was selected for this study.

### **Sample Distribution**

A sample is a subset of a population that has been chosen for observation and investigation. We can make inferences about the features of the population by looking at the quality of the sample. The investigator randomly chose 800 secondary school students from rural and urban schools in the Guntur district for the current study. The researcher utilized a stratified random sampling method. The process of picking a sample from a population is known as sampling. For this purpose, the population is divided into several segments called "sample units."

**Table 2: The Variable Wise details of the Distribution of Sample of Secondary School Secondary School Students**

S. No.	Variable	Classification of Variable	Sample	Total
1	Gender	Boys Girls	397 403	800
2	Residential area	Rural Urban	397 403	800
3	Type of management	Government Private	397 403	800
4	Medium of instruction	Telugu English	223 577	800
5	No of siblings	Sibling 'no' Sibling 'yes'	207 593	800
6	Type of family	Joint family Nuclear family	250 550	800
7	Type of school	Residential Non residential	262 538	800
8	Parental Educational qualification	Below 10 Above 10 Degree PG/above	100 275 250 175	800
9	Parental Annual income	Below 1 lakh Above 1 lakh	550 250	800

**Table 3: School wise Distribution of the Sample**

S. No.	Name of the School and Place	Total No. Students
1	Government municipal boys high school, Narasaraopet	50
2	Government municipal girls high school, Narasaraopet	50
3	Government High School, Chagantivaripalem	50
4	Government high School, Santhagudipadu	50
5	Government Girls KGBV Secondary School , Rompicherla	50
6	Government Girls KGBV Secondary School, Narasaraopet	50
7	Government Girls KGBV Secondary School, Sattenapalli	50
8	Oxford English medium school, Narasaraopet	50
9	Krishna chitanya private school, Narasaraopet	50
10	Sri chaitanya private school, Sattenapalli	50
11	Bhasyam English medium school, Guntur	50
12	Sri Chaitanya English medium school, Guntur	50
13	Pragna concept school, Sattenapalli	50
14	Little angles English medium, Sattenapalli	50
15	Government high school barampet, Narasaraopet	50
16	Government KGBV schools, Nakarikallu	50

### Tools Used for the Study

**John best** observes, "Like the tools in the carpenter's box, each research tool is appropriate in a given situation to accomplish a particular purpose. Two separate tools were used to determine the Moral values and self-confidence of secondary school pupils. These tools are in the form of a questionnaire, diligently prepared, adequately worded, systematically classified, intelligently generalized and analyzed, and printed.

### Tool Construction

In research, research tools play a major role in determining the sound data and arriving at exact conclusions about the study.



To attain the various objectives of the present study, the following five research tools were used:

- **Tool 1:** mathematical interest scale was constructed and standardized by  
**Dr Uma Tandon and Ashok Pal.**
- **Tool 2:** mathematical attitude scale was constructed and standardized by  
**Dr.Ali Imam and Dr.Tahira Khatoon.**

## ANALYSIS AND INTERPRETATION OF DATA

### Objective Wise Analysis of Interest in Mathematics

- **Objective 1:** To find out the level of Interest in mathematics of secondary school students and classify them.
- **Hypothesis 1:** The secondary school students possess a high Interest in Mathematics.

**Table 4: Showing Mean, % of the Mean, S.D. of the Interest in Mathematics of Secondary School Students**

Sample	Total Sample	Mean	% of Mean	S.D
Whole	800	69.899	58.24	7.977

### Finding

As per table 4, the result shows that all the secondary school students fall under the average level of Interest. The Interest in mathematics was dispersed widely among secondary school students. The Interest in the mathematics of the whole sample was normal. The hypothesis that "the secondary school students are possessing high interest in mathematics" can be rejected as the secondary school students possess an average level of Interest in mathematics.

**Table 5: Level of Attitude towards Mathematics Possessed by the Whole Sample**

Sample	Sample Size	Mean	% of Mean	Standard Deviation
Whole	800	65.429	59.47	9.483

### Finding

As per table (5) and the manual on the attitude in mathematics, all the secondary school students, fall under the average level of Interest. The Interest in mathematics was dispersed widely among secondary school students. The Interest in the mathematics of the whole sample was normal. Hence, the hypothesis is that "Secondary school students possess a high attitude towards mathematics." It can be rejected as secondary school students possess an average attitude toward mathematics.

- **Objective 7:** To find out the level of achievement in mathematics of the secondary school pupils and classify them.

**Table 6: Showing Mean, % of the mean, S.D. of the Academic Achievement in Mathematics of Secondary School Students**

Sample	Total Sample	Mean	S.D
Whole	800	58.70	10.593

## Finding

As per table 6 and the manual the achievement in mathematics, all secondary school students fall under the average level of achievement in mathematics. Hence the hypothesis is that "the secondary school students possess high achievement in mathematics". It can be rejected. All the secondary school students possessed an average level of achievement in mathematics.

## Analysis of Correlation

- **Objective 9:** To find out the relation between Interest in mathematics and attitudes toward mathematics.
- **Hypothesis 4:** There would be no significant relationship between Interest in mathematics and attitudes toward mathematics of secondary school students.

**Table 7: Correlation between Interest in Mathematics and Attitude toward Mathematics**

S. No.	Variables	N	df	'r'
1	Interest in Mathematics	800	798	0.2580** (p=0.00)
2	Attitude in Mathematics	800		

### Table Value of Correlation at $p=0.00$ , $df=798$ is 0.066; \*\* Significant at 0.01 Level

The computed correlation value (r) for Interest in mathematics and attitudes toward mathematics is 0.2580, as shown in Table 4.33. At a 0.01 level of significance, the estimated 'r-value' is bigger than the table value of 'r'. As a result, hypothesis 4 is ruled out. As a result, it is determined that secondary school students' Interest in mathematics and attitudes toward mathematics have a strong association. As seen in the table above, Interest in mathematics and attitudes toward mathematics are positively associated.

- **Objective 10:** To find out the relation between Interest in mathematics and achievement in mathematics.
- **Hypothesis 5:** There would be no significant relationship between Interest in mathematics and achievement in mathematics of secondary school students.

**Table 8: Correlation between Interest in Mathematics and Achievement in Mathematics**

S. No.	Variables	N	df	'r'
1	Interest in Mathematics	800	798	0.170** (p=0.00)
2	Achievement in Mathematics	800		

### Table Value of Correlation at $p=0.00$ , $DF=798$ is 0.066; \*\* Significant at 0.01 level

The computed correlation value (r) for Interest in mathematics and achievement is 0.170, as shown in Table 8. At a 0.01 level of significance, the estimated 'r-value' is bigger than the table value of 'r'. As a result, hypothesis 5 is ruled out. As a result, it may be stated that there is a significant positive association between Interest in mathematics and achievement in mathematics. It's also obvious from the table above that Interest in mathematics and achievement are linked.

In this present research, the statistical analysis reveals that positive correlation between Interest in mathematics and achievement in mathematics of secondary school students.

- **Objective -11:** To find out the relation between attitudes in mathematics and achievement in mathematics.
- **Hypothesis 6:** There would be no significant relationship between achievement in mathematics and attitudes in mathematics of secondary school students.

**Table 9: Correlation between Emotional Maturity and Academic Achievement**

S. No.	Variables	N	df	'r'
1	Attitudes in mathematics	800	798	0.080** (p=0.00)
2	Achievement in Mathematics	800		

**Table Value of Correlation at  $p=0.00$ ,  $DF=798$  is 0.066; \*\* Significant at 0.01 Level**

It is noticed from Table 4.35 that the calculated Correlation value (r) for attitudes in mathematics and achievement in mathematics is 0.080. The calculated 'r'-value is greater than the table value of 'r' at a 0.01 level of significance. Thus, hypothesis - 6 is rejected. Hence, it is concluded that there is a positive correlation between attitudes toward mathematics and achievement in mathematics of secondary school students. From the above table, it is also clear that attitudes in mathematics and achievement in mathematics are positively correlated. In this present research, the statistical analysis reveals that secondary school students' attitudes toward mathematics and achievement in mathematics show a positive correlation.

### Suggestions for Further Study

- Only 800 XI grade kids from Palnadu district and Guntur district in the region are included in this study.
- It can also be extended to other Andhra Pradesh districts.
- The current investigation can be carried out at both the upper and lower levels of education.
- A similar study might be undertaken on additional variables such as the home environment, mathematical approach, memory, ability, learning style, etc.
- A comparable study might be carried out on alternative school management types, such as schools associated with the C.B.S.E. and K.V.B. schools.
- Other subjects, such as English, science, and social science, might do similar research.
- A comparable study can be undertaken on a large sample to obtain better and more authentic results.
- The current study is also limited to the state of Andhra Pradesh.
- A similar study might be carried out in other parts.
- On the same factors, an experimental investigation can be done.

### Educational Implications of the Study

- The findings of this study demonstrated that fear of mathematics could be minimized by parents and teachers cultivating a positive attitude toward the subject at home and school.
- Teachers can build a positive attitude toward mathematics and improve students' academic achievement by conducting special classes and remedial programmes for slow learners in Mathematics.
- Teachers and parents can help pupils enhance their problem-solving abilities by raising awareness among students that grasping capacity is dependent on practice and concentration.

- Students should be encouraged to participate in brainstorming sessions, solve logical thinking challenges, and create and find solutions to new problems in novel patterns and methods rather than rote memorization.
- Teachers can encourage cooperative and peer learning in the classroom and encourage high performers to assist medium or low achievers in improving their grades.
- Teachers can make mathematics more fun for their pupils by employing a play-based approach to teaching mathematics.
- A mathematics teacher should organize a school-based mathematics club. It allows kids to learn Mathematics in a fun and engaging way. It also aids in the development of their problem-solving abilities.
- Teachers can pique students' Interest in mathematics by using appropriate teaching tools such as models, charts, online tutorials and multimedia packages, Digi courses, etc. Teachers should provide pupils with immediate feedback on mathematical problems to regulate their performance in mathematics.
- Teachers can utilize pedagogical strategies to help students develop problem-solving skills. 170 To improve students' problem-solving abilities, teaching methods and techniques may need improvement.
- The teacher should use drills and practice to improve Mathematical concepts for improved learning.
- Parents should offer moral support to their children who have failed tests and assist them with homework, assignments, projects, and exam preparation to acquire a positive attitude about the subject.
- Parents should determine their children's attitude toward mathematics at an early level of learning to instil a positive attitude in children at the start of school. According to the study, the contact between parents and children impacts children's academic achievement.
- In informing children's personality and overall development, both the mother and the father play an equal role.
- As a result, parents must positively affect their children's academics, particularly mathematics, to lessen mathematical anxiety and terror. The study's conclusion recommended that children be given a school atmosphere appropriate for their behaviour so that their attitude and problem-solving abilities might grow.

### **Suggestions to the Teachers**

We observed that the findings of the secondary school students fall under average level in mathematical Interest and Attitude towards mathematics, so the recommendations to the teachers are necessary to build up mathematical skills among students.

- Secondary school students must know that their grasping strength depends on their practice and attentiveness.
- To develop the thinking abilities of secondary school pupils, brainstorming sessions and frequent Mathematical Quiz conducting sessions should be held in class throughout the teaching of Mathematical problems.
- Teachers should take responsibility for instilling strong study habits in pupils to become autonomous learners to a large extent during the teaching-learning process.

- Students can understand the applicability of the subject by developing good study habits such as doing regular Mathematical work at home and co-relating classroom mathematical concepts such as ratios, Commercial Mathematics, and soon in their real-life situations. This will help them develop a positive attitude toward Mathematics.
- Low- and average-achieving students can improve their academic performance with coaching and support.
- Maintaining a happy attitude is critical to a student's academic and personal success.
- It is dependent on the efforts of both parents and teachers.
- The government should take the necessary steps to change the syllabus without sacrificing the quality of education or the competency level required of secondary school students, and equivalent changes should be made to the examination format. The school's administration is also important in fostering a positive attitude toward mathematics and developing diverse mathematical competencies.
- As a result, it is the school's job to hire skilled and experienced subject teachers who can help pupils develop positive attitudes and abilities from an early age.

## CONCLUSION

Mathematics provides a platform for students to experience the true practical value of mathematics and the potential applications of classroom mathematics learning in real-world circumstances. The mathematical study provides training in the scientific method and promotes heuristic problem-solving abilities in students, resulting in a good attitude toward the topic. A positive attitude involves problem-solving abilities, abstract and logical thinking, curiosity, accuracy, the habit of inquiry, and perfectionism, which aid academic development. In this paper, the Researcher gives the overall findings of interest attitude and mathematical achievement of secondary school students, including findings, Conclusions, suggestions to parents and teachers, and limitations. He describes the problems, and further research is suggested.

## BIBILOGRPHY

1. Ajai, J. T. & Imoko, I. I.(2015). *Gender differences in mathematics achievement and retention scores: A case of problem-based learning method. International A Journal of Research in Education and Science (IJRES), 1(1), 45-50.*
2. Ajisukmo, C. R. P., & Saputri, G. R(2017).*The Influence of attitudes towards mathematics, and metacognitive awareness on mathematics achievements. Creative Education, 8, 486-497.*
3. Akeem, Raji Ayobami. “Effect of Problem Solving Method on Students Achievement in Mathematics at Ibadan North East Local Government Area of Oyo State”, *Research Project (Bsc. Ed) (October, 2010).*
4. Akinsola, M.K. and Animasahun, I.A., “The Effect of Simulation-Games Environment on Students Achievement in and Attitudes to Mathematics in Secondary Schools.” *The Turkish Online Journal of Educational Technology (TOJET), Article 11, (July 2007) Vol.6(3) 113-119.*
5. Akre, R. S., Bais, H. S. & U. S. (2004). *A study of relationship between socio-economic status and attitude towards mathematics. CTE National Journal, VI(1), 41-44.*

6. Allan, L.W., Bob, P., Jenni, W. & Beth, S. (2006). *Mathematical attitudes, beliefs and achievement in primary pre-service mathematics teacher education. Mathematics Teacher Education and Development, Vol.7, 33-52.and performance: Dose the teacher attitude matter?. Journal of Education and Practice, Vol.4, No.3, 2222-1735.*
7. Andile, M., & Moses, M. (2006). *Factors associated with high school learners' poor April10, 2012. Arsal, Zeki. "The Impact of Self-Regulation Instruction on Mathematics Achievements and Attitudes of Elementary School Students." Education and Science (2009), Vol.32(152): 3-14.*
8. Awan, Riffat-Un-Nisa; Noureen, Ghazala and Naz, Anjum. "A Study of Relationship between Achievement Motivation, Self Concept and Achievement in English and Mathematics at Secondary Level." *International Education Studies, (August 2011), Vol. 4(3) : 6-11.*
9. Bala, Suman. "Academic Achievement of High School Students in Mathematics in Relation to their Socio-Economic Status." *International Referred Research Journal, (June, 2011), Vol.II(21) : 50-51.*
10. Benjamin, S. (2009). *The impact of an attitude towards mathematics performance. Ph.D. Thesis, Marietta College. Marietta.*
11. Bramlett, David C. and Herron, Sherry. "A Study of African-American College Students' Attitudes towards Mathematics." *Journal of Mathematical Sciences and Mathematics Education (2009), Vol.3(2) : 43-51.*
12. Chavan, Dipak K. "Development of Mathematics Interest Enhancement Programme for Student Teachers and Study Its Effectiveness." *Framework NCERT Report (2005) 1-10.*
13. Chiou, Chei-Chang. "The Effect of Concept Mapping on Students' Learning Achievements and Interests", *Innovations in Education and Teaching International, (November 2008) Vol.45(4): 375-387.*
14. Frenzel, Anne C.; Goetz, Thomas; Pekrun, Reinhard and Watt, Helen M.G. "Development of Mathematics Interest in Adolescence: Influences of Gender, Family, and School Context." *Journal of Research on Adolescence (2010), Vol.20(2), 507-537.*
15. Hannula, M. S. (2005). *Attitude towards mathematics: Emotion, expectations & values. Educational Studies in Mathematics. Kluwer Academic Publishers. Netherlands. 25-46.*
16. Harish, G.C., & Srikantaswamy, (2011). *Need for integrating critical thinking skills in mathematics instruction. Journal of Educational Research and Extension, 48(3), 1- 7.*
17. Heaverlo, Carol Ann. "Stem Development: A Study of 6th-12th Grade Girls' Interest and Confidence in Mathematics and Science." *Ph.D. Thesis Abstract, Iowa State University Annes, Iowa, 2011.*
18. Heinze, Aiso; Reiss, Kristina and Rudolph, Franziska. "Mathematics Achievement and Interest in Mathematics from a Differential Perspective." *ZDM 2005 Vol. 37 (3) : 212-220.*
19. Hui-Ling, C. (2001). *A cross-national study of factors influencing mathematics achievement for eighth grade students. Retrieved from <http://scholarship.bc.edu>.*

20. Ismail, N.A., & Awang, H. (2008). *Differentials in mathematics achievement among eighth grade achievement of Chilean students- A cross national analysis students in Malaysia. International Journal of Science and Mathematics*, 6(3), 559-551.
21. James, Ajogbeje Oke. "Effect of Formative Testing on Students Achievement in Junior Secondary School Mathematics." *European Scientific Journal* (April 2012) Vol.8(8) : 94-105. Jingsong, He. "Cultivating the Interest of Students in Higher Mathematics Courses." *The China Papers*, (July 2003) 11-115.
22. Kaplan, K. (2010). *Female climate and income as determinants of educational achievement. Behavioural Scientist*, 5(1), 55-57.
23. Hooda, Madhuri, and Rani Devi. "Exploring the role of educational aspiration to enhance the mathematics achievement of secondary school students." *International Journal of Research in Humanities, Arts and Literature* 6.9 (2018). *IMPACT: International Journal of Research in Humanities, Arts and Literature (IMPACT: IJRHAL)* ISSN (P): 2347-4564; ISSN (E): 2321-8878 Vol. 6, Issue 9, Sep 2018, 51-60

