A STUDY OF THE PERFORMANCE OF SECONDARY SCHOOL CHILDREN IN RELATION TO THEIR INTERESTAND ATTITUDE TOWARDS MATHEMATICS

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Abstract

The objective of the current research is to find out the performance in mathematics of secondary school children in relation to their interest and attitude towards mathematics. In this study, a sample of 815 secondary school students from the Krishna district in Andhra Pradesh was investigated using a descriptive survey research technique. For the purpose of this study, the researcher used the Formative-I grades for academic achievement in mathematics that the students in classes VIII and IX received as an indicator of their level of proficiency in the subject. In order to gather data for this inquiry, Dubey, L.N. (2004)'s Mathematics Interest Inventory and Shreedevi,T.(2015)'s Attitude Towards Mathematics Scale were both developed and standardized. The objectives of the study were:1.To Study the effect of the following variables on the achievement in mathematics, interest in mathematics and attitude towards mathematics among secondary school children with respect to certain variables like gender,locality of living and class of studying.Results showed that Gender, locality of living and class studying make a significant difference in secondary school children's achievement in mathematics.Gender, locality of living make a significant difference in the attitude and interest of secondary school children towards mathematics. Class studying make no significant difference in the attitude and interest of secondary school children towards mathematics.

Keywords: *Achievement/ Performance, Interest, Attitude and Secondary School Children*

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Introduction: In the 21st century, mathematics has become the backbone of prosperity in every sphere of life. Mathematics is known as the father of all sciences. It is impossible to think of any scientific study without mathematics. Mathematics is the knowledge of the 3Rs i.e. reading, writing, and arithmetic. Every student should achieve some important goals and objectives in his daily life. Mathematics serves as a base camp to achieve these goals. It is a form of mental jogging to build the mind. In the study of mathematics, there is disciplinary value in the

development of good work habits, the ability to develop work habits, the ability to work independently, and the acquisition of problem-solving skills and strategies. Mathematical interest or an interest in mathematics may or may not be accompanied by the verbal and numerical abilities necessary to successfully pursue a study or career in mathematics. It is essential to create students' interest in mathematics to develop different intellectual qualities like thinking power, reasoning, analysis, synthesis, invention, etc. in students and lead society in a positive and constructive direction. A positive attitude toward mathematics affects students' willingness to learn mathematics compared to students with a negative mathematics attitude, and once they feel that mathematics is important, they strive to improve their mathematics achievement (Ajisuksmo & Saputri, 2017).

Thus attitude is the readiness for a particular type of activity and achievement is the level of a person's learning and the state of his ability to apply what he has learned. A person's attitudes toward mathematics are directly related to a person's liking for mathematics, fear of mathematics, enjoyment of it, valuing it, and engagement in mathematics. The NCF, 2005 also highlighted the role of a positive attitude in mathematics education and advocated changing the learner's attitude by making mathematics teaching activity-oriented. Math games, puzzles, and stories help develop a positive attitude. Students are the lights of a nation. It is the prime duty of the nation to develop a positive attitude towards mathematics among students to achieve better achievement in mathematics.

Review of related literature:

In the present study the investigator has reviewed the researches done in the field of academic performance, interest and attitude towards mathematics. After reviewing the above studies, it was observed that many studies were explored on Benjamin and Murugaraju (2021) investigated the Mathematics proficiency of pupils in the Ix standard. Results indicated that gender and location had little impact on the mathematical proficiency of pupils in the IX standard. Maam in et al. (2021) examined the relationship between student engagement and Mathematics achievement among secondary school students. The results of the study of multiple linear regression showed that effective engagement has the largest estimate of Mathematical practice, followed by behavioural engagement and cognitive engagement. Sarmah and Das (2020) explored how pupils in a conventional and digital classroom in Guwahati city felt about learning Mathematics. According to the study, male students'opinions regarding learning Mathematics in a regular classroom versus a digital classroom differ significantly. The opinions of female students regarding learning Mathematics in a digital classroom versus a traditional

classroom differ significantly. Academic achievement of students in the digital classroom is strongly correlated with their attitude toward Mathematics; hence level of academic achievement of students is mostly determined by their attitude.Poudel (2020) investigated ethnic Nepalese people's interest in Mathematics. According to the research, 0.8% of ethnic kids showed interest in practicing Mathematics. Math is typically not as interesting to students in Nepal. Therefore, a significant challenge, particularly for children of that race, is how to improve pupils' interest in arithmetic. To enhance interest in Mathematics among all students in Nepal's schools and universities, the instructor should adapt their teaching strategy. Lakshmi Karthika and Suresh Kumar (2018) researched the Tirunelveli district's higher secondary students' interests in Mathematics. The findings showed that higher secondary pupils' interest in Mathematics varied greatly depending on their gender and geographic location. Based on the above reviews the investigator also intended to study the performance of secondary school children in relation to their interest and attitude towards mathematics.

Need and importance of the study:

Mathematics is viewed effectively in the building of mental discipline and encourages logical reasoning and rigor of thought. In addition, mathematical knowledge plays a crucial role in understanding the contents of other school subjects such as science, social studies, and even music and art. It makes life for easy and smart. In the present globalization scenario, it is a powerful tool in organizing lives, by encouraging logical reasoning, critical thinking, creative thinking, abstract or spatial thinking, problem-solving ability, and even effective communication skills.

Academic achievement in general, and achievement in mathematics in particular, is positively associated not only with cognitive abilities but also with emotional and motivational skills. Students must be made to understand the importance of competence in mathematics, the utility of mathematics, intrinsic interest in learning, mathematics, etc., as their achievement in mathematics at the school level. The importance given to promoting interest in the learning of mathematics across all the cultures of the world indicates the importance given to the subject in both formal education and people’s daily lives. Hence, it is essential to make studies from time to time to go deep and understand the relationship between interest in mathematics, attitude towards mathematics, and achievement in mathematics.

Statement of the Problem:

The investigator proposed to take up this study, namely “*A Study of the performance of Secondary School children in relation to their Interest and Attitude towards Mathematics"*.

Objectives of the study

The present study consists of below mentioned objectives:

1. To study the impact of the following variables on the achievement in mathematicsof secondary school children.
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class
2. To study the impact of the following variables on the interest in mathematics of secondary school children
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class
3. To study the impact of the following variables on the attitude of secondary school children towards mathematics.
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class

Hypotheses of the Study

In order to achieve the forecasting objectives the following hypotheses were framed:

1. The following variables do not make a significant influence on the achievement in mathematics of secondary school children.
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class
2. The following variables do not make a significant influence on the interest in mathematics of secondary school children.
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class
3. The following variables do not make a significant influence on the attitude towards mathematics of secondary school children.
    - Gender: Male / Female
    - Locality of living : Rural / Urban
    - Class studying: 8th class / 9th class

Method of research:

A survey method was followed in the present study.Survey research is amethod of collecting and analyzing data obtained from a large number of respondents representing a specific

population collected through highly structured and detailed questionnaires or interviews.

Population of the study:

The aim of this study was to evaluate secondary school students' performance inrelation to their attitude toward an interest in mathematics. Consequently, secondary school students made up the study's population.

Sample of the study:

The sample consists of secondary school children studying in classes VIII and IX in Vijayawada city including rural and urban areas in the Krishna district of A.P.

Sampling Technique:

For the present study the investigator has taken up a stratified random sample of 30 secondary schools in and around Krishna district.

Research Tools Used:

Performance in mathematics:

In this research, the researcher took the achievement in mathematics marks obtained from the students of classes VIII and IX in their Formative-I for the academic year 2019-2020 as an indicator of their academic achievement in mathematics.

Mathematics interest inventory:

The Mathematics Interest Inventory was constructed and standardized by Dubey, L. N. (2004), and it was employed to collect data in this investigation. This inventory contains 40 items, including 20 positives and 20 negative items. The areas/dimensions-wise items among the distribution of these 40 items.

Attitude towards mathematics scale:

Attitude towards Mathematics Scale constructed and standardized by Shreedevi,T. (2015) was used to collect data for the present research study. This scale consists of50 items, of which 27 are positive and 23 are negative. These statements fall intothree categories i.e., cognitive, affective, and behavioral. The areas/dimensions-wise items among the distribution of these 50 items are not mentioned in the manual.

Data analysis & Interpretation

Objective 1: To study the impact of the following variables on the achievement inmathematicsof secondary school children.

- Gender: Male / Female

- Locality of living : Rural / Urban
- Class studying: 8th class / 9th class
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Table: 1 Variable wise distribution Mean, S.D. and C.R value for the achievement in mathematicsof secondary school children.

S.. No	*Variable*	*Type*	*N*	*Mean*	*S.D*	*C.R*
1	Gender	Boys	407	48.85	15.38	2.22**
		Girls	408	46.50	15.02	
2	Locality of living	Rural	382	50.58	15.26	5.21***
		Urban	433	45.11	14.76	
3	Class studying	VIII	443	46.20	15.20	3.05***
		IX	372	49.43	15.10	

**Significant at 0.05 level & ***Significant at 0.01level

Interpretation

From the above table it can be inferred that Gender, Locality of living and Class studying makes a significant difference insecondary school children's achievement in mathematics. Hence the hypotheses was rejected.

Objective 2: To study the impact of the following variables on the interest in mathematicsof secondary school children.

- Gender: Male / Female
- Locality of living : Rural / Urban
- Class studying: 8th class / 9th class
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Table: 2 Variable wise distribution Mean, S.D. and C.R value for the interest in mathematicsof secondary school children.

S.. No	*Variable*	*Type*	*N*	*Mean*	*S.D*	*C.R*
1	Gender	Boys	407	25.22	7.15	4.44***
		Girls	408	27.35	6.64	
2	Locality of living	Rural	382	25.54	7.30	2.86***
		Urban	433	26.94	6.61	
3	Class studying	VIII	443	26.65	7.10	1.63*
		IX	372	25.85	6.80	

*Not significant at 0.05 level

**Significant at 0.05 level & ***Significant at 0.01level

Interpretation

From the above table it can be inferred that Gender, Locality of living makes a significant difference insecondary school children's interest in mathematics. Hence the hypotheses was rejected. The class studying (8^{th} class and 9^{th}) by children of secondary schools makes no significant difference in their interest in mathematics. Hence the hypotheses was accepted.

Objective 3: To study the impact of the following variables on the attitude towards mathematics of secondary school children.

- Gender: Male / Female
- Locality of living : Rural / Urban
- Class studying: 8_{th} class / 9_{th} class
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Table: 3 Variable wise distribution Mean, S.D. and C.R value for the attitude towards mathematicsof secondary school children.

S. No	*Variable*	*Type*	*N*	*Mean*	*S.D*	*C.R*
1	Gender	Boys	407	173.71	28.10	3.18***
		Girls	408	179.62	25.07	
2	Locality of living	Rural	382	174.65	28.09	2.04**
		Urban	433	178.50	25.45	
3	Class studying	VIII	443	177.64	25.65	1.12*
		IX	372	175.52	27.92	

*Not significant at 0.05 level

**Significant at 0.05 level & ***Significant at 0.01level

Interpretation

From the above table it can be inferred that Gender, Locality of living makes a significant difference insecondary school children's interest in mathematics.Hence the hypotheses was rejected. The class studying (8^{th} class and 9^{th}) by children of secondary schools makes no significant difference in their interest in mathematics. Hence the hypotheses was accepted.

Major findings of the study:

The present study concluded that Gender, locality of living and class studying make a significant difference in secondary school children's achievement in mathematics.boys have better achievement in mathematics than girl's children.The interesting finding is that secondary school children in living rural areas have better achievement in mathematics than children in living urban areas. Gender, locality of living make a significant difference in secondary school children's

interest in mathematics.Class studying make no significant difference in the secondary school children's interest in mathematics.Therefore, it can be assumed that girls' children have more interest in mathematics compared to their counterparts.The another finding is that Gender, locality of living make a significant difference in the attitude of secondary school children towards mathematics. Class studying make no significant difference in the attitude of secondary school children towards mathematics.

Educational implications: It is necessary to adopt and implement individual learning strategies and target appropriate assessment methods to arrive at judicious conclusions and implement better programmes.It is desirable to implement suitable activities tocreate genuine interest in the study of mathematics through age and gender relevant activities particularly play way methods to impress on the children on the importance of learning mathematics and also help them to realize the pleasure they could derive in the learning of mathematics. It is also important to take into consideration the locality of the living class of study and order of birth while developing the programmes.This suggests once again the need for individualized or learner-centered approaches in the teaching of mathematics y giving due importance to the specific interests of each learner. It is essential to dispense with mass teaching strategies.

Conclusion: Mathematics has a miraculous role in the development of all the subjects and directly or indirectly influences the continuous progress of all the subjects.Mathematics provides a definite way of thinking. Children who study mathematics develop the attitude with which they learn to work systematically, regularly, and properly. Along with this, it also develops logical thinking in them. Because of the importance givento mathematics academicians all over the world always focus on research studies involving the teaching and learning of mathematics.

This study helped the investigator to identify certain significant aspects in the learning of mathematics and understand the influence of interest and attitude on the achievement of young learners. The study highlighted the need to individualize instruction, update the assessment techniques, make teaching and testing age and classappropriate, develop gender-sensitive tools, modernize teaching and assessment methods, focus more on play way methods of teaching, to give due emphasis to groupactivities and project works to give adequate space for individual differences and make teaching more and more learner-centered. It is hoped that this humble attempt open new avenues of study in the days to come.

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