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THE IMPACT OF MATHEMATICS ON THE INTELLECTUAL WELLNESS OF HIGH SCHOOL STUDENTS

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Abstract

This paper is a research study to know the impact of Mathematics on the Intellectual Wellness of High School Students. The investigator have adopted the survey method for this research. The sample for the study, 50 high school students in Tirunelveli district is selected by random sampling technique. A self-made questionnaire, SuRa's Attitude Scale on Intellectual Wellness which captured the students' demographic data (like gender, locality, etc.) and a 10-question self-assessment questionnaire were used to collect data. The data was statistically analysed by Percentage Analysis and t-Test. The result revealed that there is significant difference between the Impact of Mathematics on the Intellectual Wellness of High School Students with respect to the various background variables. The educational implications like helping students acquire the skill of Mathematics. And, suggestions were also made based on the results.

Keywords: *mathematics, intellectual wellness, school, students.*

Introduction

Mathematics is the fundamental part of our daily life. One can identify relationships using mathematics, from counting to measuring to more complex calculations. Mathematics helps the students to acquire better problem-solving skills to understand patterns and make future predictions. Mathematics helps to think analytically and acquire better reasoning skills. Analytical thinking refers to the ability to think logically about a situation. Mathematics organizes our lives and prevents confusion some of the qualities fostered by mathematics are reasoning, creativity, abstract or spatial thinking, critical thinking, problem solving skills and effective communication skills. All the mental abilities of the students are developed through mathematics. Mathematics is very calculating in man, it is the strong will power that develops patience and

self-confidence. It creates innovation in their critical thinking while facing any problems.

Need and significance of the Study

Intellectual wellness encourages learning. It is important to explore new ideas and understandings in order to become more mindful and better-rounded. Having an optimal level of intellectual wellness inspires exploration. Intellectual wellness also stimulates curiosity. Curiosity is important because it motivates you to try new things and develop an understanding of how you see the relationship between yourself, others and the environment.

Mathematics is not just about numerical values, theorems, and quadratic equations. Mathematical exercise is an effective way of building mental discipline, logical reasoning, and mental rigour. Math helps us understand and engage with the world, from everyday tasks such as managing money and following recipes to analyzing data and solving problems. It is a fundamental skill that is used in every aspect of life. Math is the foundation for many other subjects. Math helps us to think analytically and have better reasoning abilities. The reasoning is our ability to think logically about a situation. Mathematical knowledge helps to relate the other areas of the curriculum and basic mathematical knowledge which is essential for problems that arise in everyday life. Mathematics allows us to work together towards the new discoveries and ideas. The importance of mathematics beyond the confinement of the classroom provides an effective means of developing mental discipline. Thus, the application of mathematics provides intellectual health and the foundation of a new academic field. It can create interest and motivation among learners. Hence, the need and the importance of mathematics is highly essential in the studies.

Objectives of the Study

1. To find out the level of the impact of mathematics on the intellectual wellness of high school students with regard to i) gender ii) locality of residence and iii) medium of instruction.

2. To find out whether there is any significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to i) gender ii) locality of residence and iii) medium of instruction

Hypotheses of the Study

1. There is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to gender.

2. There is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to locality of residence.

3. There is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to medium of instruction.

Method of Study

The investigator has adopted *the survey method* to find out the impact of mathematics on the intellectual wellness of high school students.

Population & Sample

The population of the study is the high school students. A sample of 50 high school students in Tirunelveli district is selected by *random sampling technique.*

Tool

The investigator used a questionnaire, *SuRa's Attitude Scale on Intellectual Wellness,* comprising of 10 statements, to test the impact of mathematics on the intellectual wellness of high school students. It was prepared by E. Subitha Ramani (Investigator). *General data sheet* was also used to collect the demographic details like gender, locality and medium of instruction.

Statistical Analyses

The data collected was analysed by percentage analysis and t- test to find out the level and significant difference in the impact of mathematics on the intellectual wellness of high school students.

Percentage Analysis

Table 1. Level of the impact of mathematics on the intellectual wellness of high school students with regard to gender

Variable	Category	Low		Moderate		High	
		N	%	N	%	N	%
Gender	Male	8	30.7	12	46.1	6	23.2
	Female	6	25	5	20.8	13	54.2

It is inferred from the above table that 30.7% of the male and 25% of the female have low level; 46.1% of the male and 20.8% of the female have moderate level; and 23.2% of the male and 54.2% of the female have high level.

Table 2. Level of the impact of mathematics on the intellectual wellness of high school students with regard to Locality of residence

Variable	Category	Low		Moderate		High	
		N	%	N	%	N	%
Locality of residence	Rural	4	19	15	71.4	2	9.6
	Urban	4	13.8	8	27.6	17	58.6

It is inferred from the above table that 19% of the rural and 13.8% of the urban have low level; 71.4% of the rural and 27.6% of the urban have moderate level; and 9.6% of the rural and 58.6% of the urban have high level.

Table 3. Level of the impact of mathematics on the intellectual wellness of high school students with regard to medium of instruction

Variable	Category	Low		Moderate		High	
		N	%	N	%	N	%
Medium of instruction	Tamil	5	21.7	16	69.6	2	8.7
	English	6	22.2	4	14.8	17	63

It is inferred from the above table that 21.7% of the Tamil and 22.2% of the English have low level; 69.6% of the Tamil and 14.8% of the English have moderate level; and 8.7% of the Tamil and 63% of the English have high level.

Ho 4. Significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to gender, locality of residence and medium of instruction.

Differential Analyses –'t' test

Table 4. Significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to gender, locality of residence and medium of instruction.

Variable	Group	N	Mean	SD	t - value		Remarks
					Calculated value	Table value	
Gender	Male	26	6.53	1.52	1.96	2.01	NS
	Female	24	7.45	1.79			
Locality of residence	Rural	21	5.80	1.32	5.05	2.01	Significant
	Urban	29	7.82	1.44			
Medium of instruction	Tamil	23	6.17	1.19	3.39	2.01	Significant
	English	27	7.66	1.79			

It is inferred from the above table that the calculated 't' value (1.96) is less than the table value (2.01) for df 48, at 0.05 level of significance. Hence, the null hypothesis is accepted. Therefore, there is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to gender.

It is inferred from the above table that the calculated 't' values (5.05) and (3.39) is greater than the table value (2.01) for df 48, at 0.05 level of significance. Hence, the null hypothesis is rejected. Therefore, there is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to locality of residence and medium of instruction.

Findings of the Study

- 46.1% of the males and 20.8% of the females are at moderate level in their impact of mathematics on the intellectual wellness of high school students.
- 71.4% of the rural and 27.6% of the urban students are at moderate level in their impact of mathematics on the intellectual wellness of high school students.
- 69.6% of the Tamil and 14.8% of the English students are at moderate level in their impact of mathematics on the intellectual wellness of high school students.
- There is no significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to gender.
- There is significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to locality of residence.
- There is significant difference in the impact of mathematics on the intellectual wellness of high school students with regard to locality of medium of instruction.

Interpretations

- The 't' test result reveals that females have positive attitude than the males. This is a welcome attitude and this shows that women are now becoming more interested in learning Mathematics.
- The 't' test result reveals that urban students like more mathematics application than rural students.

This may be due to the mathematical resources and internet facilities at their locations. Awareness and math skills are generally higher among urban students.

- The 't' test result reveals that English medium students are more interested in applying mathematical concepts in daily life and intellectual well-being than Tamil medium students.

Suggestions

Mathematics can be a challenging subject for many high school students, but it is crucial to their education and future careers. It requires a lot of practice and understanding of various concepts. We can make math relevant to real life situations and include how math is used in cooking, budgeting and Sports. This will help the students understand the practical applications of math and make them more interested in learning the subject.

Educational Implications

1) Games and puzzles are the greatest way to make math fun for our students. We can use math games like Sudoku, Crosswords and Tangrams to help our students to understand mathematical concepts.

2) Video games and activities likely already have math tied in, which will feel more relevant to younger students and it will give an immediate impact on them.

3) Collaboration and competitions can be an effective way to get our students interested in Math. We can group students into teams and assign them math-related tasks.

4) We can arrange for the separate sessions for conducting Inter-School Competitions and assign any Guest speakers to kindle the interest of the students.

5) Mathematical teacher can use technology (or) math-related apps and software to help them to visualize and understand mathematical topics. Finally, we can make math fun by using humor and creativity in our teaching method.

Conclusion

Mathematics is not just another subject to be learned in school. It is a fundamental skill that shapes the

children's cognitive abilities, Problem-solving skills, and analytical thinking. The importance of mathematics to children's development cannot be overemphasized by encouraging an honest approach to mathematics and providing opportunities for learning parents and educators can help the students to reach their full potential and prepare them for a successful future in a Math-centered classroom.

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Subitha Ramani *is a teacher working in the Department of Mathematics. A graduate of M.Sc. Mathematics and B.Ed., She has been working as a Post Graduate Assistant in various schools for more than 10 years. She conducted many Quiz programs and math related activities for the students. Participated in workshops and seminars and presented papers. She focused on developing mathematical knowledge in the student community.*

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