A STUDY OF RELATIONSHIP BETWEEN MATHEMATICAL CREATIVITY AND PERSONALITY TRAITS OF SECONDARY SCHOOL STUDENTS

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Abstract

Research has shown that personality trait of conscientiousness is the strongest personality predictor of academic performance. The students can be guided in a better manner if their temperamental characteristics are known. Thus the study helps to understand the nature and the temperament of the students. The study identifies the mathematical creativity of the students and further explores its relationship with the personality traits of the students at secondary level.

Keywords: Mathematics, Creativity, Personality

I. Introduction

Mathematics is infinitely involved in every moment of everyone's life. In the real sense, mathematics is a science of space and quantity that helps in solving the problems of life needing numeration and calculation. It provides opportunities for the intellectual gymnastic of man's inherent powers. Teaching of mathematics helps students in acquiring knowledge, skills, interests and attitudes. As the students progress through the educational system their interest in mathematics diminishes yet there is an ever increasing need within the work force for individuals who possess talent in mathematics. The literature suggests that mathematics talent is often measured through speed and accuracy of student's computation with little emphasis on the problem solving and pattern finding and no opportunities for students to work on rich mathematical tasks that requires divergent thinking.

Mathematical creativity ensures the growth of mathematician as a whole. However, the source of this growth, the creativity of the mathematician, is a relatively unexplored area in mathematics and mathematics education creative persons display apparently contradictory behavior patterns that is, a positive correlation between creativity and both the extremely introvert and extremely extrovert. Mathematical creativity has been simply described as

discernment or choice (Poincare, 1948). Runco (1993) describes it as a multifaceted construct involving both divergent and convergent thinking, problem finding and problem solving, self expression, intrinsic motivation, a questioning attitude and self confidence.

Mathematicians consider mathematical creativity as a major element of mathematical ability. As the area seem to relatively unexplored and yet important, thus it seemed to be eminent to carry out research on the area.

II.   Objectives of the Study

The objectives of the study are as follows:

- To study the mathematical creativity of the secondary school students
- To find the relationship between mathematical creativity and personality trait of secondary school students

III.   Hypothesis

There is no relationship between mathematical creativity and personality profiles of secondary school students.

IV.   Research Design

The present study was descriptive in nature.

- *Sample*

A sample of 100 secondary school students was drawn randomly from different schools. Random sampling enabled an equal and independent chance of inclusion of all in the sample.

- *Tools Used*

The following tools were used in the study:

- ➢ *Catell's 16 PF personality traits test*: The test is an objective test measuring 16 dimensions of personality that are essentially independent.

- ➢ S^2 *Mathematical Creativity by Yogesh Sharma and Sansanwal*: the S^2 MCT had a total of 18 items equally divided into 3 parts viz. A, B, C to overcome the problems of administration. The items of the test are such that they seek divergent responses based on different mathematical situations based n the Guilford's structure of intellect. The items pertain to overcoming fixation, problem posing and problem solving. The purpose of the test is to check the student's fluency, originality and flexibility in mathematics.

- *Analysis of the data*

The quantitative data collected was represented graphically through bar graphs and pie charts. Simple statistical techniques were used to get an insight of the current situation.

V.   Findings of the Study

The results of the analysis are discussed as under:

The scores obtained on the mathematical creativity test had a fluency score ranging between 34 to 73, the flexibility score ranging between 8 to 24 and the originality score ranging between 20 to 48. Thus 18% of the students were found to be highly creative, 62% were found to have an average creativity and the remaining 20% had a low mathematical creativity levels. Therefore the students were found to be normally distributed on the basis of the mathematical creativity.

To test the relationship between personality traits and the mathematical creativity of the secondary school students the coefficient of correlation "r" was calculated. The computations involved are highlighted below:

Category	No. of Cases	Variable correlated	Value of r
Secondary School Student	100	Personality traits & fluency of mathematical creativity	0.378
		Personality traits & flexibility of mathematical creativity	0.364
		Personality traits & originality of mathematical creativity	0.424
		Personality traits & total of mathematical creativity	0.369

The table depicts that there is a positive correlation between personality and mathematical creativity of secondary school students. Thus null hypothesis stating no significant relationship between personality traits and mathematical creativity of secondary school students stands rejected.

VI.   Conclusion

It can be concluded that there is a significant relationship between personality traits and mathematical creativity of the secondary school students. It can be also inferred from the findings that there is a positive correlation of personality traits and mathematical creativity of secondary school students. Significant differences were found amongst the personality profiles of the highly creative students in mathematics and also significant difference were found amongst the personality profiles of the low creative students in mathematics.

VII.   References

Poincaré, H. (1948). Science and Method. New York: Dover.

Runco, M.A. (1993). Operant Theories of Insight, Originality, and Creativity. American Behavioral Scientist, 37, 59–74

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