



IDENTIFYING GEOMETRIC CONCEPT OF SECONDARY SCHOOL STUDENTS IN RELATION TO THEIR ACHIEVEMENT

Dr. S. Kalaivani* & J. Jayasamundeeswaridevi**

* Assistant Professor, Department of Education, Annamalai University, Chidambaram, Tamilnadu

** M.Ed Scholar, Department of Education, Annamalai University, Chidambaram, Tamilnadu

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Abstract:

The present study aims to identify geometric concept of secondary school students in relation to their achievement. The present study includes a sample of 300 High School Students studying in different schools in Cuddalore District based on random sampling technique. Geometric concept Test (GCT) developed by – S.C. Gakhar -2004 is used as tool to identify geometric concept and for achievement score final exam mark was considered. Result shows that there is a positive and significant correlation between examination stress and achievement.

Introduction:

Mathematics plays an important role in accelerating the social, economical and technological growth of a nation. It is more so in India as the nation is rapidly moving towards globalization in all aspects. Hence Mathematics is an important subject in school curriculum. It is also believed that mathematics is an exceptionally difficult subject, (i.e) its study requires special ability and intelligence; therefore everybody should not be burdened with the study of this tough subject; everybody is not able enough to learn it successfully. Thus the investigator intended to study of the Problem Solving Ability, Scientific Aptitude and Personality Triads of achievement in mathematics

Achievement in Mathematics:

Achievement in any school subject means the knowledge, understanding and the skills a learner acquires by undergoing a prescribed course over a period of time, in a school. Even before entering school, children develop intuitions about geometric shapes and their characteristics during their early explorations with their environment. Using boxes and other containers, they form intuitive ideas of space-filling or volume. As children walk around in their neighborhood they develop informal notions of spatial arrangements, distance, and directionality. The learning of geometry can be built on this naturally acquired spatial sense. Guiding children to reflect on the characteristics and regularities of their spatial experience can easily lead to the development of the basic concepts (abstractions) of geometry, such as straight and curved lines, points as intersections, planes, and planar and three-dimensional shapes. A programmatic document, the 1989 *Curriculum and Evaluation Standards for School Mathematics*, produced by the National Council of Teachers of Mathematics (NCTM) to guide reform in mathematics education, recommends that geometric topics be introduced and applied to real-world situations whenever possible. However, this does not imply that immersing children in real-world situations automatically leads to mathematical or geometrical understanding. The challenge of geometry instruction is to elevate children's experience with real-world objects to the level of mathematics.

This happens in well-designed instructional tasks that promote reflection on the geometric features of real-life situations, leading to the development of geometric concepts and spatial reasoning. Children learn to generate geometric arguments by participating in carefully orchestrated conversations where they articulate, share, and discuss their ideas regarding spatial problems. Children develop skills of modeling spatial situations when they are invited to publicly display and discuss their visualizations in drawings. These drawings can then be turned into mathematical representations during revision cycles, in the course of which the geometrical features are accentuated while the mathematically irrelevant features (e.g., material, color, and other decorative elements) gradually fade away.

Need for the Present Study:

The new National Policy on Education (NPE revised 1998) as well as the new National Senior Secondary School Science (Physics, Mathematics and Biology) curriculum had been sufficiently adjusted to accommodate new trends in science teaching worldwide both in its principles and practices. Poor performance of students in science subjects at the senior secondary school certificate examination (SSCE) can be attributed to inadequate acquisition in competence in Mathematics laboratory and also the ability and competence of the male students to the female students in solving problem task in Mathematics related courses and non-attainment of formal operational stage-the age at which students can think in abstraction and logically too. This study therefore focuses on identifying geometric concepts of secondary school students in relation to their achievement.

Objective:

To find out if there is any significant relationship between the Geometric concept and achievement in Mathematics of secondary school students

Hypothesis:

There is no significant relationship between the Geometric concept and achievement in Mathematics of Secondary School Students.

Methodology of the Study:

Method of Study: Normative survey method has been used in the present study.

Tool: In the present study, the following tool was used to measure the Geometric concept of the Secondary School students

Sample: The present study includes a sample of 300 High School Students studying in different schools in Cuddalore District based on random sampling technique. Geometric concept Test (GCT) developed by – S.C. Gakhar -2004.

Statistical Techniques Used: The Correlation Analysis statistical techniques have been used in the present investigation:

Sample of the Study: The present study includes a sample of 300 Secondary School Students of different schools in Cuddalore District based on random sampling technique.

Correlation Analysis: One of the important objectives of the present study is to find out the significance of the relationship between the Geometric concept and the achievement in Mathematics of the High students. For this purpose, the co-efficient of correlation(r) was computed by the investigator and the values are given in the below table.

Null Hypothesis:

There is no significant relationship between Geometric concept and achievement in Mathematics among the secondary school students. Showing the significance of the relationship between geometric concept and achievement in mathematics among the secondary school students.

Variables	N	'r' value	Level of Significance
Geometric concept & Achievement in Moths	300	0.480**	0.01 level

It is evident from the table the calculated ' r ' value is found to be 0.480 which is positive and significant at 0.01 level. So, the null hypothesis is rejected and it is concluded that there exists a positive and significant relationship between Geometric concept and achievement in Mathematics among the Secondary school students.

Recommendations:

- To solve the problem of the average competence of Secondary School Students in Geometrical Concept, the following recommendations are made based on the result of the study.
- Mathematics teachers need to undergo further training to update their skills in teaching Geometrical Concept exercises effectively. During training, the importance of building up of students' Geometric concept should be emphasized.
- School administrators should see to it that forums are organized for the teachers to acquire the necessary skill for effective teaching in Mathematics
- School administration should also help in the purchase of necessary materials, books etc. and necessary for the purpose of Geometric concept to be achieved
- The government should also provide adequate infrastructure, laboratory equipment, etc as practical work helps in developing the mathematical laboratory competence.
- Mathematics laboratory should be maintained in all secondary schools to improve the level of geometric concept of the school students.

Conclusion:

It is found in the present investigation, that the Secondary School Students are having average level of Geometrical Concepts. It is also found that there is a positive and significant relationship between the Geometric concept and achievement in Mathematics of the Secondary School students.

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