

CHAPTER 1: INTRODUCTION

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INTRODUCTION

Mathematics is a foundational subject that enhances logical reasoning, critical thinking, and problem-solving skills. In an academic curriculum the subject of mathematics plays a crucial role in the intellectual development of students. However, students' interest in mathematics is influenced by multiple factors. Despite its importance, students often show varied interest levels in the subject, influenced by both personal aptitude and external factors, including the school environment. This study seeks to explore varied level of students' interest in mathematics across various dimensions such as gender, school type, and board affiliation, and how the type of school, its board affiliation, and student gender influence interest in mathematics, and how these are related to the school environment, and how the school environment relates to students' interest in mathematics across various dimensions such as gender, school type, and board affiliation.

1.1 Background of the Study

As mathematics is a universal language and it is regarded as a foundational subject, essential not only for academic purposes but also for everyday decision-making, critical thinking and problem-solving. Despite its importance, a significant number of students of secondary schools exhibit a lack of interest in mathematics, leading to weak performance and reduced opportunities in STEM (Science, Technology, Engineering, and Mathematics) fields as a career. The growing concern among educators, policymakers, and researchers regarding students' decreasing interest in mathematics highlights the need to explore factors and analyse the areas that influence this phenomenon.

One of the most important areas is the school environment—a composite of physical infrastructure, classroom climate, teacher attitudes, peer relationships, teaching methodology, and school culture. The environment in which students learn plays a critical role in shaping their motivation, attitude, and interest in various subjects, including mathematics. Numerous studies have demonstrated that a supportive, inclusive, and stimulating school environment can significantly boost students' engagement with mathematics.

In India, where this study is contextualized, education systems vary widely in terms of infrastructure, pedagogy, and teacher training. Although national education policies advocate for learner-centered and inclusive classrooms, many schools still struggle with outdated methods of instruction and an exam-centric approach that alienates students from mathematical thinking. This study seeks to investigate how different aspects of the school environment correlate with students' interest in mathematics, particularly among Class 9 students, who are at a critical stage in their academic development.

1.2 Statement of the Problem

There is a growing concern about students' shows disinterest in mathematics, which is evident from declining performance in assessments, increased dropout rates in higher-level mathematics courses, and general avoidance of math-related careers. While many factors may contribute to this issue, the school environment remains a powerful yet under explored influence.

Problem Statement:

This study aims to examine “**students’ interest in mathematics in relation to school environment**”

1.3 Objectives of the Study

1. To study the mathematical interests of secondary school students.
2. To compare the mathematical interest between boys and girls in secondary school.
3. To compare the mathematical interest of secondary students of government and private schools.
4. To compare the mathematical interest between students of CBSE and STATE board affiliated schools.
5. To study the school environment of government and private secondary schools.
6. To compare the school environment of CBSE and STATE board affiliated schools.
7. To study the relationship between mathematical interest and school environment.

1.4 Hypotheses of the Study

- 1) There is no significant difference in the mathematical interest of secondary school students.
- 2) There is no significant difference in interest in mathematics between boys' and girls' students.
- 3) There is no significant difference in students' interest in mathematics between private and government schools.
- 4) There is no significant difference between interest in mathematics of students studying schools affiliated to different boards.
- 5) There is no significant relationship between students in different types of schools.
- 6) There is no significant difference in interest in mathematics between students of schools affiliated to different boards.
- 7) There is no significant relationship between the school environment and students' interest in mathematics.

1.5 Significance of the Study

This study holds significance for researchers, educators, school administrators, curriculum planners, and policymakers. By examining the elements within school environments that contribute to or hinder interest in mathematics, the study offers a pathway to reforming educational practices. Teachers can adapt their methodologies to become more student-centered, while school leaders can foster an atmosphere and infrastructure that promotes curiosity, engagement, and confidence in mathematics. Furthermore, the findings will contribute to the academic literature on mathematics education, offering empirical data on the relationship between learning environment and student interests.

1.6 Scope and Delimitation of the Study

due to this is a short research study, as well as make it more specific the current study has been restricted in the below aspects:

1. This study is limited to secondary schools of Bhopal district (MP) only.
2. This study is limited to secondary students of class 9th only.
3. The study was delimited to students from four selected secondary schools (DMS-RIE, Bal Bhawan, St. Michael, and Jahangiria), with a sample of 30 students per school (15 boys and 15 girls) studying in the class ninth of Bhopal district (MP).
4. The study was delimited to two independent variables i.e. interest in mathematics, and school environment.
5. The sample was limited to 120 students by random selection.
6. The study is delimited to 30 students who were randomly selected from each school of Bhopal district only.

7. The study is limited to two CBSE and STATE boards affiliated schools only.
8. The study is delimited to two PRIVATE and GOVERNMENT schools only.

The study focuses specifically on interest in mathematics and how it correlates with school environments. Other external variables such as parental involvement, socioeconomic status, and previous academic achievement are not considered in-depth.

1.7 Operational Definitions of Key Terms

Interest

Interest refers to what motivates a person, indicating why they prefer certain situations and respond to them in specific ways. When predicting educational and career success, intelligence and abilities alone aren't enough; one must also consider a person's interests, which are vital non-intellectual factors. An interest is a steady inclination to consistently choose a particular path independently of external influences, often leading to the preference of certain options over others. Therefore, teachers, educational administrators, and guidance councils should closely observe a student's interests right from the early stages of their life.

Student's interest:

In an educational context, student interest refers to students' attitude, inclination towards or engagement with a particular discipline, subject, topic, or learning activity. Its emotional as well as cognitive attention towards a specific subject, often admired to engage with it overtime. It's what to lead a student to find a subject interesting, enjoyable and meaningful.

□ **Mathematics Interest**

One important variable for community college students' success in their mathematics courses are their level of interest in mathematics. Higher levels of interest in mathematics and in other academic areas are associated with improved performance and learning in those areas in K-12 and post-secondary settings (Ainley et al., 2002; Harackiewicz et al., 2008; Kim et al., 2015; Murayama et al., 2013; Potvin & Hasni, 2014). Higher interest also tends to predict higher levels of important learning processes like attention, engagement, persistence, perceived competence, and use of learning strategies (Ainley et al., 2002; Flowerday & Shell, 2015; Hidi, 1995, 2001; Kim et al., 2015; Linnenbrink-Garcia et al., 2013; McDaniel et al., 2000; Schiefele & Krapp, 1996), which can serve as mediators and predictors of achievement at academic level.

Interest in mathematics or in a career area can first be triggered by experiences in or outside of classrooms that are relevant, salient, personally meaningful, or novel (Schraw & Lehman, 2001). This can elicit affective changes like increased engagement associated with *triggered situational interest* (Hidi & Renninger, 2006). When something triggers or catches a student's interest, it has further been found to focus attention and contribute to persistence in a learning task (Ainley et al., 2002) and improved learning as a result (Harackiewicz et al., 2008). Continued triggering of situational interest promotes *maintained situational interest* characterized by continued attention and persistence and the development of positive affective, knowledge-, and value-related responses (Linnenbrink-Garcia et al., 2010; Renninger & Int. J.

Res. Undergrad. Math. Ed. (2022) 8:612–641 6151 Su, 2012). As situational interest is maintained and knowledge and value are built, students' attitudes may also change – students may develop *emerging individual interest* in a content domain (Hidi & Renninger, 2006) and seek out future learning.

□ **Mathematics:**

The study of numbers, shapes and space using reason and usually a special system of symbols and rules for organizing them.

□ **Interest in Mathematics:**

The degree of attention, enjoyment, and motivation a student shows toward learning mathematics.

□ **Students interest in mathematics:**

Students' interest in mathematics means students' attention and attitude towards mathematics and how students engage and learn or apply the mathematical concepts in their real life as well as problem solving ability. This concept is multifaceted as liking, motivating, dealing, positive feeling towards it, and enhancing their knowledge to learn and be assured about the ability of solving mathematical problems with confidence. It's linked to their attitudes, motivation, inclination, initiatives, and confidence in their mathematical abilities.

□ **School**

Some people see school as a miniature form of society. Some believe that school is a place where learning happens. School is a systematic structure where all students sit together and learn from the same teacher's, regardless of their caste, creed, religion and colour. However, a school should primarily be thought of not just as a place National Journal of Multidisciplinary Research and Development of learning where certain knowledge acquired but as a place where young are disciplined and taught essential skills-certain form of artistries namely those that holds lasting significance in the real world.

□ **Environment**

Environment stands for all these circumstances which assents their influence on the child since conception to death, consciously and unconsciously environment mould the personality, behavioral attitude, motivation, attention, aspiration level, aptitude, and self-confidence or learning of the child. Our innate abilities are modified by the circumstances. So, a person's environment consists of the sum total of stimulation which he receives at the time of his conception until death. The environment consists of physical, intellectual, social, moral, economics, political and cultural forces.

According to Woodworth(1948), "Environment covers all the outside factors that have acted on the individual since he began life."

□ **School Environment:**

The total atmosphere of all over the school including teacher-student relationships, classroom climate, infrastructure, peer interaction, and instructional methods.