



**ROLE OF MATHEMATICS IN THE
DEVELOPMENT OF SOCIETY: SCIENCE AND
TECHNOLOGY IN MODERN LIFE**

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Abstract

Science, which regulates numbers and their functions, includes mathematics. It entails estimating, computation, problem-solving, and other activities. According to the importance of the word reference, mathematics is the study of numbers and space, or it is the science of estimation, quantity, and splendour. This investigation relied on supplemental information from numerous sources, including books, journals, websites, and papers. This article illustrates how human job, needs, and benefits affect how mathematics is used. It discusses the results of societal demands and how they affect the use of mathematics. The main topic of our essay is how mathematics is used in daily life. Research strategies are based on mathematics. With the aid of value-based education, we can encourage students' aptitude in

mathematics because it is a part of our everyday lives and influences both our personal and professional destiny. We conducted research using a survey to determine the understudies' interest in mathematics. Our goal was to increase the students' mathematical advantage. We needed to influence the professional path of students and encourage them to pursue specialized professions, which are more useful in the job market.

Keywords: Mathematics, Development, Society, Science, Technology, Modern Life

1. Introduction

Through mathematics, we can uncover hidden examples that improve our understanding of the world around us. At the moment, mathematics is a distinct field that organizes with data, hypotheses, and perceptions from science, with derivation, derivation, and verification; and with numerical models of regular peculiarities, of human behaviour, and of social structures. There is a lot more to this than simple calculations and number crunching. Consider a world without any mathematics. How would we be able to count the members of a family, the number of students in a class, the rupees in our pockets, the number of runs in a cricket match, the number of days in a week, the number of months, or the number of years? The precise definition of mathematics is "things which can be counted," and it is obvious that counting is a crucial aspect of our daily lives. On a basic level, you should be able to count, add, subtract, increase, and separate.

In fact, mathematics is completely embraced by nature as well. We experience a strong sense of attention and enthusiasm for designs as a result of the immense amount of evenness that surrounds us. Find the evenness or the example in any regular object by observing it. Day turning into darkness, summer turning into winter, and so forth. There are innumerable examples of balance, shapes, designs, etc. in plants. These models can be found in various things, including objects, animals, and images. At the specified second, the sun rises and sets. At a set time, the stars appear. Physical science and astronomy are two inherent disciplines that are infused with mathematics. This topic is inextricably linked to the world and everyday oddities.

Math is a part of science, which governs numbers and their uses. Making predictions, using arithmetic, solving issues, and other things are all part of it. According to the word reference importance, mathematics is the science of numbers and space, or it is the science of estimating, quantity, and size. It is a sensible subject that is planned, precise, and cautious.

The public growth of India and other nations throughout the world depends greatly on mathematics. Since the beginning of human history (Egyptian, Greek, Roman, and so on), mathematics has been seen as the foundation for their enlightening thoughts and overall growth.

Mathematics is the basis for a country's functioning since it plays a significant role in determining the degree of scientific and innovative components in any nation, which is a necessary necessity for its progress. Mathematics nowadays has a huge impact on science and culture and shapes our world in a number of ways, even when its effects are subtle and concealed.

Through mathematics, we can uncover hidden examples that improve our understanding of the world around us. At the moment, mathematics is a distinct field that organizes with data, hypotheses, and perceptions from science, with speculating, deriving, and confirming; and with numerical models of regular peculiarities, of human behaviour, and of social structures. This goes much beyond simple math and number juggling.

2. Literature Review

In order for students to retain new information and adjust to new technology, be situated in an information environment to really determine issues, and interact with global society, education should prepare students for responsive and adaptable skills, strong language, mathematics, and science foundations, great correspondence skills, the ability to apply data technology, development capacities, and strong language, math, and science establishments.

The value of having scientific and math skills: PISA (Program for Global Understudy Evaluation) has defined mathematics as sums, spaces and shapes, change and connections, and vulnerability. The fundamental techniques of mathematics include the understanding of numerical language, the creation of models, and the application of critical thinking hypotheses, all of which are inextricably linked to the capacity for critical thought. Critical thinking is defined as the ability to use data, correspondence, and emotional responses to conduct thoughtful analysis, use persuasive arguments, and develop effective problem-solving techniques.

Modern aptitude for science and mathematics: Recently, Service of Schooling, Culture, Sports, Science and Technology (2012) has successfully progressed connected changes in science, math, and business. It believes that applying the knowledge and methods from

mathematics and science to the sciences will help to identify and clarify a variety of challenging problems. Such rational and numerical data will give society new motivation. In 2007, the Service of Schooling, Culture, Sports, Science and Technology offered open doors for college coordinated effort support for cooperative inventive work, while the Japan Science and Technology Organization was active in mathematics research and modern applications. Such a constrained speed increase has gradually produced research breakthroughs that have prompted improved bearings. The Exploration Advancement Department of the Service of Instruction, Culture, Sports, Science, and Technology acknowledges that this can do more for society. Modern planning, according to Tseng (2009), necessitates method-focused ideas, which are a strength of the math and science personnel.

According to Business Week every week (2011), the most well-known businesses will always be the financially and technologically advanced ones in the next forty years. People with strong math and science skills work in related fields such as protections specialists, fates examiners, semiconductor investigators, mechanical administrators, and designers. According to this scientist, if a country doesn't improve its critical thinking abilities, critical information and procedures, and development capabilities in the information economy, it will lag behind other nations in terms of modern seriousness.

Preparing a workforce with the top aptitude for using science and math: China has recently placed a remarkable emphasis on ability strategy. The State Committee of the People's Republic of China (2010) designated Rules for the Development and Arranging of Ability in the Mid to Long Run for the State (2010-2020) as the fundamental standard for promoting its ability development technique in June 2010. Ability refers to people who lead imaginative work, contribute to society, and have a certain level of expert knowledge or expert capacities; these people are HR workers with better capacity and quality. A person's capacity for creativity and innovation can be increased by broadening their thinking processes and field of observation.

Using computer technology and data for guidance: Informational strategies incorporating advanced technology have also emerged with the rapid growth of advanced data technology. These teaching methods are more energetic, clever, challenging, and fascinating than traditional informational procedures, and they more successfully create learning environments that can't be created using conventional supervision. For instance, experts have used PCs to create mixed-media learning programmes on sinking so that students may

actually see and experience subsidence, allowing them to transform the theoretical concepts from books into real feelings.

3. Need and Function of Mathematics in the Evolution of Society—

A society, or human society, is a group of individuals who have regular interpersonal connections, live in the same physical or virtual area, and adhere to the same governmental structure and social mores. A society can be defined more broadly as a social, economic, or modern framework made up of a vast range of people. In the human social structures, mathematics plays a unique and important role that is crucial to the advancement of all humanity. The people who make up a society are the ones who form the government and allocate the common resources to support the base. The people themselves are what keep society alive. Therefore, we shall discuss the role that mathematics plays in both the personal and societal growth of an individual. We really want to discuss the related material in order to understand this;

3.1. At Personal Level--

The purpose of mathematics at the personal level will be covered first.

➤ Role of Mathematics in Social Development

Being a social animal, man depends on other people for his or her survival. Numerical information is necessary to carry out a public activity, and because of the compromise cycle, commerce and industry rely on knowledge of mathematics. Mathematical advancements have essentially been responsible for the social design of modern offices, such as transportation and correspondence methods, as well as advancements in science and technology. In this way, mathematics plays a crucial role in comprehending how society has progressed as well as in fostering society.

➤ Mathematics' Place in Intellectual Growth

Education in mathematics is essential for scholastic advancement. Mathematics is the only topic in the curriculum that can stimulate students' minds like no other. Intellectual capacity development is aided by critical thinking. Every mathematics topic groups these successions, which are crucial for a useful and creative approach. In this way, math develops a child's full range of psychological abilities. In addition, the man is unusually certain thanks to maths. It

strengthens a person's capacities for strength, tolerance, and confidence. It also encourages employee growth and disclosure.

➤ **Mathematics' Place in Career Development**

The main goals of instruction are to help the students become financially independent and self-reliant. Mathematics is the primary topic than any other to achieve this goal. It aids in preparing students for a variety of careers, including those in fitting, carpentry, looking over, banking, business, and even the agriculture. The knowledge of mathematics is also necessary for the workplace.

➤ **Role of Mathematics in Moral Development**

The most heavily influenced moment, person, circumstance, and location in life is the crucial period of profound quality. Mathematics as a discipline can support a student's ethical development because numerical information is beneficial in character and character development. It supports the wide range of qualities that a person of integrity should possess.

➤ **Role of Mathematics in Spiritual Development**

Taking care of numerical problems is enjoyable, especially when the solution to the problem is discovered. Each child experiences contentment, assurance, and confidence at that point. The child experiences comfort, fulfillment, and joy as a result of making significant progress. Math hence aids in fostering their tasteful reasonableness and aids them in the proper utilization of their timing relaxation.

➤ **Mathematics' Place in Cultural Development**

The student gains a better understanding of the part mathematics plays in the development of culture and progress as a result. It has given her or him the ability to understand the role that mathematics plays in strengthening human existence and expressive arts.

3.2. At Societal Level--

We shall now talk about how mathematics affects society.

➤ **Mathematics' Contribution to the Development of the Educational System:**

Mathematics plays a significant part in determining the future prospects of students in the educational system. We want to focus on mathematics in addition to nearly every other subject we study in school and college, such as physical science, science, life science,

financial aspects, business and bookkeeping, geology, history, brain research, engineering, planning, registers, measurements, trade, and so forth. Numerical knowledge is also necessary in professions like fashion, covering, cooking, cosmetology, sports, gardening, and so forth. In fact, basic numerical concepts are used in a variety of professions, including those of a guide, businessperson, driver, performer, entertainer, clerk, and others.

➤ **The role of mathematics in the development of economics:**

Mathematics gives the foundation for understanding economics. It is crucial to real sciences, technology, business, financial management, and many ICT fields. The establishment of businesses lays the groundwork for societal financial issues. In the current world, applied mathematics is essential. Examples include computational science, applied research, development, differential condition, information analysis, discrete mathematics, and others. A growing number of complex structures and designs in the modern world require mathematical perception, and a large portion of the design and management of high-tech structures is dependent upon numerical data sources and outcomes. The expense of oil research and picture correspondence could be reduced by the application of numerical techniques. For this reason, wavelet and fractal techniques are used. Super transmitter links are put together with the help of mathematical reproductions of numerical models to lower the cost of power.

➤ **Role of Mathematics in Development of Infrastructure:**

Despite everything continuing to be as it is, mathematics specifically has contributed to advancements in science and technology for millennia. It finds useful uses in the creation of frameworks, including those for business, industry, music, legal matters, sports, medicine, agribusiness, architecture, and the social and natural sciences. In a civilization, it is important how a foundation actually looks and develops. Next, for the creation of roads, buildings, arenas, flyovers, air terminals, dams, spans, vehicles, planes, and other structures in mechanical, structural, electrical, and other designing

➤ **Mathematics' Contribution to the Advancement of Science and Technology**

The language of science, technology, and design, according to some, is mathematics. Another widely held belief is that mathematics is essential to both science and design. The current period has seen a significant development in the use of numerical approaches in the social, therapeutic, and real sciences, reinforcing mathematics as an important part of all school curricula and sparking a remarkable interest in college-level numerical training. The

requirement for measurable and numerical evidence of abnormalities directly influences a sizeable percentage of the interest. Mathematics has been successfully used to progress science and technology in the 20th and 21st centuries. Numerological concepts are essential in fields like high-tech semi-guide devices, biotechnology, computerized picture technology, nanotechnology, counterfeit satellites, and rockets. The new Mars Meanderer result also has a mathematical foundation.

➤ **The role of mathematics in the advancement of agricultural and medical science:**

The study of disease transmission, cancer and cardiovascular diseases, DNA sequencing, and quality technologies all use mathematics. It is used to make opto-hardware, sensor technologies, and clinical tools and diagnostics. Every actual science assumes a crucial role for numerical and factual showing of anomalies, which also significantly advances the natural sciences, medical sciences, and agricultural disciplines. There are several good qualities that mathematics excels at. We may categorically state that it is temperate because to its core nature as a commonly used conceptual language and its support of the sciences, technology, and design. Additionally, mathematics is generally crucial and indispensable to both the job and the individual resident.

➤ **Role of Mathematics in Cultural and Moral Development:**

Although mathematics has its own distinctive perfection and attractiveness, its social function is mostly served by its seeming teaching qualities. A refined inhabitant is someone who upholds social norms and is an educated person. A polite person is always straightforward, distinctive, patient, sincere, accurate, and restrained. Mathematics is a subject that is meticulous, sincere, distinct, and exact, and it focuses on the mathematical needs to uphold the laws and rules. As a result, mathematics helps people become sophisticated citizens with good ethics.

➤ **the part mathematics plays in the rise of living standards.**

Since mathematics is used in almost every profession, it aids in developing expectations for a person's daily comforts. The advancement of medicine, science, and technology, as well as the general societal growth, all contribute to the advancement of manner of life. Therefore, mathematics plays a crucial role in raising the bar for basic comforts. Last but not least, as women make up half of society, no civilization can be built without them being strengthened. In due course, we'll also observe a growth in the role of female math education.

➤ **The Role of Mathematics Education in Women Empowerment**

Despite the widespread use of science and technology, mathematics instruction has persisted as a key component of the school curriculum and is still essential for advancement in both education and the workforce. Female understudies have lagged behind in a number of areas. This has also had an impact on the programs and careers that women are looking for in the working world. They have attributed their inability to perform to expecting that the rules should be lacking in reliable mathematical foundational knowledge. It is this recognition that the skills learned in school have had little to no bearing on what society requires in terms of productive citizens.

In this way, concerns included the orientation of uneven characters in enrollment, success at the secondary school level, universities and colleges, and the workplace. Our societal structures are becoming more and more mechanical with a numerical bent, with increased importance placed on the development of numerical skills. Strengthening offers opportunities to increase knowledge and professional skills for endurance and also expands women's access to extremely risky career paths.

4. Methodology

The application of mathematics to daily life and the subject of mathematics as a field of study for a world-class group are two important topics of the way of thinking of mathematics. Recent discussions on the role of mathematics in relation to human existence have been conducted from a logical standpoint by using one of the subjective exploration strategies, the report assessment approach. Using watchwords, distinguishing evidence of noteworthy reports was examined.

4.1. The Need for Mathematics in Society Development

There had never been a more well-founded interest in appreciating and using mathematics in daily life and at business, and it would only grow (Figure 1). As a test:

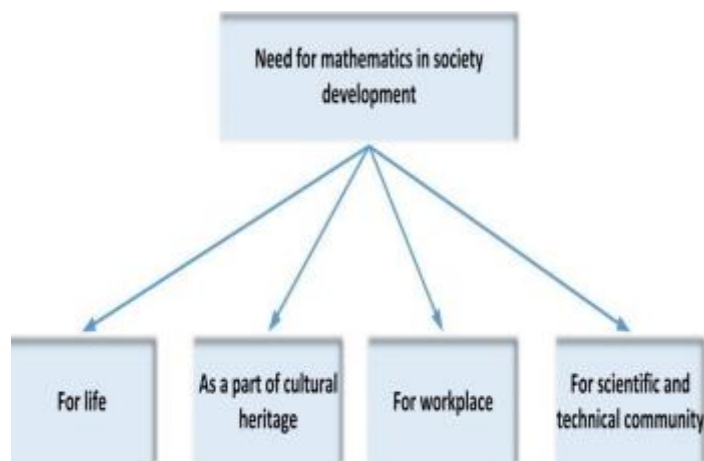


Figure 1: Need for Mathematics in Society Development in a Schematic

4.2. Mathematics for Life

Knowing mathematics may make you feel powerful and successful. The institutions of everyday life are becoming more and more specialized and quantitative. For example, making informed decisions about purchases, selecting health care providers or insurance, and casting votes all involve a solid understanding of math.

4.3. The Cultural Heritage of Mathematics

People should learn to value mathematics as maybe humanity's greatest intellectual and social achievement, including its elegant and occasionally even joyful components.

4.4. Mathematics in the Workplace

Along with the level of mathematics required for smart citizenship, the amount of numerical reasoning and critical thinking anticipated in the job has increased significantly in everything from clinical consideration to website architecture.

5. Analysis and Result

5.1. The Relationship of Pupils to Mathematics - Survey

Our research sought to understand how understudies in various types of schools interacted with mathematics. Additionally, we looked at whether students and students realized that they would eventually need math and natural science. We also made an effort to discern between undergraduates' interest in general research and undergraduates' interest in specialized topics.

120 students and students overall responded to the survey. 56 young males and 64 young women, aged 12 to 21, were among the responders. The Tatenice Grade School in the Czech

Republic, Lankroun Syntax School, and Lankroun Optional Professional School in the Czech Republic conducted the poll study. There were 11 questions in the survey, 4 of which were closed (questions Nos. 2, 5, 8, and 10) and 7 of which were open. The understudies and understudies had the option of responding YES or NO to the closed questions (Nos. 2, 5, and 10). They might look through Brilliant, Estimable, Great, Adequate, and Deficient after being sent to No. 8.

The survey included the following questions:

1. What comes to mind when you hear the word "mathematics"?
2. Do you rank math as one of your top subjects?
3. What mathematical themes did you enjoy?
4. Which mathematical subjects did you fail to master?
5. Which numerical concepts did you find the most difficult?
6. Do you work on school assignments that you might encounter practically?
7. What applications of mathematics do you utilize on a daily basis?
8. Which mathematical grade appears on your transcript the most frequently?
9. Identify the areas where mathematics will be used in the future.
10. Would you consider focusing on a niche area? Who is it?
11. What might alter your perspective on mathematics?

We only include a few exciting findings from the led investigation in this report because they are so important. We were particularly interested in whether mathematics was well-liked in both primary and secondary schools. (Fig. 2) and (Fig. 3) show the examination results. reveals that math is typically not a popular subject in elementary schools. Only 35% of those who attended primary school ranked mathematics as their favorite subject. We discovered through observing the responses of young men and women that the popularity of mathematics as a topic in schools was quite similar for the two sexual orientations.

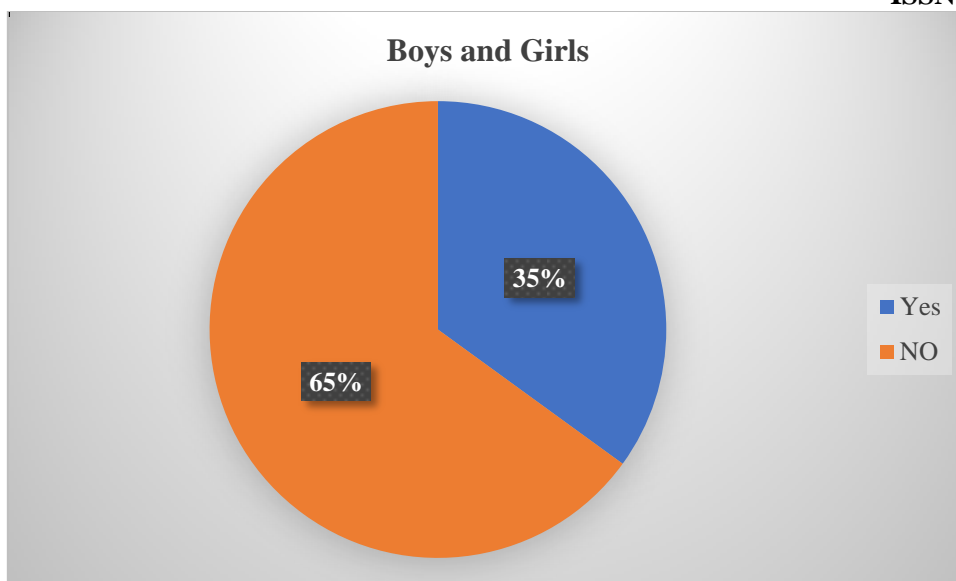


Figure 2: popularity of math among elementary school students

For 40% of students at optional schools, mathematics is a popular subject. at comparison to elementary schools, one may conclude that mathematics is more well-known at secondary schools.

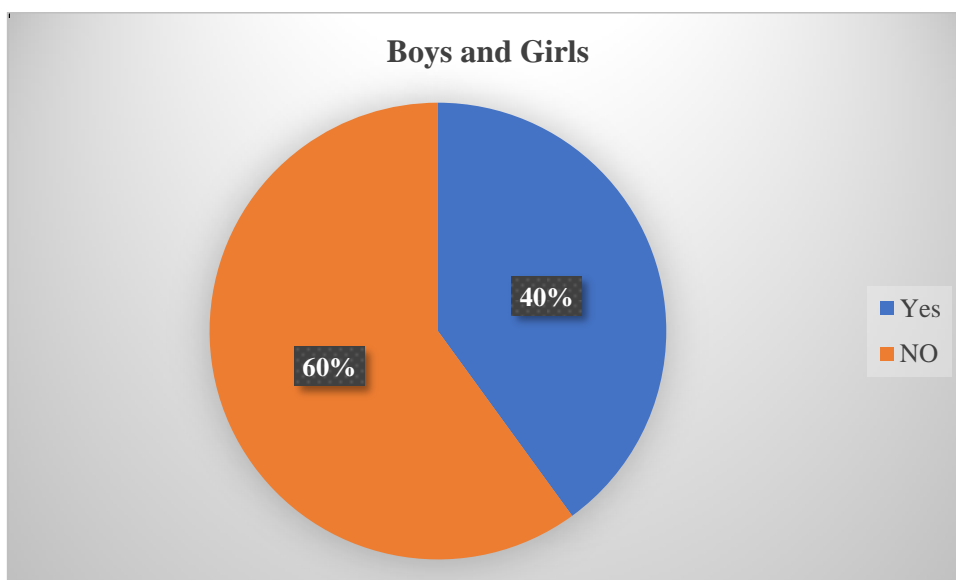


Figure 3: popularity of maths among students in secondary schools

The majority of pupils responded that they didn't need any points, and they could have done without them. Some students stated that they only liked the subjects that they fully understood.

In a different study, we tried to discriminate between the subjects that the elementary school pupils struggled with and those that they had no clue whatsoever. The subsequent table (Table 1) contains the reactions that were observed.

Table 1: issues in mathematics that primary school students struggle with

Responses	Number of Responses
Geometry	7
Fractions	7
Equations	6
Pythagorean theorem	2
Rational numbers	2
Decimal numbers	3
Nothing	3
Everything	3
Other response	2

Calculation is the area where elementary school students struggle the most. For students in primary school, conditions is another problematic area. The subjects that auxiliary school students struggled with are listed in the following table (Table 2).

Table 2: Mathematical concepts that secondary school pupils struggle with

Responses	Number of Responses
Geometry	8
Combinatorics	6
Everything	6
Logarithms	3
Functions	3
Graphs	4
Trigonometric functions	3
Vectors	3
Roots	3
Other response	9

Calculation is a difficult subject that the optional school pupils, like the primary school children, have decided to avoid. Combinatorics and abilities are other topics that challenge secondary school students. In one of the closed questions, we tried to determine if grade school students and students in the optional school handled common sense tasks in their mathematical examples. 70% of responders from elementary schools said they completed practical errands. Only 30% of students acknowledge that they sometimes put off schoolwork that they might regret in the future.

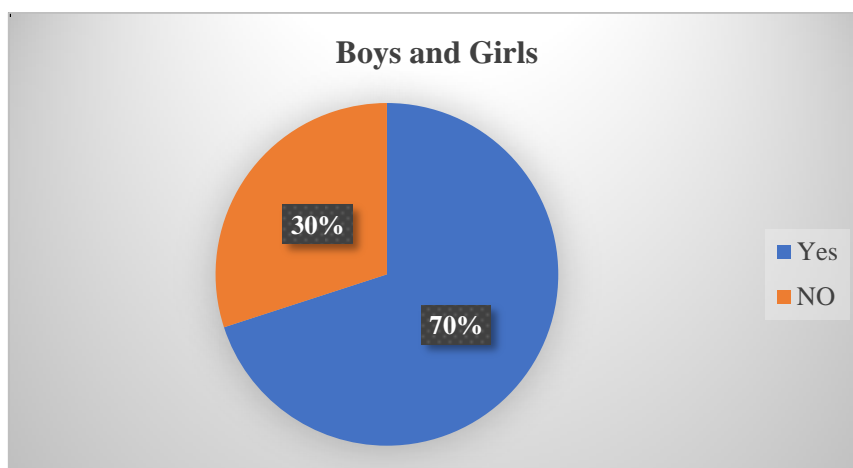


Figure 4: solving real-world problems in math in primary schools

54% of fourth-year optional school students agree that they can complete arithmetic assignments that make sense, as shown in the following outline (Fig. 5).

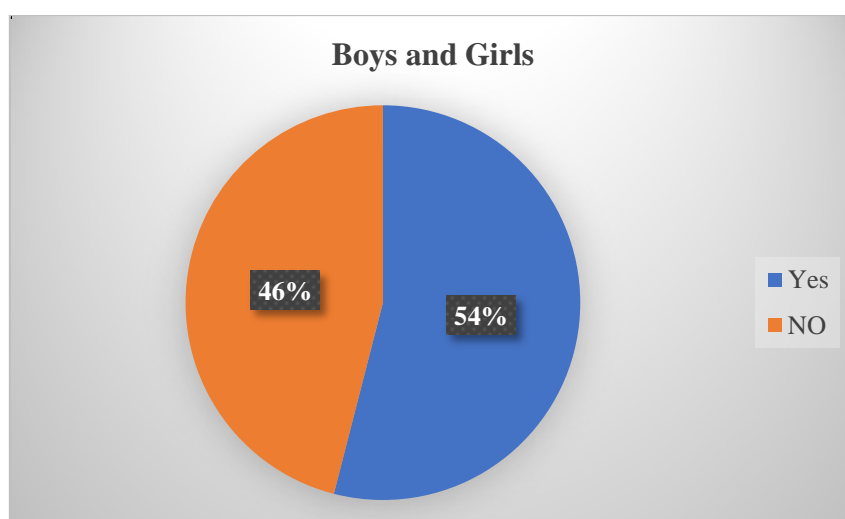


Figure 5: solving real-world problems in secondary math classes

We looked at how the students felt about applying mathematics in real-world situations. Students from elementary schools and optional schools should list the fields in which

mathematics was used. The responses of the elementary school students are listed in the following table (Table 3), while the responses of the auxiliary school students are listed in a different table (Table 4).

The majority of pupils admitted to using math when they went shopping. Economy is another area where mathematics is used. Additionally, the pupils cited math teachers, contractors, service providers, and real estate investors and developers.

Table 3: Primary school students' perspectives on how arithmetic is used in real-world situations

Responses	Number of Responses
Shopping	20
Economy	6
Mathematics teachers	6
Transport	2
Civil engineering	3
Repairmen, servicemen	3
Banking	3
Other response	4

Table 4: Secondary school students' perspectives on how math is used in real-world situations

Responses	Number of Responses
Adding, subtraction, multiplication, division	20
Figures	6
Rule of proportion	5
Geometry	3
Volumes, areas	4
Interest	3
Everything	3
Probability	3
Pythagorean theorem	3
Percentages	3

Other response	7
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We also examined in the poll whether the elementary school pupils might wish to focus on a specialist field. The students who said they should focus on a particular field mentioned design and structural designing in their responses.

The secondary students in the optional school received a similar question. In response to the question of whether they should focus on a certain specialty, 13% of students said they must, 85% said they don't think about doing so, and 2% said they haven't made up their minds yet. For those undergraduates who are interested in specific disciplines, science, technology, mechanical design, or informatics should be their main areas of study.

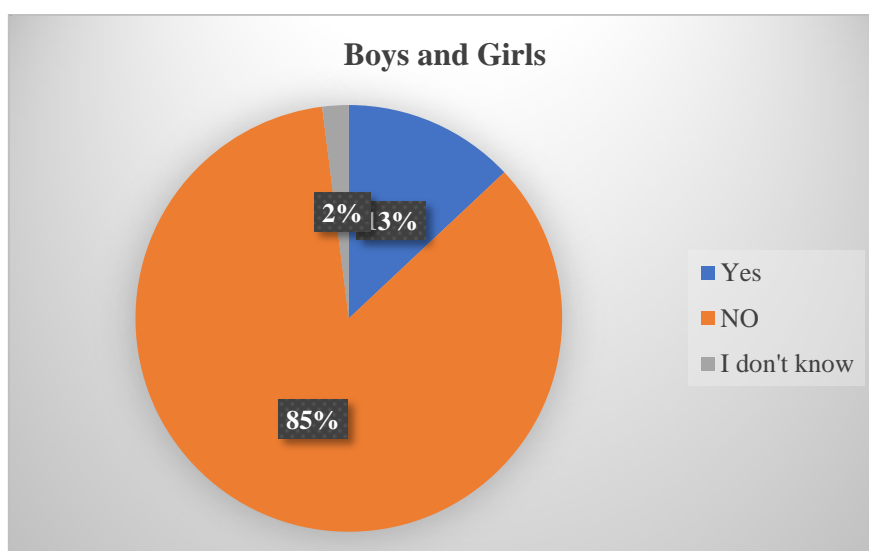


Figure 6: Secondary school students' interest in studying technological fields

We also looked at factors that might alter how an elementary school student and a student in an optional school perceive mathematics. Perky maths, smart games, origami, and puzzles were mentioned as things that some responders would enjoy. Students in elementary and secondary schools enjoy mathematical graphics that are very interesting and need to complete easier tasks.

6. Conclusion

Mathematics has a unique and important place in human social structures. It is essential to the advancement of humanity as a whole. The ability to calculate, along with the strength of technology, the capacity for social interaction, and the mathematical comprehension of

spacetime, which is the real world and its typical examples, all serve as examples of the function of mathematics in the development of a society. The history of mathematics shows that anytime a civilization placed a high importance on numerical understanding, it made exceptional development. Modern pedagogical methods may have an impact on grade school and elective school students' interest in the study of mathematics and specialized disciplines. This entails using actual projects as examples and illuminating mathematics by coming up with fresh concepts. In order for students in elementary and secondary schools to actively participate in the learning process, it is crucial to incorporate them in mathematics drawings. Supporting elementary school students' and secondary school students' effective learning strategies is important in the teaching of mathematics. Understudies and understudies who participate in the learning experience will have a better understanding of mathematics, which is why specialized subjects are being investigated.

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