The importance of mathematics in our daily life

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Abstract: Mathematics plays a predominant role in our everyday life and has become an indispensable factor for the progress of our present day world. Counting starts from day one of the birth of a person. Most students would like to know why they have to study various mathematical concepts. Teachers usually cannot think of a real-life application for most topics or the examples that they have are beyond the level of most students. Mathematics is generally regarded as the driest subject at school, made up of routine, difficult, boring, arcane and irrelevant calculations which have nothing to do with discovery and imagination. Mathematics is a branch of science, which deals with numbers and their operations. It involves calculation, computation, solving of problems etc. Its dictionary meaning states that, 'Mathematics is the science of numbers and space' or 'Mathematics is the science of measurement, quantity and magnitude'. It is exact, precise, systematic and a logical subject. It may also be defined as, 'Mathematics is the study of quantity, structure, space and change; it has historically developed, through the use of abstraction and logical reasoning, from counting, calculation, measurement, and the study of the shapes and motions of physical objects. Contemporary life demands the requirement to have good mathematical knowledge. Mathematics is important for life and supports all-round personal development. Mathematics significantly influences pupils' and students' education both in a special branch (mathematical knowledge) and in terms of moral education. We can find mathematical application in the nature, technology, architecture, machinery, building industry, in the banking sector, in research, cartography etc. There are very interesting applications in genetics and in using mathematics in the nature. Statistical methods are used in hypothesis testing in genetics.

[Sajjad, F. **The importance of mathematics in our daily life.** *The International Journal of Interpretation, Observation and Analysis*, 2025; Volume 4, Issue 1:70-76 (October-December). ISSN 2349-0713, Peer-reviewed (online/offline), Refereed, Indexed and International Journal (Since 2013), Global Impact Factor: 6.205

Keywords: Science, life, knowledge, technology, research

Introduction: The application of mathematics in the modern world is a complex and ever-changing field. In the Middle East, there are many businesses and governments that rely on mathematical expertise to make their decisions. Some of the most common applications of mathematical expertise in the modern world are in business, finance, and engineering. In business, mathematical expertise can be used to calculate financial ratios and statements, to analyse data, and to make predict future financial trends. In engineering, mathematical expertise can be used to design and build products, for data analysis, and to make predictions.

We have all found the subject of maths to be daunting and challenging. Despite its reputation, mathematical skill is one of the most coveted skills due to its role in the modern world. We all use it in some form or the other. From paying for groceries to calculating a tip in a restaurant to building a smartphone; maths has found its way into every aspect of life.

Mathematics has made a significant contribution to the study of climate change by allowing researchers to better comprehend the Earth's climate and the impact of global warming. It helps in understanding the dynamics of the Earth's natural systems concerning infectious diseases, their origins, their spread and control.

In the GCC areas, Maths is also part of Social Studies as it helps in exploring the social dynamics of the country and helping to identify income inequality and political polarisation. Using mathematical data they can identify underlying patterns and predict future trends more accurately.

The world as we know it today, would not be possible without maths. It aids us in problem-solving and critical thinking – two very essential skills in today's technology-powered generation.

Schools in Dubai believe that learning maths opens up a world of opportunities. It is basically the foundation of many fields such as science, engineering, economics, and computer science. It is extremely relevant to the current school curriculums and being deficient in mathematical skills means underperforming in other subjects as mentioned above too. This would translate into limitations when it comes to future employability.

Maths is the foundation of almost every subject. Every aspect or form of mathematics such as algebra, complex numbers, trigonometry etc., influences our lives every day. You will always see an influence of the same in the field you work in, be it in medicine, meteorology or cryptography etc. Astronauts use it to

determine the probability of life in outer space, statisticians rely on data to predict population trends and accountants use it to determine whether a company is doing well or making losses. Being proficient in maths opens a lot of doors for job seekers.

Without mathematics, the world would not have made the giant strides it has made today as it is crucial to understand the natural world as well. Maths describes the behaviour of particles and waves, the flow of fluids, and the dynamics of complex systems.

To assist in easier comprehension of this intimidating yet crucial subject, many schools in the UAE offer STEM learning which focuses on individual learning styles and interests. STEM courses develop children's cognitive abilities and facilitate quick problem-solving. They are working towards their goal of ensuring that every student graduate is tech-savvy and STEM-literate. Recognising this, Blake E-learning along with 3P Learning created Mathletics which is the perfect early learning maths program to form a strong base for math students. It is convenient to use as it syncs with all your devices and hence you can use it anywhere at any time. This platform offers a personalised path with downloadable worksheets and a self-paced curriculum. Enjoyable characters and lessons use real-world examples and escort you through your learning journey while providing immediate assessments and reports so you are aware of your progress.

Mathematics reveals hidden patterns that help us to understand the world around us. Now, much more than arithmetic and geometry, mathematics today is a diverse discipline that deals with data, measurements and observations from science, with inference, deduction, and proof; and with mathematical models of natural phenomena, of human behaviour, and of social systems. The literal meaning of mathematics is "things which can be counted" now you can think that counting has vital role in our daily life; just imagine that there were no mathematics at all, how would it be possible for us to count members of the family, number of students in the class, rupees in the pocket, runs in a cricket match, days in a week or in a months or years? On a basic level you need to be able to count, add, subtract, multiply, and divide. Even nature also embraces mathematics completely. We see so much of symmetry-around us and have a deep sense of awareness and appreciation of patterns. Observe any natural thing and find out symmetry or pattern in it. Change of day into night, summer into winter etc. In plants there are innumerable examples of symmetry, shapes, patterns, etc. Such examples exist in animals, in objects, in pictures and other things. The sun rises and sets at specified moment. The stars appear at fixed time. Mathematics runs in the veins of natural sciences like Physics and Astronomy. This subject is inextricably incorporated with world and the natural phenomena.

Math is very useful in everyday life. Math can help us do many things that are important in our everyday lives. Here are some daily tasks for which math is important:

- Managing money $$$
- Balancing the checkbook
- Shopping for the best price
- Preparing food
- Figuring out distance, time and cost for travel
- Understanding loans for cars, trucks, homes, schooling or other purposes
- Understanding sports (being a player and team statistics)
- Playing music
- Baking
- Home decorating
- Sewing
- Gardening and landscaping

Parents can help teens connect math they learn in school and their everyday lives. As a parent, you could talk to your teen about how you use math in your daily life. You could also ask family members and friends how they use math in their daily lives. Please talk to your teens about these math connections to real world. Share with your child the examples of everyday math applications, which are listed below. When your teens hear how math can be used every day, they will be more likely to view math as important and valuable. They may also become more interested in mathematics. Remember that you as a parent can greatly influence how your child thinks about mathematics.

The testimonials included on this website give brief examples of how people use math in their daily lives. Please watch these. You can share information from these videos with your teen.

Examples of Math Connections to Daily life

Managing Money

Your teen will learn skills in algebra class that will help them with money. One important skill they will learn is how to calculate interest and compound interest. Your teen can use this skill to manage their money now and when they grow up. This skill also will help them pick the best bank account. It will also help them decide which credit card is best to have. People who take out loans need to understand

interest. It will also help them figure out the best ways to save and invest money.

Recreational Sports

Geometry and trigonometry can help your teens who want to improve their skill in sports. It can help them find the best way to hit a ball, make a basket or run around the track. Basic knowledge of math also helps keep track of sports scores.

Home Decorating and Remodeling

Calculating areas is an important skill. It will be useful for your teen in remodeling future homes and apartments. It will help your teen find how much paint they need to buy when repainting a room. It is also an important skill for anyone who wants to install new tiles in a bathroom or a kitchen. Knowing how to calculate perimeters can help your child when deciding how much lumber to buy for floor or ceiling trim.

Cooking

People use math knowledge when cooking. For example, it is very common to use a half or double of a recipe. In this case, people use proportions and ratios to make correct calculations for each ingredient. If a recipe calls for 2/3 of a cup of flour, the cook has to calculate how much is half or double of 2/3 of a cup. Then the cook has to represent the amount using standard measures used in baking, such as ¼ cup, 1/3 cup, ½ cup or 1 cup.

Shopping

Your teen will use math when buying different items. When buying a new computer, your child will need to figure out which store offers the best price or best financing. Math is useful in finding the best deal for food items. For example, your teen will need to decide which pack of soda to buy when given a choice of 20 oz., 2-liter, 12 pack, or 24-pack. Stores often have sales that give a percentage off an original price. It is helpful for people to know how to figure out the savings. This math skill is very useful because it helps us calculate discounts so we can buy an item for the best price offered.

2. Theoretical framework

The aim of performing this activity is to explore the daily life applications of mathematics. Observation is the method used for data collection. The researcher has carried out the activity of daily life mathematics. Mathematics is often perceived as a difficult subject utilized solely for calculations. However, in reality, mathematics is utilized incessantly in every simple aspect of life. It is the only subject that is applicable in both scholarly and personal realms.

Mentioning specific numerical examples, mathematics is applied while shopping for vegetable quantities, cake grams, and more. Other manipulations of calculation include calculating monthly salaries, splitting bills for transports, and distributing share and profit amounts among 3-4 members. This investigation focuses on the aspects of life where mathematics is utilized. Symbolical examples related to addressing bill amounts in shopping are included within this activity. This research is expected to be informative for several individuals as mathematics interfacing is common among people. As science is releasable in different mathematics usages, mathematics research will be useful for the science domain. After conducting this activity, all the different aspects of daily life where mathematics is used have been noted. Various persons including home-makers and literate workers exhibit differences in threshold daily life mathematics quantities. While the analysing results section includes a brief introduction in reflecting activities, the points of highlight significance should be readable by anyone. These points can also be a basis for further research about science interfacing with day-to-day mathematics aspects. On exploring the impact of mathematics in everyday life activities, it is noted that art as a domain receives the least scientific interfacing. Other interfacing can be classified in different standards irrespective of the number of aspects. As science methodology is applied in analysing aspects, mathematic domain interfacing is the only simple analysis. Mathematics must be a compulsory item for every domain to conduct commencing with schooling to higher studies.

3. Methodology

The study of the importance of mathematics in everyday life activities has been approached through the theoretical framework of science, with a focus on the scientific methodology. This science-oriented methodology integrates the concepts of mathematics, its evolutionary phases, time, space, theory, experiment, model, and paradigm in a holistic manner. To study the importance of mathematics in daily life activities in particular, and to study any scientific knowledge and its importance in general, the in-depth notions of the evolutionary phases of knowledge (Phase I, Phase II, and Phase III) and of the higher and lower dimensions of knowledge in harmony with time and space have been proposed, developed, and practiced.

Purposes and Aims of Mathematics

Mathematics is generally regarded as the most dry subject at school, made up of routine, boring, arcane and irrelevant calculation which have nothing to do with discovery and imagination. You may have noticed how terms in mathematics have an unnerving effect on most students as well as the public. “Dull” and “Urgh” are the most common epithets often used to describe the subject. Whether we realize it or not, mathematics is around us, in our everyday life, and

we are using the subject. Mathematics exists in nature. Mathematics is used in the kitchen; when we prepare our food, we must put in enough amounts of salt and spices in the curry, otherwise it will be too hot, tasteless, or very salty. To build a house we need mathematics for its shapes and to estimate the cost needed. We need mathematics when we go shopping, and when we are on the highway. Even then, whenever we talk about mathematics, many fear the subject; they have the mathematic phobia, and try to avoid it. The fact is that, mathematics forms part of our life. We have to make the public aware of this. This is the duty of mathematicians or mathematical scientists. Popularization of mathematics could be done at various levels in the society, at home, nurseries, schools, universities, offices, supermarkets, highways and elsewhere. In this paper we will discuss how this could be achieved. The role of mathematics in society is subtle and not generally recognized in the needs of people in everyday life and most often it remains totally hidden in scientific and technological advancements. The old saying: "The one who lives hidden lives best" is not true in present day society. If a subject becomes invisible, it may soon be forgotten and eventually it may even disappear. Mathematics has such a prominent place in school curricula all over the world that probably nobody can imagine such a fate for this subject. But if we do not constantly care about the image of mathematics, we will see continuing pressure to lower the amount of mathematics at primary schools, secondary schools and at the university level. Mathematics is exciting to many people but at the same time is considered difficult and somewhat inaccessible by many more. Since mathematics is the fundamental cornerstone in many diverse areas of society, it is important for civilization as a whole that mathematicians do their utmost to help explaining and clarifying the role of mathematics."

4. Scientific approach to studying mathematics in daily life

Mathematics involves abstract concepts such as quantity, structure, space, equations, and changes, which can be represented through numbers, symbols, vectors, diagrams, and equations. Everyday life is defined as the typical activities of persons in personal, educational, or social contexts, including anything that occurs in routine life or standard situations. The research objective focuses on identifying mathematical activities in daily life, particularly relating to planned and executed local activities. A geographical perspective emphasizes the significance of place and space. Hence, the intent is to discover the quantity of mathematics embedded in daily activities and the perception of importance and difficulty in the local treatment of it. The concerned population comprises students of Classes IV and V of SDN Sipak, Citeureup, Bogor, West Java. The method utilizes the scientific approach comprising systematic steps: Observations, Questions, Exploration, Association/Reasons, Conclusion, and Re-Observation. The research is fieldwork-based or fieldwork as a research basis, depicting the setting, interactions, and problems in natural patterns as they occur in daily life. The local theme ensures closeness and relevance and facilitates understanding by focusing on the local and common so that they are more familiar (Mainali, 2021) [2] . Observations are initial activities to collect information on mathematical activities regarding the selection of plants, fruits, and flowers to be planted and maintained in the yard. The selection concerns the number/quantity of plants, flowers, and fruit trees based on the area/size of the land. This area is calculated in square meters using a calculation method and mathematical calculations. Simple calculations consist of gathering the available plants and comparing the number of plants observed. Questions arise from the observation process concerning mathematical aspects of everyday life activities. It focuses on planned and executed activities, indicating technology and mathematics components and involving mathematics in local activities. The mathematical design consists of exploring plant species options comprising fruits and flowers planted in the garden. Tracing local treatment mathematically allows for the local quantitative activity of distance, area, and capacity as part of room design, which can be a design theme of the learning process (Wang, 2021) [3] .

5. Applications of mathematics in various daily life activities

Mathematics is commonly regarded as a complex subject that revolves around numbers, formulas, graphs, and charts and entails the application of different operations and techniques. However, the significance of mathematics in daily life is usually unnoticed. The fact is that mathematics has immense relevance in real life, especially in shaping a person's lifestyle and molding their character. Mathematics plays a pivotal role in diverse facets of life such as banking, finance, shopping, cooking, travel, sports, education, measurements, time, clothes, business, health, and many more. The applications of mathematics in everyday life should not only be studied conventionally but should also be understood as it relentlessly functions and acts in various daily life activities. With the advancement of modern education, mathematics has now emerged as a significant subject and is a part of the essential educational curriculum in schools and colleges. Due to the growth of some professions like research,

intelligence, finance, and equipment development, mathematics has attained prime significance in the field of education (Andersson & Barwell, 2021; Ernest, 2021) [4, 5] . Finance and budgeting are two essential elements of life that require mathematics in daily activities. People usually live on a budget where they make a calculation on the cash in hand and the cash remaining after spending and depositing. The balance of this will reveal the budget of a person. Houses are bought with the help of loans, and the EMI is repaid monthly, depending on the tenure, rate of interest, and principal amount. A simple interest loan is the cheapest one, while compound interest is a more expensive loan on which high interest is paid off. In a similar vein, fixed deposit schemes are opted where every month a fixed amount is deposited to the bank, and at the span of a certain period, maturity is received back with interest. Therefore, finance and budgeting almost always require the calculations of simple interest, compound interest, percentage, division, addition, and so on. Mathematics is also used in cooking and baking in daily life activities. Cooking often requires measuring the weight of the items or counting the number of ingredients, which are mathematical problems. Even the cooking times are based on mathematics and depend on the weight of the component, i.e. if further time is necessary for more weight, the time again needs to be calculated. In baking, the precise amount of flour, cake bread weight in grams, etc. is used based on pan size and ingredient density. Here weight and density play a vital role, which is again a mathematical concept. Apart from this, to bake a cake, the infra-red radiation of the oven here is placed in terms of Fahrenheit and time duration which needs to be explored. Therefore, cooking and baking are also surrounded by mathematics problems. Home DIY projects are another everyday activity that revolves around various types of mathematical concepts. Flat pack furniture is generally bought from IKEA, and the DIY projects often require simple steps where calculating the sizes, areas, and surface areas are to be discovered. Building a birdhouse from wood involves problems of calculating the area and cutting the right dimension. Similarly, growing plants on a vertical garden wall requires calculations on the height and width of the pot, number of plants per square meter, etc. Designing clothes, making photo frames or craft projects involve geometry or symmetry, so that the shapes look pleasing and nice. Painting whiteboard surfaces in rectangles or picking up area carpets always includes calculating the area of the surface to be covered. Therefore, there are lots of day-to-day DIY home projects that come up with mathematical problems that require a systematic approach toward solving.

5.1 Finance & budgeting

Many people believe that mathematics is no longer required after school. However, mathematics plays an important role in various everyday life activities that are taken for granted. Finance and budget is an area of everyday life that frequently uses mathematics without most individuals even realizing it. Whether it is about personal loan, transfer of funds, interest on fixed deposit, or tracking of the monthly expenditure, mathematics is intricately involved in such financial transactions. This article examines the use of mathematics in everyday life focusing on finance and budget (Ferreira & Bisognin, 2020) [6] . Financial transactions involve digits from 0-9. Thus, every financial transaction is a numerical value in the number line. Based on place value system, mathematical operations such as addition, subtraction, multiplication, or division can be applied for any financial transaction. Number sense is an essential skill needed to comprehend and carry out calculations for such financial transactions. Generally, school-going children are expected to learn and develop number sense. To be proficient in number sense, learners should develop an understanding of numerical values and their relationships. For example, grasping the concept of tens and units in a number 81. Each digit in the number has a specific place value. In this case, 8 denotes 80 and 1 denotes 1. Understanding place value can help to do different computations in multiple ways such as expansion, rounding number, or performing operations on numbers. Generally, a homemaker, retired person, or students who are not a professional accountant would deal with household budget and monetary transactions. In such instances, finance and budget is tracked using pencil and paper. Accounting is a systematic formal record-keeping process of financial transactions. Finance and budget based on addition, subtraction, multiplication, or division is simple and straightforward. Still, it can lead to calculation errors affecting daily life. Errors in number-based computation frequently occur due to various reasons such as human error, transposition error, and outside disturbance. It could lead to severe consequences such as imprisonment, being sent behind bars, or bankruptcy.

5.2 Cooking & baking

Mathematics is essential in cooking and baking tasks. Whether for personal enjoyment or as a vocation in restaurants or bakeries, various measurements are required, from dry and wet ingredients to the amounts of flavouring and spices used. Many cooking measurements are based on American and British standards. Common measurements are on spoons and cups, with cup measurements considered large because they can measure liquid ingredients. Spoon

measurements are small and precise. In cooking, several conversions are necessary for different recipes, especially where the conversions involve centimetres and inches for dry ingredients and millilitres, litres, and gallons for liquid measurements. On the other hand, baking requires accurate measurements, so converting recipes is a little tedious, although it is essential to know. Many kitchens scales measure and convert weight measurements and different kinds of liquid measurements. Though considered a strong subject as part of the school curriculum, a little struggle in cooking and baking mathematics is not a shame. Consider knowing only the basics in cooking and baking measurements. Several common cooking and baking measurements.

5.3 Home DIY projects

The importance of mathematics in home DIY (do-ityourself) projects cannot be understated. Drawing on subjects such as geometry, algebra, measurement, and arithmetic, these projects have the potential to bring hours of fun, creativity, satisfaction, pride, and joy. A mathematical understanding of space and shape helps with planning and projects. Measurement is vital for ensuring that parts fit together as designed, such as the size of joints or tiles. Designs rely on ratios, including the ratio of a vehicle to the width of a door and the best ratio for an arch to avoid collapsing. Ellipses are used in churches for sound projection. The visual arts rely on geometry and numeracy, such as artists needing to know how to mix paints or maintain perspective. Even a simple drawing involves calculations of ratio, measurement, angles, and estimation. There are two aspects to home DIY projects. Planning is crucial for everything, including repairing a water leak. Most problems involve producing ideas and repeatedly modelling them mathematically, modifying them until an adequate design is made. It is possible to be able to visualize most designs and projects without drawing them on paper. The double sickness of perfectionism makes some designs too complicated for hope to build. Listening to good advice and modifying some plans is suggested, such as the design is simpler and cheaper than the original. Speculating on feasible shapes of objects is commonplace, including speculation on the shape of planets. One project of interest is involving raising the roof of an old building to create more space.

6. Conclusion

Mathematics occupies a crucial and unique role in the human societies and represents a strategic key in the development of the whole mankind. The ability to compute, related to the power of technology and to the ability of social organization, and the geometrical understanding of space time, that is the physical world and its natural patterns, show the role of Mathematics in the development of a Society. The society consists of its members (human being), who make government and organize the natural resources to develop infrastructure. The human beings are the one who develop the society. With education and employment, the use of mathematics becomes more advanced and sophisticated; nevertheless, individuals remained ignorant of mathematics topics learned in higher education. Almost everybody believes mathematics is difficult, and there are many who go to the extent of saying that they hate this subject. At the same time, it is shown that mathematics in everyday life, although not a topic of general awareness, is quite complex and deals with Euclidean geometry and calculus as well. Attention and future research directions are now focused on filling gaps in the present study and addressing the issues raised from its results.

7. Future research directions

Future research could analyse how daily life activities would be performed in the absence of mathematics or further investigate and summarize these activities by age and/or occupation. The bridge between formal and less formal mathematical practices could be examined as well as its consequences in terms of educational policies. Lastly, methodology addressing and focusing upon mathematics topics learned in higher education could be developed. To sum up, this study reinforces the importance of mathematics in daily life activities and quality of life and provides an impetus for further investigation in this field.

References

1. Ahdhianto E, Marsigit H, Nurfauzi Y. Improving fifthgrade students' mathematical problem-solving and critical thinking skills using problem-based learning. Universal J Educ Res. 2020;8(5):2012-2021.
2. Mainali B. Representation in teaching and learning mathematics. Int J Educ Math Sci Technol. 2021;9(1):1-21.
3. Wang D. Seasonal colour matching method of ornamental plants in urban landscape construction. Open Geosci., 2021.
4. Andersson A, Barwell R. Applying critical mathematics education: An introduction. In: Applying Critical Mathematics Education, 2021.
5. Ernest P. Mathematics, ethics and purism: An application of MacIntyre's virtue theory. Synthese, 2021.
6. Ferreira SM, Bisognin V. Construction of mathematical and financial concepts based on realistic mathematics education. Acta Scientiae, 2020.

7. Mohammad SM. Cloud computing in IT and how it's going to help the United States specifically. Int J Comput Trends Technol. 2019;67(10).
8. National Curriculum Framework, 2005: A paradigm shift - Mathematics. New Delhi: NCERT; ca2005.
9. NCERT. Pedagogy of Mathematics: Textbook for TwoYear B.Ed. Course. New Delhi: NCERT.
10. Hollands R. Development of mathematical skills. Oxford: Blackwell Publishers; c1990.
11. Skemp RR. The psychology of learning mathematics. Hatmondsworth: Penguin Books; c1971.
12. Sonnabend TA. Mathematics for elementary teachers: An interactive approach. Florida: HBJ Publishers; c1993.