



THE IMPACT OF MATHEMATICS ON MODERN TECHNOLOGY

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ABSTRACT

In spite of their practical importance, the connections between technology and mathematics have not received much scholarly attention. This article begins by outlining how the technology-mathematics relationship has developed, from the use of simple aide-mémoires for counting and arithmetic, via the use of mathematics in weaving, building and other trades, and the introduction of calculus to solve technological problems, to the modern use of computers to solve both technological and mathematical problems. Three important philosophical issues emerge from this historical résumé: how mathematical knowledge depends on technology, the definition of the hybrid concept of a (technological) computation, and the (perhaps surprising) usefulness of mathematics in technology.

Introduction. Technology can be used in a variety of ways to improve and enhance the teaching and learning of mathematics. It can be used to facilitate mathematical discovery, understanding, and connections that may be difficult or impossible. The advantages of the technology as teaching aid is the possibility of more realistic modelling in problem solving and interdisciplinary activities, so new and reformulated disciplines in the curriculum of teacher preparing courses come up. In the science of mathematics, analytical methods and numerical computational methods have been developed in parallel throughout the history of its development. The need to perform mathematical immediately and quick calculations, imposed by military technology (ballistics and decoding), the exploration of universe etc., has been a strong incentive for the development industry of the electronics in general and computers in particular. Construction of high-speed computers helps mathematicians to calculate and make the situation more clearly than ever before. The meaning of calculation would not make sense without mathematics, and what led to the creation of the concept of the computer programming were the mathematical analysis methods from mathematicians, philosophers and engineers. Indeed, two mathematicians Von Neumann in the US and Turing in England, are known as the founders of modern computers. For the analysis of computer calculations and attempts that make it as reliable as possible, we need the advanced mathematics, and this need is growing. Until the computer is programmed, it is just a box



made of metal, glass, silicone etc. The program represents algorithms in the appropriate forms for the computer. Mathematics is necessary as a language for detailed description, how should it be done and when should it be done, and verifying that the program and algorithm are working correctly. The role of mathematics, advanced mathematics in particular, is crucial to the development of modern technology. Even non-mathematical knowledge, which enables the development of technology, would not be possible without advanced mathematics. For instance, analytical geometry made possible CAD, advanced program, and these programs have contributed such as the fact that the new engine in the car occupies much less space than the old car models, calculation cutting surfaces etc. Also, computers and networks are based on advanced mathematics for the preservation of records, coding information etc. We all use mathematical perfect results without which on-line banking, WebTV, the Internet, radio etc., would not be possible.

A good teacher, equipped with effective tools and strategies to dominate the technology, can become an excellent teacher. As Shakespeare said (Bernhard, 2000) "there is nothing either good or bad, but thinking makes it so". In the case of the use of modern technology in teaching mathematics, this statement may be paraphrased: "calculators and computers are not working means neither good nor bad-just using them makes them such". While driving the car, the most important is the driver-car is secondary. Also, the use of modern technology in teaching, first-hand role, plays the teacher, technology is second-hand.

The Role of Technology in Mathematical Research. Technology needs and requirements affect the presentation of new problems for researchers in mathematics. Although this effect is much smaller than the impact that technology has on science and other fields, however, it is important. However, mathematics has some internal coherence, which allows it to develop its problems and to solve them without any reference to the outside world. Among other sciences, mathematics is the only one that owns this technique-no need to experiment. Despite the fact that this isolation is possible, it doesn't mean that this happens often, which means that this isolation is not necessary or useful. Although mathematics can handle its problems in a higher degree than other sciences can, there are a large number of mathematical disciplines that have been developed later on, based on their beauty and their interesting character. It is sufficient to mention the example of geometry. It started as a practical tool for surveyors, however, when its importance was discovered, it began to develop as a separate branch. After a multi-year development, other branches have been developed, some of which are formed due to their secret beauty - which later have been applied-the others have been proposed by users. For example, differential geometry has been established from the famous Gauss to meet the needs of topography, while the Riemann geometry, unexpectedly, found application in the theory of relativity. We could mention many other branches of mathematics, such as analysis, partial derivatives equations, Fourier analysis, etc. Certainly there are areas that their application has not yet been recognized or their implementation has started too late. Among the well known in this regard is the number theory, which until recently has been completely not implemented in practice. Algorithm, linear programming, game theory etc., are all disciplines that arose and developed as a necessity of solving many practical problems of practical reality of today. It should be noted that not all that we want to do is valid. Sometimes, understanding of mathematics and the



possibility of its implementation are the key challenges for the advancement of mathematics itself.

Computer Use in Teaching Engineering Mathematics. Using the computer as a tool to support teaching has been used a several years ago even in universities, especially in practical subjects. However, we should pose the question: are computers being used in teaching mathematics? The answer is obvious. In most cases they are used as calculators, since they are used as tools for calculating the numbers, although they are also used to algebraic operations, presenting curves etc. This kind of use complements or simplifies traditional teaching methods, but this does not represent a significant improvement in the teaching of mathematics. This is partly because teachers have been educated in an educational system, which did not have any training that had to do with technology. Thus, teachers do not have sufficient computer culture to prepare lectures to teach students adequately for their professional future. However significant improvement has been achieved: until a few years ago high school students have learned how to use a logarithmic tables. Now this is not necessary and is no longer taught; rather than that they use the computer or calculator. Without a doubt computer usage this calculation is faster, but let us be clear that this does not have improved the way of explaining the concept and use of log. In this way mathematicians have contributed with their work in creating the technological tools that are used by professionals of other professions relevant to their work. In short, the challenge we have to face in the future is overcoming this situation in order to use the computer as a tool for the establishment of mathematical creativity. Since this is not an easy job, it is advisable that at least computer exercises are included in each branch where mathematics is used and, in particular, in engineering faculties. Thus, it will be possible for future professionals to be able to develop programs that will substantially change the way of explaining math. The fact that students can perform these types of exercises with mathematical software's will help them not only in mathematics, but also in other courses. Also, they will be ready to face professional problems that they will face in the future.

Modern technology owes a great deal to mathematics for its evolution, sustaining, and further growth. In simple words, modern technology is the application of mathematics. It is the reason behind the fast-changing technology that humans heavily rely upon. In today's time, we are all connected to human beings, even located far away. The credit goes to maths and calculations in the rise and development of modern tech.

Many sectors have seen a massive change in their applications, which is again credited to mathematics playing an indispensable role.

Mathematics in the banking sector. Mathematics and banking tech are closely connected. As the banking world is a world full of numbers, the slightest miscalculation can lead to huge ramifications.

This modern technology has made it easier for banks to avoid inaccuracies and firmly hold all data together while dealing with multiple customers at an ongoing time. The application of high-level modern tech has made it simple to determine credit scores and calculate interest rates or outstanding.

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realize that algebra and math tools have a great deal of usage and impact on accurate technology that we use. As a student, you might not have a complete understanding of how the applications make a difference. In such cases, seek [college algebra solutions](#) on PlainMath to truly understand what the tutors at university are trying to provide you with maths education. With maths being so important, you need to be on top of your game.

Mathematics in stock exchange technology. Stock exchange or trading exists online. A million users are on the portals each day to stroke their understanding and knowledge on trading to get fruitful results. It is for maths in this modern technology that makes stockbrokers make calculated decisions. Suppose there is an absence of applying maths for this analysis, calculation, and decision making. In that case, the field becomes gambling.

The rise of [modern tech and tools](#) has made stock marketers use their understanding and skills to make the desired profits. The latest tools are all a result of modern technology that has made these calculations and estimates an easier job to do.

Communication technology. Communication technology has instead gained immense popularity among people. If it was not for modern technology, we might not have had the opportunity to connect with individuals based in different geographic locations seamlessly.

The cyber culture is fueled by mathematics. While less has been spoken on this front, there is strong evidence and reasons that match up to the argument. Because of the application of mathematics, modern tech tools were invented, modified, and continues to see various new additions and changes in the way we interact.

Mathematics in modern architecture. We all know that a deep understanding of mathematics helps an architect create the proper dimensions and units before the construction of a building. Modern tech in architecture has also evolved greatly over time, and it does owe it to mathematics.

It is the math calculation that helps judge. It determines the money required, tools needed, and more importantly, the estimates are what help come to the closest practical and doable structure of any building or construction.

Engineering tech involves maths. Mathematics is indeed the [bedrock in engineering](#), whether mechanical or electric part of engineering. It is the right maths calculations that help invent, sustain any discovery. Most of the tech tools that we see today are a result of tech in engineering. The manufacturing sector entirely relies on mathematics and determines the size, flexibility, durability, and productive usability of any device.

Maths in computing. The software packages and many applications are born out of maths language and are crucial for any programming development. Just as [dance for maths students](#) is important, maths is critical for any career path that young adults choose for their future.

The computer and the internet have made this word truly savvy of impacting any physical location. If it were not for the application of maths, there would have been no computing language.

The maths language of 0s and 1s is the primary computer language and basically how it operates.

Conclusion. Mathematics is a vital subject, and its application comes into the picture in almost all life aspects. It is for maths that modern technology has forever been on the rise.



This is a testament that it will continue to grow and see many new developments impact human lives. Modern tech tools result from the growing application of mathematics in the world of computing, coding, and programming.

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