



Stem Ta'limi Va Va Uning Afzalliklari

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Annotatsiya: Ushbu maqolada STEM ta'limi va uning afzalliklari, STEM ta'limining maqsadi, STEM ta'limining o'quvchilarda asosiy ko'nikmalarini shakllantirishdagi ahamiyati haqida fikrlar bayon etilgan.

Kalit so'zlar: STEAM, STEAM yondashuvi, STEAM ta'limi, ilm-fan, texnologiya, muhandislik, san'at va matematika, asosiy ko'nikmalar.

Stem Education And Its Benefits

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Annotation: This article discusses STEM education and its benefits, the purpose of STEM education and the importance of STEM education in building basic skills in students.

Keywords: STEAM, STEAM approach, STEAM education, science, technology, engineering, arts and mathematics, basic skills.

The world around us is changing. Digital technologies have become a major part of our daily lives. The development of technology affects everything, especially the business world. Entire industries are emerging or disappearing, and the workforce is scrambling to keep up with the changes.

In a globalized world where technological advancements are taking place every day, jobs are being automated more than ever before. Demand for highly skilled professionals with strong knowledge and technical skills is increasing in all rapidly developing industries. Thus, there is a need for a STEM education system. In the process of this research, the main content, goals and advantages of STEM education in the educational process were studied. During the study, the necessary guidelines for the use of STEM education at different educational stages were presented.



STEM education is an interdisciplinary approach to learning that integrates rigorous academic concepts with real-world lessons as students connect science, technology, engineering, and mathematics to school, community, work, and the global enterprise that enables STEM development. use in communicative contexts.

Despite the growing focus on STEM education around the world, there is considerable uncertainty about what constitutes STEM education and what it means in terms of curriculum and student outcomes.

STEM (Science, Technology, Engineering & Math) education is a teaching approach that integrates science, technology, engineering and mathematics.

Over the past 25 years, STEM education has evolved from a convenient cluster of four overlapping disciplines (science, technology, engineering, math) to a more holistic knowledge base and set of skills essential for the 21st century. is developing according to It now includes the fields of computer science, "the designed world" and robotics, as each of these fields reflects the integration of the four fields of study, which is to solve problems and create innovative solutions to proposed problems.

These broader categories reveal current and future workforce opportunities. According to the U.S. Department of Commerce, over the past decade, employment in STEM occupations has grown much faster than employment in non-STEM occupations (24.4% vs. 4.0%, respectively), and STEM occupations It is projected to grow by 8.9% from 2014 to 2024., compared to 6.4% growth for non-STEM occupations (Department of Commerce 2017).

Instead of teaching the five subjects as separate and discrete subjects, STEAM integrates them into a holistic learning paradigm based on real-life applications.

Science. Physics, chemistry and biology are the main STEM subjects, which also incorporate technology, engineering and mathematics into scientific research. Science is important not only for the development of technology, but also for everyday life. Today, science is present in all aspects of life. Students increasingly need a good foundation in the basic principles, implications, and applications of science. As Albert Einstein said, "The important thing is to never stop asking questions," and that's our motto.

Technology. Technology is the application of scientific knowledge to real problems in industry or in our daily lives. This is nothing new and has been around since ancient times. Technology solves problems with science, and science makes new discoveries with technology. Technology classes in the STEM-based curriculum now include topics such as computer programming, digital modeling, big data analytics, machine learning, artificial intelligence, and game development. To fully understand the technological aspect of STEM, you also need analytical skills and evaluations to help you draw conclusions from your results.



Engineering. STEM is a multidisciplinary field of study, and engineering is the glue that holds it together. Studying the early practical application of each field is important because it provides practical applications to graduate students. STEM education focuses on an engineering curriculum that covers a wide range of topics, including electrical and electronics, computer science, mechanics, chemistry, civil engineering, information technology, robotics, food technology, and aerospace engineering. Engineers look for problems to solve and then use scientific knowledge and mathematics to design, build, and maintain technology to solve them.

Mathematics. Many fields today, particularly Science, Technology and Engineering, require a deep understanding of mathematics. Mathematics covers all the major mathematical fields such as algebra, trigonometry, calculus, geometry and probability. Mathematics should be considered as a language, especially in the STEM field, because it is necessary to create new technologies. It is a gateway to a career and opens wide opportunities for it. STEM education gives students the opportunity to try more ways to apply mathematics to solve real-world problems in creative and innovative ways.

The STEM curriculum intentionally integrates these disciplines. It is a blended approach that supports hands-on experience and provides an excellent opportunity for students to learn and apply relevant 'real world' knowledge in the classroom.

Math and science are especially important in STEM learning because engineering and technology depend on them.

For example, if an architectural engineering student has to design a ten-story building, they must first understand basic scientific and mathematical concepts in order to successfully implement the project.

STEM careers relate to either science or math, usually both. For this reason, students who do not excel in science or math usually choose an easier curriculum.

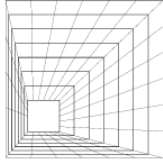
Modern STEM education not only develops skills such as critical thinking, problem solving, higher order thinking, design and reasoning, but also behavioral competencies such as persistence, flexibility, collaboration, organization and responsibility.

Below we describe 6 advantages of STEAM education.

1. Critical thinking. The development of critical thinking skills is the main goal of the STEAM education program. Instead of being spoon-fed (memorizing instead of understanding), your child needs to actively learn and solve problems based on their understanding of the subject. It encourages logical thinking and prepares them well for the workplace.

2. Education of creativity. Creativity is another important component of STEAM education. Just as our world has unlimited resources and unlimited problems, STEAM education encourages your child to solve problems with limited resources, making them think.

3. Strengthen communication. Communication is an important skill in STEAM and in life in general. STEAM education develops your child's communication skills as they have to discuss complex concepts with their peers. STEAM education encourages your child to be an active listener and open to the ideas of others, an important skill that will last them a lifetime.



4. Encourages hands-on learning. Plus, learning STEAM can be a lot of fun! STEAM includes many real-world applications – meaning your child is very good at learning through experiences and projects. This type of learning style (learn by doing) encourages children to actively learn on their own, preparing them to be lifelong curious learners.

5. Be prepared for the future. STEAM-future topic. Children learn STEAM through research and inquiry, a valuable skill in our information age. Your child will be prepared with the skills and scientific thinking for future success.

6. Introduces STEM careers. In addition to its cognitive benefits, STEAM education also introduces children to exciting STEAM careers at an early age. Your child will find a world of growing career opportunities for them in the future. In our world where many STEAM positions are in high demand, this can play a positive role in guiding their future career paths. STEAM education differs from traditional education in its hands-on approach. STEAM education teaches children to apply their knowledge to real-life scenarios and use scientific thinking in their everyday lives. STEAM education can start at a very young age:

In Kindergarten: It's not too early to introduce STEAM to kindergarteners. STEAM at this level should make children interested in the world around them. Kids can directly interact with STEAM through hands-on experiences. Most importantly, the goal is to show kids that STEAM is something they can do with their hands. Therefore, the STEAM they study is tailored to the level. This means that the concepts they learn should not be too difficult, but can still be explained in detail.

In elementary school: At the elementary school level, STEAM education should be basic—not too difficult, but enough to keep students interested. The aim of this stage should be to encourage students to think scientifically and apply what they have learned in everyday life. Students should also be exposed to STEAM fields and jobs and learn how STEAM shapes the world around them.

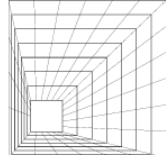
In High School: At the high school level, STEAM education should be more complex and in-depth. Students at this stage engage in more abstract concepts and apply their knowledge at a higher level. The goal of this phase should be to strengthen students' learning and interest in STEAM. Schools must also provide students with solid insight, guidance, and resources to continue their studies and pursue careers in the community.

Teachers often struggle to teach STEAM in their classrooms because:

- They don't have time to teach it
- They are not STEAM experts themselves

As a result, students have less exposure in school, activities and education, and thus are less interested in pursuing STEAM careers.

According to various studies and forecast trends. The demand for occupations related to STEM disciplines is particularly prominent. It will be more in demand than the rest of the professions. This fact is true today. It invites us to develop new ways of teaching and learning. These methods are aimed at improving the scientific and technological profession of young people. Equipping them with the skills and abilities they need to solve real problems and face the



challenges of the future. The ultimate goal of STEM is to prepare new generations to live in an ever-changing environment. The aim is to train them for future professions.

Today, the world faces an unprecedented need for new scientists, engineers and leaders to solve problems. At the current rate, there are not enough students interested in technical careers to meet this need.

STEM is also not a curriculum, but a way of organizing and delivering learning. It's a recipe for helping students apply their knowledge and skills, collaborate with their peers, and understand the relevance of what they're learning. This does not detract from the importance of teaching the main ideas, but instead gives students the ability to know how to apply what they are learning.

Today, STEM is defined in various ways, including computer science and engineering/robotics. Computer science courses solve problems through coding, such as the coding opportunities offered at The Hour of Code (<https://code.org/>), a global movement driven by leaders in computer science education, or Girls Who Code, a national non-profit organization dedicated to closing the gender gap. aimed at doing.

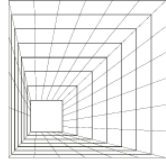
STEM educators often struggle with the notion that the skills and concepts they teach in the classroom are not applicable in real life. But when it comes to STEM subjects, there are a million ways to stimulate the imagination and curiosity of children who use STEM concepts every day. So let your kids discover why STEM skills and concepts are so important to everyone.

STEM toys and STEM kits for kids are definitely a great choice, but did you know that you can teach your kids a variety of important lessons right at home?

Many of us consciously or unconsciously engage in STEM activities in our daily lives and this can be used to effectively teach STEM to young people.

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