



## STEM – A VITAL COMPONENT OF AN EFFECTIVE EDUCATION SYSTEM

**Dr.Sunayana J. Kadle**

*Associate Professor,*

*Gandhi Shikshan Bhavan's*

*Smt. Surajba College of Education Juhu (North) Mumbai – 400 049.*

### Introduction:

The educational model STEM that is focused on enhancing the concepts of “science, technology, engineering and math” was in focus till date. Students in STEM programs may have more experiential learning opportunities, but they are limited to only science, technology, engineering, and math. Integrating the art into STEM allows students to master the skills, which supports their ability to succeed in the future. It also allows students not only to engross with their learning but also supports them in recalling and recollecting the information they learned. The STEAM approach also concentrates on promoting collaborative learning through group activities and projects.

STEAM education is fundamentally an experiential form of learning which is focused towards building skills in children and provide deep concept understanding. STEAM is an amalgamation of Science, Technology, Engineering, Art and Mathematics where two or more or all the subjects taught together which leads to a concept understanding.



In a fast-changing educational world, students are being provided with the knowledge and skills needed to succeed in the coming times. Moreover, they are being equipped with the confidence required to practice those skills. With the contemporary teaching pedagogies, the focus of educators has drifted from providing theoretical knowledge to practical learning and the art of using it energetically. STEAM agenda fosters young



minds to learn scientific/mathematical knowledge along with artistic and life skills. It encourages them to think logically and incorporate various disciplines collectively. STEAM is very useful concept as it involves various skills instead of lopsided knowledge. This helps to shape the wholistic personality of the student and all the areas of the brain are activated. For example, a student may create a good animated video but might lack in the storyline or an engineer may be great in his work but might lack drafting his plan.

### Importance

In order to stimulate their creative minds and kindle their ways to pursue their interests **it** is very crucial to integrate STEAM in students at a young age This discipline focuses on teaching relevant skills required for the individual as well as the professional development of students so that they can contribute to the nation’s success in the future. STEAM encourages an all-inclusive learning environment that encourages children to involve with each other, develop relationships, and strengthen their academic as well as artistic skills. It is important to adopt STEAM to develop the critical thinking skills of students by teaching them to learn, experiment, create, and seek answers to their questions.

### STEAM Education Program

This education program revolves around questioning, open group discussions, and group activities to strengthen communication skills, improve attention span, and foster creativity by making students think about the “WHYs” and “HOWs”.

By using numerous methods at the same time, the students are encouraged to find the answers to their questions and develop better problem-solving skills. The STEAM curriculum consists of lessons and activities that cultivate various skills through hands-on experience rather than just learning from books. A STEAM program integrates the use of fun and engaging resources like the inclusion of technology and other digitalized learning equipment.



A STEAM-centered classroom solves a question by focusing on the main field it belongs to, looking for particular details, and discovering the approaches required to solve it. For example, some questions can merely be solved using math while others may require logic - or sometimes both. Once the problem and the approach required for its solution is identified, the students are required to apply the analysed solutions and present their answer. This helps them find an answer using various skills together.



The STEAM classroom Includes scenario-based learning, encourages interviewing and question asking amongst students, planning of hands-on projects frequently, STEAM worksheets and projects online, Connecting the lessons with real-life issues. It is a holistic approach that pushes the students beyond their comfort zones, makes them curious, and encourages them to come up with creative ideas.

### **6-Step STEAM Education Model**

1. An essential question to answer or problem to solve should be selected by the teacher the question or problem should be related to STEAM content areas that need to be covered
2. Elements that contribute to the problem or question together with students should be examined. Background information should be provided and questions on the existence of the problem need to be discussed.
3. Guidance to the students should be given as they research answers and solutions to the question or problem presented. When uncovering answers and solutions, teacher should observe students as they identify what's working and what's not. Teacher should analyse gaps in students in skill, process, or application.
4. Students should be empowered to apply the skills, processes, and knowledge they gained in step 3 to create their own solution to the question or problem presented. Questions should be asked to the students in areas of the question or problem that requires to be addressed.
5. Students should be given a chance to present their findings after refining their solution. Feedback from teachers, professionals, and peers is important.
6. Reflection time should be given to the students, to reflect on the feedback received, as well as to reflect on their own process and skills. Students can use their reflection to revise and improve the solution they created.

### **Some of the STEAM Activity projects in school:**

- Building a Small House in the school campus
- Building a steam power plant
- Wind Turbine
- Sprinklers
- Solar cookers

### **Role of a STEAM teacher**

- Understand and support Quest's mission and philosophy and to encourage a positive image of the school.
- Contribute to a harmonious school atmosphere by working accommodatingly with all colleagues.
- Respect the confidentiality of private information involving to students, colleagues and the operations of the school.
- Refrain from establishing close relationships with colleagues, students, parents or trustees that would



compromise professional integrity.

- Demonstrate responsibility and promptness.
- Display flexibility in answering to new situations and expectations, a positive attitude and a helpful, non-judgmental outward behaviour
- Show willingness to consider and implement suggestions for improvement.
- Model the good character traits that Quest students are expected to embody.

### Conclusion

If we want to educate our students and make them ready for future career opportunities and global challenges, it is very important to incorporate STEAM education into our curriculum right from the elementary school to build a strong foundation and enrich the educational experience of every child. Every school must opt for STEAM education to teach students meaningful skills and a chance to realize their potential. By nurturing logical reasoning, creative thinking, and problem-solving skills in students, they can become leading professionals in all fields. This collaborative thinking approach prepares STEAM education students for life after study. STEAM education promotes inquiry and process-based learning, rather than simply encouraging students to revise facts for tests and use this as a marker for success. It prepares students for the type of research-based approach that's required for further education, as well as setting them up for the needs of the 21st century workplace.

In the modern job market, possessing a combination of creative and analytical skills is more important than ever, as roles become multifaceted and require an appropriately adaptable skillset. Occupations within the STEAM industries are growing twice as quickly as those outside of it, with employers now looking for a wider range of skills in each candidate. For instance, a graphic designer role may previously have only required proficiency in visual arts and design; now, the same role may encompass coding and development, skills from the STEM area.

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