

What Is STEAM Education?

STEAM stands for Science, Technology, Engineering, Arts and Math. STEAM integrates Science, Technology, Engineering, art and Mathematics into “interdependent” learning units based on real-world applications rather than teaching as separate and discrete subjects.

STEM vs. STEAM

The addition of Arts to STEM to create STEAM is about incorporating creative thinking and applied arts in real situations. The arts are a natural part of STEAM work. Products and structures are built according to creative designs. In addition, art is about discovering and creating ingenious ways of problem solving, integrating principles or presenting information. Scientific developments are explained through well-crafted communications.

Why is STEAM education important?

STEAM are not new, they are simply ways of understanding and applying an integrated form of learning that resembles real life. Instead of teaching math as separate from science, they can be taught together in a way that shows how the knowledge from those two fields compliment and support each other.

STEAM reflects real life. Jobs in the real world are interdisciplinary. children needs to be educated as in how subjects integrate and work together to develop diverse skills sets and a passion for exploration and growth.

Benefits of STEAM learning

STEM embraces the 4 C’s identified as key in 21st Century education: Creativity, Collaboration, Critical Thinking, and Communication.

In addition, students who participate in STEAM learning understand the ways that science, maths, engineering, arts, and technology work together and become increasingly curious about the world around them and feel empowered to change it for the better.



21st Century Competencies



Creative Thinking



Problem Solving



Teamwork



Essential STEAM Skills



What does STEAM learning look like?

STEAM learning is inquiry and focus on real-world problems

The entire idea surrounding STEAM lessons and the STEAM approach is that it's based around questioning. Questions are driven by the learners, and failure is reframed as part of the learning process. Goals, decisions, and solutions are generated by the students within the limitations of their learning context (such as access to materials and tools, or achieving curriculum standards). Children control their own investigations. As long as the inquiry results in a product that provides a solution to a real problem, the inquiry is authentically STEAM.

STEAM challenges require students to make, tinker and build. Bringing in methods from art and design can take STEAM projects to their full creative potential.

STEAM learning approaches

STEAM is an integrated approach to learning which requires an intentional connection between standards, assessments and lesson design/implementation. True STEAM experiences involve two or more standards from Science, Technology, Engineering, Math and the Arts to be taught AND assessed in and through each other.

Below are some of the learning approaches widely used as frameworks for guiding students through STEAM learning:

- *Design thinking*

Design Thinking is a design methodology that provides a solution-based approach to solving problems. It contains several different phases, including empathising, defining, ideating, prototyping, and testing.

- *Engineering design process*

The Engineering Design Process (EDP) is a step-by-step method of solving a problem by creating something tangible with a specific function.

- *Project-based learning*

STEAM learning fits in really nicely with the goals and aims of project-based learning. Perhaps the only difference is that STEAM has an engineering focus.

- *Makerspaces*

A more relaxed and open-ended version of STEAM, Makerspaces are places where students can follow any kind of interest that involves making, creating, tinkering, programming, and designing.



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