ABOUT STEAM EDUCATION

Integrated STEAM education is a philosophy of teaching about science, technology, and mathematics by using engineering-based problems with creative and aesthetically pleasing approaches. It is conceptualized as a comprehensive pedagogy that can be applied as early as preschool. Well-designed STEAM education does not encourage the memorization of facts or the decontextualized learning of concepts because all learning takes place through problem-solving in real contexts.

In most STEAM-focused schools, universities, programs, and classrooms, distinctions between grade levels or academic disciplines are considered to be artificial. STEAM is for all ages, all interest levels, and all educational backgrounds; it can be used in elite private universities and poor, rural public schools. And most importantly, it does not consider science or mathematics instruction in traditional disciplinary models: such boundaries are broken down into pragmatic objectives that serve real-world purposes. Yet, mastering important scientific and mathematical concepts necessitates teachers who know subject matter and “pedagogical content knowledge” extremely well, as the ways in which learners understand such concepts are quite complex.

While “engineering thinking” is the overall objective of STEAM, there are many other skills and knowledge being developed in the process including science, mathematics, technology, critical thinking, creativity, and problem solving. Integrating the arts into this process encourages design-based thinking, inspires aesthetically pleasing outcomes and expands upon and links mathematical and scientific concepts through creative innovation. In STEAM education, nothing is out of context and nothing is done without purpose.

STEAM is both very simple and very challenging. It is simple because when one knows how to do it, it seems so natural. It is challenging because educational institutions are so deeply stuck in disciplinary boundaries that change towards interdisciplinary and meaningful applications that reach even the marginalized student is difficult. Our aim in this conference is to demystify STEAM and provide the resources needed to make it an effective model for Egyptian education. We thank you for attending. Together, we will inspire change in education for Egypt!

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