An average of 8,300 American high school students drop out every single day. Those who do not complete high school are locking themselves into a cycle of low opportunities, low wages, and all too often, crime and imprisonment.

ITEEA, the International Technology and Engineering Educators Association, promotes technological literacy for all by supporting the teaching of technology and engineering and promoting the professionalism of those engaged in these pursuits. ITEEA emphasizes the critical importance of truly integrating the four facets of STEM, thereby bringing STEM to life to engage children in learning.

Often, studying STEM components independently makes real-world connections difficult. How many students have wondered when they might actually use algebra or chemistry? By using technology and engineering in conjunction with math and science, we create opportunities to engage students with topics that have meaning to them and perhaps can even facilitate their ability to solve real-life problems. Projects might include designing a car with the most fuel efficiency or creating a portable shelter for a homeless person. The ultimate goal is for the students to identify and create design challenges from their own lives and then create learning around their ideas!

A student’s exposure to integrative STEM education can have an enormous impact on his or her learning experience, but it can be even more effective if it begins early. Elementary-aged children are especially creative. Integrative STEM education allows them to tap that creativity in a way that has a lasting impact and can forge positive learning experiences that will carry over into the high school years. Middle and high school students can engage through activities such as the “TEAMS” (Tests of Engineering Aptitude, Mathematics, and Science) competition program managed by the Technology Student Association (TSA; www.TSAweb.org). This one-day competition is an opportunity for students to apply their knowledge of STEM in a real-world engineering challenge. The 2014 theme is based on the Academy of Engineering National Challenge “restore and improve urban infrastructure.”

ITEEA’s STEM Center for Teaching and Learning™ has the only K-12 standards-based national model that delivers technological literacy in a STEM context. EngineeringbyDesign™ (EbD) is built on the Common Core State Standards as well as standards for technological literacy, math, and science. Additionally, the program has been mapped to the National Academy of Engineering’s Grand Challenges for Engineering and integrates TSA cocurricular events as well.

Using constructivist’s models, students in the program learn concepts and principles in an authentic, problem/project-based environment. Through an integrative STEM environment, EbD uses all four content areas as well as English-Language Arts to help ALL students understand the complexities of tomorrow.

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