

Making STEM Connections

2017-2018 STEM Scale-Up Program

Overview: The Science Center of Iowa's Making STEM Connections program provides a kit, including tools, teacher resources and lessons to inspire the maker mentality through highly-engaging, interactive and safe experiences. Building upon the natural inclination to tinker, this program empowers participants to explore STEM principles and 21st Century Skills as they design, create and make.

Grade Levels: K-8 (Ages 5-14)

Program Summary

The Making STEM Connections program is designed to empower teachers to cultivate engaging, purposeful and successful extensions of their already developed curriculum. The making philosophy directs students to use their hands in conjunction with their minds to produce meaningful learning outcomes. Educating teachers on the process of making as well as familiarizing them with the tools and materials, to be used will be the cornerstone of the Making STEM Connections professional development. A classroom using the Making STEM Connections kit might have students learning how to fuse plastics to create textiles or assembling an art-bot using a DC motor and batteries. Teachers are provided with a curricular framework to develop STEM principles and enhance those already existing in their classroom using maker materials, both high tech and low tech as well as skills.

This curriculum framework is focused around the idea that making and tinkering are ways to engage student's minds and build conceptual understanding around academic content. Making STEM Connections is structurally supported by cross-curricular experiences and opportunities, including literacy and math, to reinforce the maker foundation of active learning and problem solving. The purpose of making as a learning technique is summed up by Dale Dougherty, Chairman of Maker Education Initiative, "It is the difference between a child who is directed to perform a task and one who is self-directed to figure out what to do."

Program Objectives and Description

- Ignite student interest in STEM by helping them discover science in the world around them through interactive, hands-on activities
- Provide teachers with foundational tools to develop a maker space in their classroom
- Support teachers implementation through professional development, technical manuals, reference materials and curricula

What does the program provide to the educator?

- Educational materials including lesson prompts, teacher resources, as well as books for teacher instruction and inspiration
- Maker toolbox with a variety materials to support a classroom of 30 such as a GoPro Camera, robotics components, MaKey MaKey, circuit materials, DC Motors, hand tools, soldering iron, sewing machine, safety goggles and first aid kit
- Literature for student engagement and understanding
- Professional development led by a master teacher & maker, focused on the making process and research behind its success

What is required by the educator in order to implement this program?

Awardees participate in a full day of professional development. This experience includes an overview of making, strategies for inspiring the maker mentality, training for tool use and safety as well as a walkthrough of each lesson prompt. Awardees will also benefit from four regional webinars offered as continued support and education about making and use of their kits.

Website (with link to Standards Alignment): <http://www.sciowa.org/makingstemconnections>

"Our parents and our grandparents created the world's largest economy and strongest middle class not by buying stuff, but by building stuff -- by making stuff, by tinkering and inventing and building; by making and selling things first in a growing national market and then in an international market -- stuff "Made in America." — President Barack Obama at the first-ever White House Maker Faire, June 18, 2014