

# GREATNESS STEMS FROM IOWANS

GOVERNOR'S STEM ADVISORY COUNCIL

## Making STEM Connections

### 2016-2017 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 "makers mentality" in youth ages 5-14 through highly engaging, interactive and safe experiences. Building upon the natural inclination to tinker, this program empowers participants to explore STEM principles and 21<sup>st</sup> 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 making an art-bot using a DC motor and batteries. Educators receive a curricular framework to develop STEM principles and enhance those already existing in their classroom using maker materials and skills.

This curriculum framework is focused around the idea that making and tinkering are ways to engage student's mind 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 makers 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 educators with foundational tools to develop a Maker's space in their classroom
- Support educators implementation through professional development, technical manuals, reference materials and curricula

#### What does the program provide to the educator?

- Educational materials including lesson prompts, educator resources and books for instruction and inspiration
- Makers 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 and maker, focused on the making process and research behind its success

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

Awardees must participate in a full day of professional development. This experience includes an overview of making, strategies for inspiring the makers mentality, training for tool use and safety and a walkthrough of each lesson prompt.

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

**Program Video (temporary video—official link coming soon):** <https://youtu.be/S8inqhb68gc>