

**STEM Ideas for Science Classes**

**Solar Ovens**

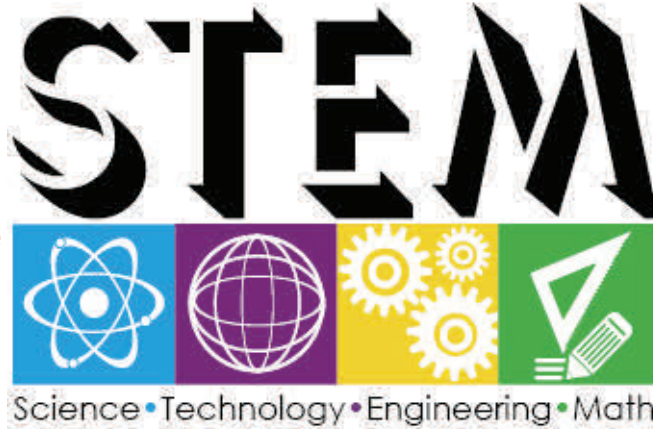
Solar Ovens have been used around the world for centuries to cook food. In this lesson, students build their own Solar Ovens to cook everyone's favorite treat...S'Mores!

Using everyday household items and their knowledge of Conduction, Radiation, and Thermal Equilibrium, students demonstrate how heat transfer occurs.

The solar ovens capture the heat from the sun and melt chocolate and marshmallows to complete this treat.

# Step into STEM

Bringing engineering into the classroom through an integrative, real-world approach to learning science and mathematics.

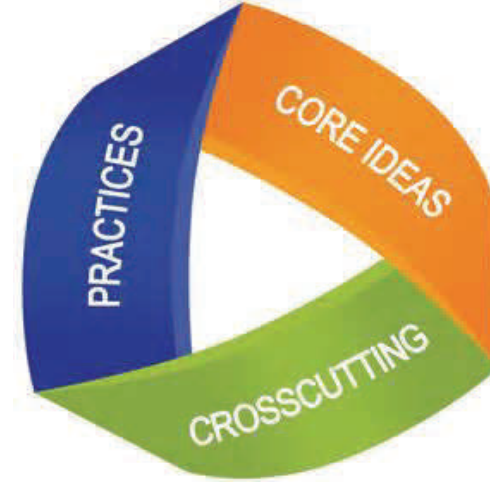
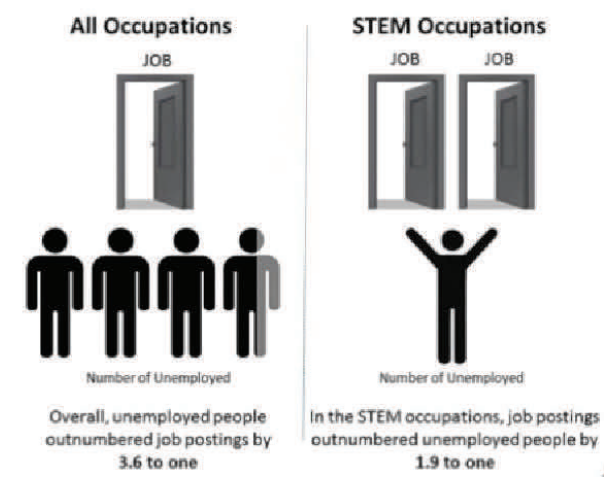
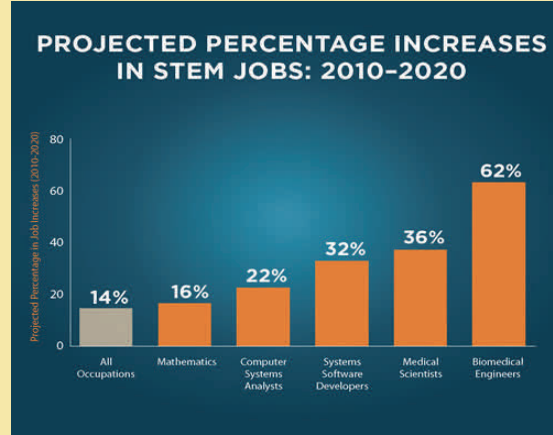


**Science, Technology, Engineering and Math: Education for Global Leadership**

The United States has developed as a global leader due to the hard work of its scientists, engineers, and innovators. In a world that's becoming increasingly complex, where success is driven not only by *what* you know, but by what you *can do* with what you know, it's more important than ever for our youth to be equipped with the knowledge and skills to solve tough problems, gather and evaluate evidence, and make sense of information. These are the types of skills that students learn by studying science, technology, engineering, and math—subjects collectively known as STEM.

STEM prepares to think deeply and to think well so that they have the chance to become the innovators, educators, researchers and leaders who can

solve the most pressing challenges facing our nation and our world today and in the future. See the chart below for projected percentage increase in STEM related jobs. Please visit <http://www.ed.gov/stemfor> for more information.

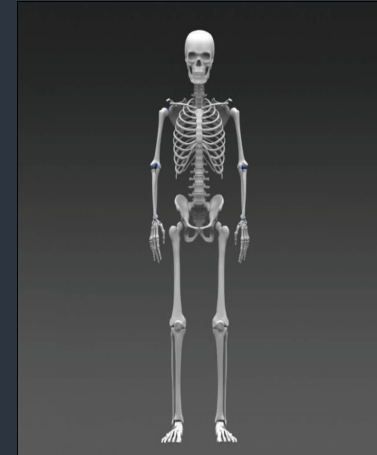


**STEM Ideas for Math Classes**

These Bones! These Bones!

Students collect data by measuring their femur, humerus, and radius bones—as well as their height in centimeters.

By using a formula in a linear equation and by converting centimeters to feet, students determine if each bone is a good predictor of their actual height.



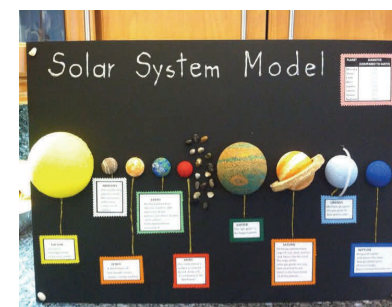
**Middle School STEM Specialists**

Bayshore:  
JoAnn Layton, ext. 2610

Thompson:  
Jeanette VanFechtman, ext. 8776

Thorne:  
Kristen Parry, ext. 7785

**NGSS Implementation: Modeling versus Representation**



As we move toward full implementation of the NGSS, it is important to understand what is meant by the term “modeling” as opposed to simply a “representation”.

An excerpt from the book *Ready, Set Science!* explains and clarifies this difference. Representation is a precursor to full-fledged modeling since even small children realize that they can use one object to stand in for another (i.e., styrofoam ball for the moon). Modeling, however, involves the building and testing of representations that are comparable to the real world system they are showing. In other words, models need to move or show movement. Models can take many forms; computer diagrams, physical models, diagrams that show flow, and mathematical equations). Objects depicted in models allow students to see how the natural world works and they are important in developing both scientific and mathematical theories.

For more information, see <http://www.nap.edu/catalog/11882/ready-set-science-putting-research-to-work-in-k-8>.



**Engineering Resources**

<http://concord.org/>

The Concord Consortium, a free resource for science and math

<http://stemcollaborative.org/additionalResources.html>

STEM lessons, interactive activities and digital media



<http://www.livebinders.com/welcome/home>

More than one million curated educational resources with free downloads

<http://www.stemedcoalition.org/>  
STEM Education Coalition free resources



These challenges, connected to the NJCCCS and NGSS, are available for your classes. Please contact your building's STEM Specialist.

**STEM Club Update**



The STEM clubs at Bayshore, Thompson and Thorne have been busy making progress with their underwater rovers. The students are working collaboratively to construct, test, and modify their designs. Each team is required to keep a detailed journal with photos. Students also need to develop a presentation for the judges regarding real life applications and career opportunities. The competition date is on Saturday, April 16th at Rowan University.