

STEM Ideas for Science Classes

Thermal Insulators

Save your cube! Students in science have been applying their knowledge of material properties to design and build a “cooler” that prevents their ice cube from melting.

This lesson focuses on heat transfer and demonstrates how materials are either conductors or insulators.

Students gather and analyze the melted water temperature over time and how the design of the thermal insulator may have impacted the ice cube.

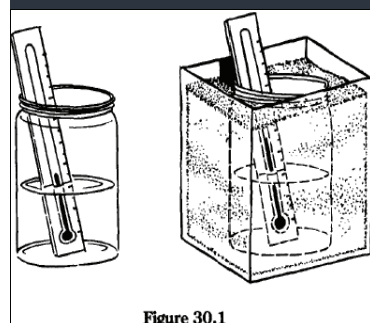
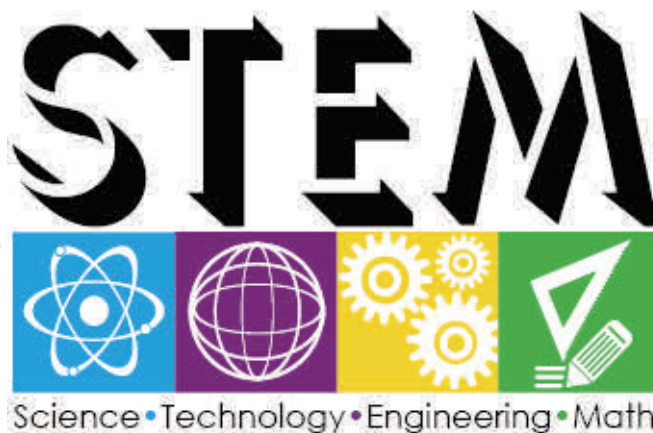


Figure 30.1

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

Step into STEM

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

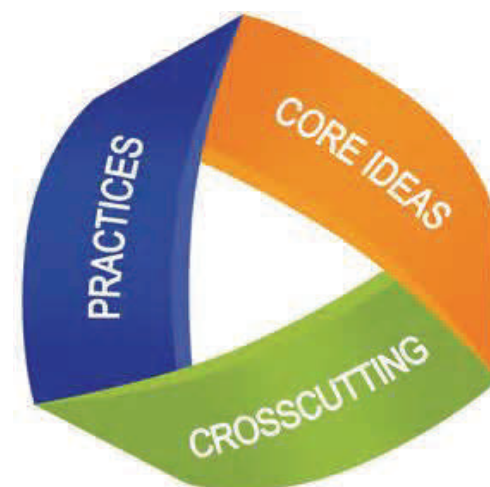
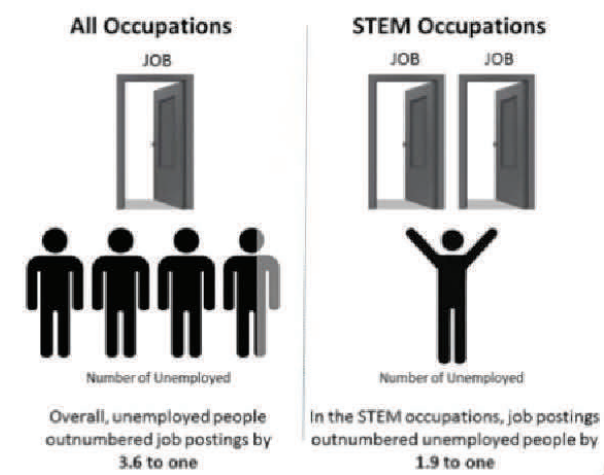
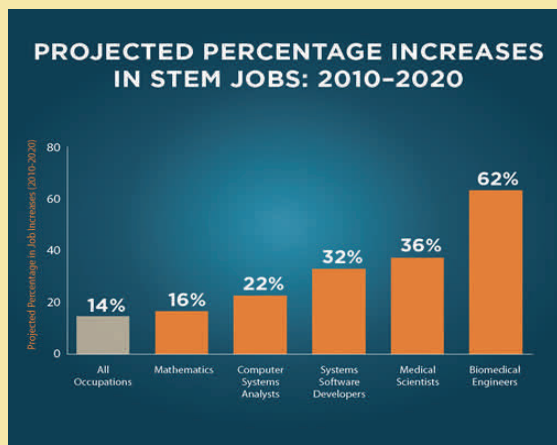


Science, Technology, Engineering and Math: Education for Global Leadership

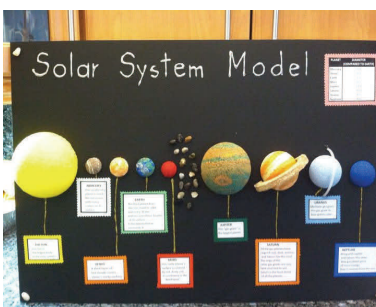
The United States has developed as a global leader due to the hard work of its scientists, engineers, and innovators. In a world that’s becoming increasingly complex, where success is driven not only by *what* you know, but by what you *can do* with what you know, it’s more important than ever for our 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.



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>.

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.

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>

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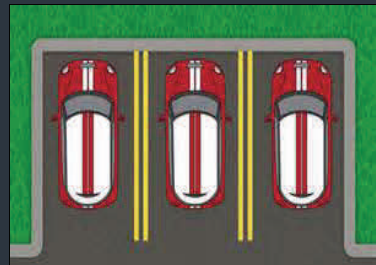
<http://www.stemedcoalition.org/>
STEM Education Coalition free resources

STEM Ideas for Math Classes

DESMOS Central Park

Students are using their knowledge in math to write variables and expressions for determining the width of parking spaces in any parking lot size by using the on-line Central Park DESMOS Activity.

In addition, they are constructing a parking lot out of paper that requires them to apply their own equations.



Central Park

Middle School STEM Specialists

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