

STEM CONNECTION

Building excitement through Science, Technology, Engineering, and Math

TOOLS & TIDBITS

Books

STEM Lesson Essentials, Grades 3-8: Integrating Science, Technology, Engineering, and Mathematics (Jo Anne Vasquez, Michael Comer, 2013) provides guidance on how to become effective STEM educators and why it is important to do so.

Web Resources

New additions to the EED website include science kits in Alaska, a list of science resources, and a variety of science related lessons made for Alaska's teachers.

http://education.alaska.gov/akstandards/science/resources_science_teachers.html

Making Sense of Science

is a monthly blog from WestEd
<http://we-mss.weebly.com/science-corner>

STEM in the News

[Kodiak High works with NASA on temblor project](#)

Worth Quoting:

The art of teaching is the art of assisting discovery.

-Mark Van Doren

STEM: A Definition

"STEM education is an approach to learning that removes the traditional barriers separating the four disciplines and integrates them into real-world, rigorous, relevant learning experiences for students" (Vasquez, Sneider, & Comer, 2013).

When beginning to plan STEM activities, start small. Not all STEM activities need to incorporate all four disciplines at first. However, the concepts and skills that are included must be tightly linked and require students to apply knowledge and skills to help shape their learning experience. STEM is more than a fun science activity, it includes grade appropriate concepts in all subjects that add to the rigor of the activity.

STEM ACTIVITY

Survival on Round Island

By Chip McMillan, UAS

Survival - whether it's a single individual adrift at sea, or an entire planet dealing with climate chaos - depends on some basic things: energy, water, and shelter, for example. The individual components in STEM (Science, technology, engineering, and math) can be taught across grade levels using survival as a theme.

Activity:

In groups of four ask students to diagram and explain how they could survive a shipwreck on Round Island in Bristol Bay, Alaska in July, 1827. They will need to work together, assign roles, choose a leader, gather information, and devise a plan.



Examples of STEM skills drawn on:

Knowledge of the Round Island climate, ecosystem, even geology (**science**) will be essential, along with the requirements to sustain a human life for weeks or months. Significant **engineering** is involved in fashioning the tools (**technology**) to dispatch and skin a walrus, and then use the parts to collect water and build a shelter. **Math** could be needed to calculate how long a lamp burns on 10 grams of walrus oil, how many blades of grass are needed to weave a 2 liter basket, or how many calories there are per puffin egg.

SPOTLIGHT ON SCHOOLS

Flipping Algebra in Action

Increasing rigor in the mathematics classroom is tricky business. Time is needed in the classroom to work on rich tasks that provide significant cognitive demand. A major concern of teachers is the amount of time needed to complete the tasks in class after providing instruction on the concept.

Frankie Shillington at Chugiak High School has found a solution. She flips her classroom. She records her 15 minute lessons using an HD video camera and posts them on www.Sophia.org (a website for Flipped Learning). Students then view the lesson as homework, front loading the content using a note-taking guide before they get to class. Her class time now is spent with student discussions about the concept and rich math tasks. Instruction in Frankie's class is interactive and personalized— guidance instead of lecturing. (MP.1, MP.3)

Check out www.Sophia.org for information and resources about flipping your classroom.

Students Create eBooks for Vocabulary

Students of all ages at Craig City School District use tablets to bring vocabulary words to life. Using the free [Book Creator](#) App students harness their creativity to define math and science words and concepts. Picture, text, video and voice recording features allow students to become authors of personalized and innovative vocabulary eBooks.

Idea Submitted by Cheryl Bobo, Craig City School District



Do you have ideas for articles or resources? Please [let me know](#).

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MATH CORNER

Solve the Shape Mystery

Kids love a good mystery! Here's a game that will sharpen your students geometry skills as they identify and describe shapes.

On a slip of paper write "Shape Wanted," along with a description of a shape that is "wanted for questioning." You might write that the shape looks like (number of edges and corners), what it did, and where it was last seen. *Examples:* "A large shape with four sides and four corners was last seen covering up Sammy's bed." (a blanket) "A 3-D round object is wanted to play an outside game. It was last seen in the hall closet." (a ball)

Give your youngsters the description. Ask them to track down the shape and name it. Then have them make a "Wanted" description for you. (K.G.1, K.G.4)

SCIENCE CORNER

When Will I Ever Use This?

Science & Technology in Action (STA) is an organization that produces lessons inspired by industry. STA partners with companies to provide the real world application that engages the students and allows opportunities to preview different STEM careers. Each lesson provides background information to provide context, a syllabus, learning outcomes and possible quiz questions. Many lessons provide an opportunity to team up with career and technical educators (CTE) to provide additional hand-on opportunities.

<http://www.sciencetechnologyaction.com/>

Great for
Secondary