Stepping into STEM

Unless someone like you cares a whole awful lot. Nothing is going to get better. Its not. -Dr. Seuss (The Lorax)

Fifth graders investigate chemical reactions in Ms. Dreher's class at Jersey Elementary.

Here's the M in STEM!

Here are a few fun titles to read aloud and engage your students in mathematical thinking! They are all available on Amazon, click on the book title to go to the link.
Mummy Math: An Adventure in Geometry by Cindy Neuschwander   Siblings must use their math skills to locate a burial chamber.
Sir Cumference and the Roundabout Battle by Cindy Neuschwander   Rounding techniques are used to save the day!
The Boy Who Loved Math: The Improbable Life of Paul Erdos by Deborah Heiligman   A beautiful introduction to the world of math.
How Many Guinea Pigs Can Fit on a Plane? Answers to Your Most Clever Math Questions by Laura Overdeck   This book proves numbers can be fun and math is power!
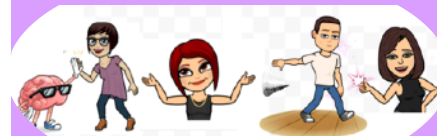
Tech Corner

Student portfolios are a great way to show student growth over time and encourage

reflections. However, it can be a hassle organizing all of that paperwork. Have you considered going digital with student portfolios? Google Sites can let you do just that! Google Sites allows students to store their work as well as reflect on their progress. The site can be shared with parents as well so they can review their student's achievement. As a teacher, Google Sites is a way to create your own website. For info click HERE. If you have any questions just contact me: rblock@llcsd.net.

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#ngsschat

This # is used to share NGSS ideas. There is also a Twitter chat Thursday evenings.

Eliciting Student Ideas

How do we introduce a phenomenon? Where do we go from there?

An important part of an NGSS science lesson is introducing the phenomenon and encouraging student talk around that phenomenon. Eliciting students' ideas (Ambitious Science Teaching, 2014) has three goals. The first goal is to reveal students' theories, prior experiences, and vocabulary associated with the science topic. The second goal is to assess students' current understanding. The third goal is to use this knowledge to plan and adapt upcoming instruction based on student needs. Ambitious Science Teaching has broken this down into three steps: eliciting ideas, eliciting explanations (modeling), and making student ideas public.

Begin the process by introducing the students to an appropriate phenomenon. Introducing the phenomenon is an important first step because it creates an environment where all students have a shared experience and can participate equitably.

Second grade students dig for fossils in Ms. Worcester's class at Jersey Elementary.

Don't ask your students to remember or imagine an experience because that may not engage everyone. Remember, introducing a phenomenon can be done in a variety of ways: videos, demonstrations, read alouds, an image, or a student investigation. Once you have introduced the phenomenon ask the students, "what did you notice?" I encourage students to write their observations in their notebook first, then talk to others at their table and finally share observations as a class. By having students share what they notice, we lower the stress level and engage more learner, there are no wrong responses as long as they are related to the phenomenon. For suggestions on how to facilitate this discussions click HERE.

> **"Your main goal as a science teacher is to change students' thinking over time. So you need to know what your students understand about core science ideas before launching the unit." - Ambitious Science Teaching (2014)**

In the last PD we moved directly from observations to questioning. However, you can include this step which allows you to further assess your students' understanding. This next step elicits students' explanations of the phenomenon through modeling. Pose the question: "how did this happen?" then direct students to work in groups of 2 - 4 to create models of their explanations. For example, what created the Grand Canyon, or what causes the moon to change? Encourage the students to draw the process which means they need to show 3 - 5 different steps then show and explain what is happening in each step. For example 5th grade students would show pancake batter before, during and after cooking. Emphasize this is a hypothesis, students can make changes to their model as they learn. For suggestions on how to support students through this process click HERE.

The last step is helping students make their ideas public within the classroom. Ambitious Science Teaching suggests having students participate in a gallery walk to review the models. After the gallery walk students can discuss similarities and differences in the models. This process is one way to encourage authentic science talks in the classroom. Once this process is complete, you can reflect on what the students shared. This knowledge guides your planning for the rest of the unit. Video 1 offers more information and video 2 is a classroom example.

Engineering Zone

For February we have Dr. Seuss inspired engineering challenges to incorporate with Read Across America. Remember, anytime students are working on an engineering activity, it is important for them to use the engineering design process. Click HERE for a video on the steps. Click on the links below for the engineering projects.

TK/K/1st:Design a fish tank for One Fish, ,Two Fish, Red Fish, Blue Fish HERE
2nd/3rd: Design and build a Truffula tree. The Lorax would be proud! HERE
4th/5th: Design and build a nest that Horton could use from Horton Hatches an Egg. HERE

First grade students in Ms. Dominguez's class build polar bear dens with marshmallows.