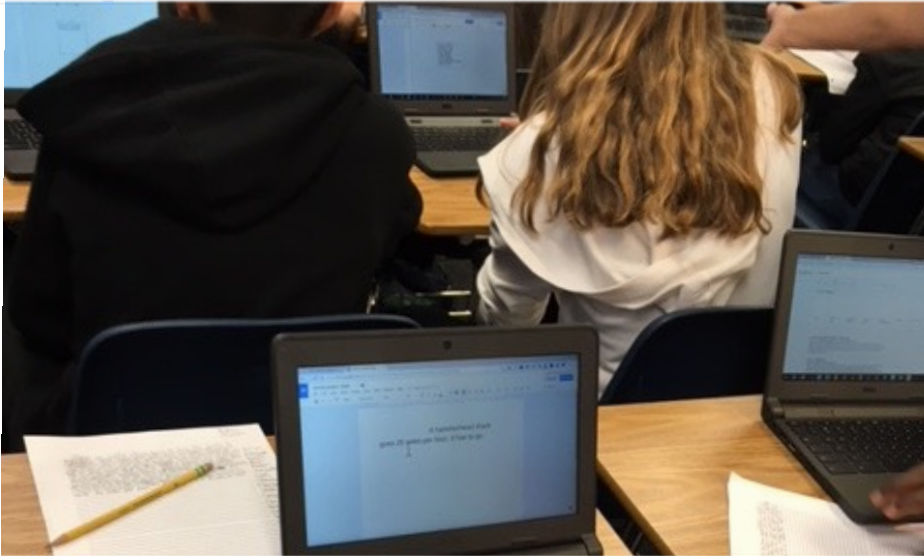


Stepping into STEM

The greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.
- Stephen Hawking



Seventh graders in Ms. Booth's class (Lake Center) work on an interdisciplinary project in math. Students are required to research, write, cite and create their own word problems.

Here's the M in STEM!

Are you searching for strategies on how to promote mathematical argumentation in your classroom? What does this look like? How do you strategically embed argumentation into a lesson? According to Rumsey and Langrall (2016) argumentation and discourse are important components of developing mathematically proficient students. This also meets the requirements of Standards of Mathematical Practice 3, which states students will construct viable arguments and critique the reasoning of others. Rumsey and Langrall identify the following key instructional strategies that effectively promote students' use of argumentation: provide language supports; discuss rich, **familiar** content; specify conditions; introduce false claims; and manipulate familiar content. For resources on how to introduce these instructional strategies go [HERE](#). For the full article on mathematical argumentation strategies go [HERE](#).

MATH ON TWITTER

Five Triangles

@Five_Triangles

Challenges, puzzles, problems and fun math facts!

TECH ON TWITTER

Kasey Bell

@ShakeUpLearning

Google Innovator, focus on G suite for education.

SCIENCE ON TWITTER

#ngsschat

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

Tech Corner

Student portfolios are a great way to show student growth over time and encourage reflection. However, it can be a hassle organizing and keeping track of all that paperwork. Have you considered going digital with student portfolios? Google sites can let you do just that!



Google Sites provides an opportunity for students to store their work as well as reflect on their learning. This student created site can be shared with parents as well so they can review their child's progress. As a teacher, Google Sites is a way for you to create your own website. For more info click [HERE](#). If you have any questions just contact me: rblock@lcsd.net.

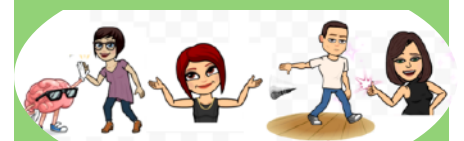
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Using Claim, Evidence, Reasoning Framework to Support Argumentation

Part 2- Claim and Evidence

This second installment focuses on how to help students develop a strong claim and use high quality evidence to support that claim. The CER framework supports students' learning and writing through forming statements (claims) based on their observations (evidence) and then discussing these results with respect to the underlying scientific principles (reasoning) leading to a deeper understanding of the content. The claim is a complete statement that answers a question or problem. Therefore, when asking students to construct an argument or explanation using the CER framework, begin with a focus question. This question can relate to a hands-on investigation, a reading piece, or an overarching unit topic.

“When scientists explain phenomena and construct new claims, they provide evidence and reason to justify them or to convince other scientists of the validity of the claims. To be scientifically literate citizens, students need to engage in similar inquiry.” (McNeill and Krajcik)

Evidence is information about the natural world used to support a claim. It includes observations, data, or measurements and can come from hands-on investigations, texts or online simulations. This can be a challenging component for our students. They struggle to find appropriate and sufficient evidence (especially from a text) because they have a hard time evaluating the quality of the evidence. Another challenge students face is determining the quantity of evidence required. Finally, students often believe sharing a single personal story qualifies as sufficient evidence to defend their claim.

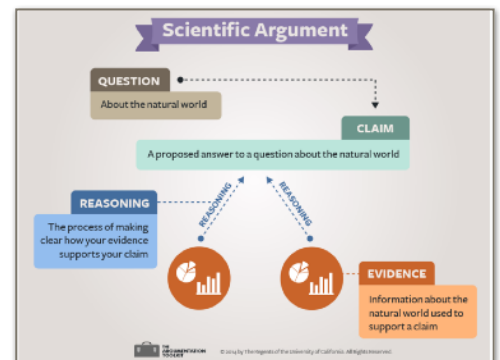
We can help our students improve! First, inform the students, quality of evidence depends on a variety of factors such as reproducibility and the reliability of the source. Reproducibility can be emphasized when students complete investigations. Instruct students to repeat an investigation multiple (3 - 5)

times to ensure their data is reliable and not a fluke. When reading different texts continue to point out the source and discuss as a class the reliability of that source. Emphasize that quality of the evidence is often more important than the quantity of evidence. It is valuable to give the students a chance to practice evaluating and identifying high quality evidence. Go to this [LINK](#) for a complete lesson plan on identifying and evaluating evidence. This lesson is about an unexpected object on Mars but the goal of the lesson is to evaluate and discuss evidence. [HERE](#) is another lesson based on fossils. The students are asked to match evidence to an appropriate claim then discuss which claim has the best support in regards to evidence.

Additionally, don't discourage students from using personal anecdotes (these can be important observations) however encourage them to use additional

evidence to support their claim. While it is valuable to practice these skills, ultimately, we want students to apply them as they collect and evaluate their own evidence. Students should gather evidence from a variety of sources: hands-on investigations, articles, and simulations. Throughout the year incorporate some time for students to consider and discuss the quality of the evidence they have collected. This is a great way to also incorporate more science talks! Let me know if there is anyway I can help you integrate argumentation, explanation, and the CER framework. edunroe@llcsd.net

This information was gathered from the Argumentation Toolkit. It is a site dedicated to scientific argumentation, link [HERE](#).



CER resources:

CER [anchor chart in color](#) or [black and white](#)

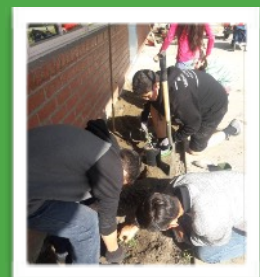
CER example [rubric 1 and 2](#)

CER [graphic organizer](#)

ENGINEERING ZONE

March's engineering activity focuses on renewable energy. This challenge can be used in an intervention class, in the 6th grade energy unit, or as part of Earth Day. Click [HERE](#) for a video on the engineering steps. Click on the link below for the engineering challenge. This is just an option, feel free to make changes to suit the needs of you and your students.

[Windmill Engineering Challenge](#)



Lake Center's Science Club students led by Ms. Motamed design and create their own butterfly garden.