

SOTSD

Recent Accomplishments
Next Steps

5/9/2019

Three Levels
(Elem, MS, AHS)
Similar Goals

Build Habits of a Scientific Thinker
Scientific Practices

1. Asking questions (for science) and defining problems (for engineering).
2. Developing and using models.
3. Planning and carrying out investigations.
4. Analyzing and interpreting data.
5. Using mathematics and computational thinking.
6. Constructing explanations (for science) and designing solutions (for engineering).
7. Engaging in argument from evidence.
8. Obtaining, evaluating, and communicating information.

Elementary School

Common Assessments under development

EARTH AND SUN

A group of students were arguing about what holds Earth in orbit around the Sun. What is the best explanation that could be supported by evidence?

(Mark the one best answer.)

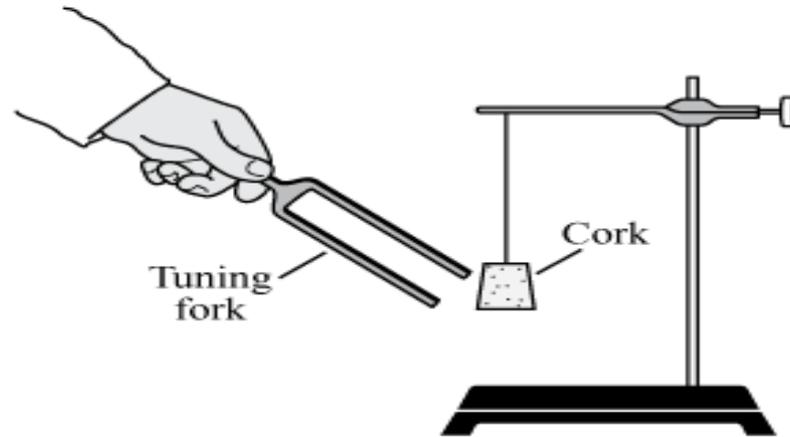
- A** The magnetic attraction between Earth and the Sun keeps them both moving and at the same distance apart.
- B** The gravitational pull of Earth on the Moon keeps Earth in orbit around the Sun.
- C** The Sun's gravity is pulling on Earth, but the Moon's gravity is also pulling on Earth, so it stays in orbit.
- D** A balance of Earth's motion forward and the force of gravity between Earth and the Sun keeps Earth in orbit.

Grade 5 MCAS question addressing the practice – “Engaging in Argument from Evidence”

- Student A learned about the motions and brightness of the Sun, Moon, and Stars. Student B said, “They are different brightnesses because they each give off different amounts of light.”
- Write an argument that student A can make to either support or challenge student B

MCAS question Practice – “Forming conclusions”

In a science investigation, a student holds a vibrating tuning fork near a piece of cork, as shown below.



The student observes that the cork moves. Which of the following conclusions can be made from this investigation?

- A. Sound is a form of energy.
- B. Sound does not travel in air.
- C. Sound cannot travel through the cork.
- D. Sound is transformed into magnetic energy.

This Year

- Meetings with FOSS specialists to introduce and interpret the Scientific Practices several times.
- Meeting with FOSS specialists to plan and draft several versions of Common Assessments.

NEXT STEPS

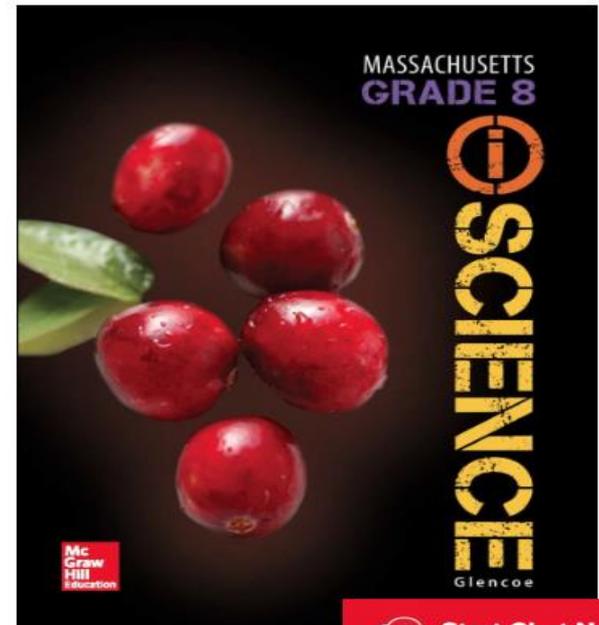
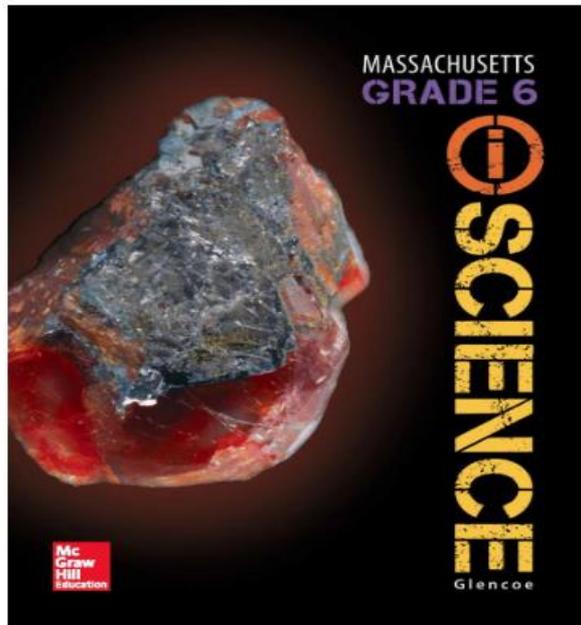
- Illustrate Content Crosswalk
- Discuss progression of the practices
- Roll out a finished version of Common Assessments
- Relate Common assessment to Progress report
- Advocate for increased time in the Elementary day for Science activities/instruction.

Time assumed by DESE for Elementary Science Instruction in order to cover the 2016 STE standards

- Grades K-2 2 hours / week
- Grades 3-5 3 hours/week

OMS/Gibbs – This Year

- Continued implementation of iScience grades 6,7,8



- Completed Gr 6 and 7 resource purchases
- Arranged for Gr 8 resource purchases

Argumentation Based on Evidence

meter inside a mitten.

Sarah's group obtained two thermometers and a mitten.

They put one thermometer inside the mitten and the other thermometer on the table next to the mitten. An hour later they compared the readings on the two thermometers. The temperature inside the room remained the same during their experiment.



What do you think Sarah's group will discover from their investigation? Circle the response that best matches your thinking.

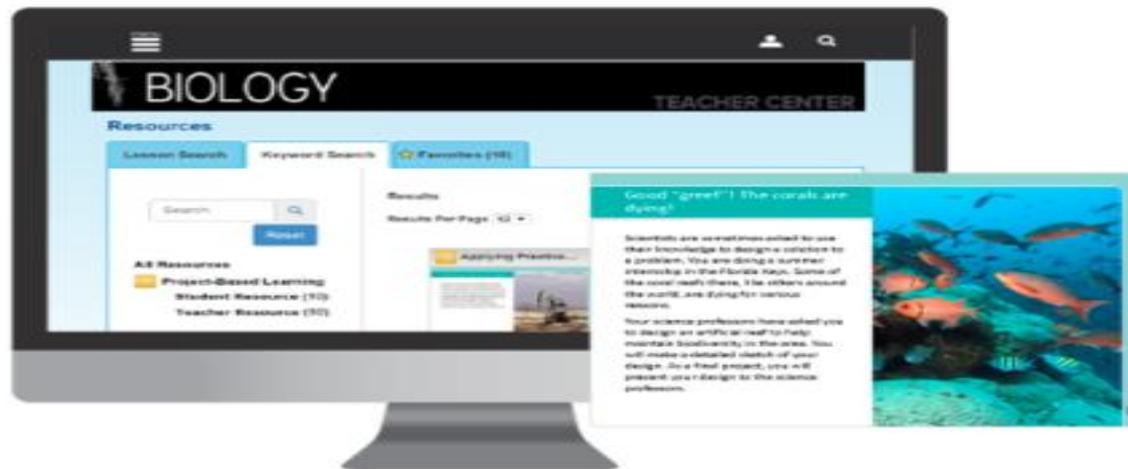
A The thermometer inside the mitten will have a lower temperature reading than the thermometer on the table.

B The thermometer inside the mitten will have a higher temperature reading than

NEXT STEPS

- Support piloting by Gr 8 staff
- Support PBL in the classroom

Project-Based Learning Activities



With over 200 engaging project-based learning activities (PBLs),

AHS – This Year

- Continue discussions and planning for a new AHS
- Shoehorn classes into lab classrooms that are too few, too old and too inadequate
- Improve courses through data analysis

Next Steps

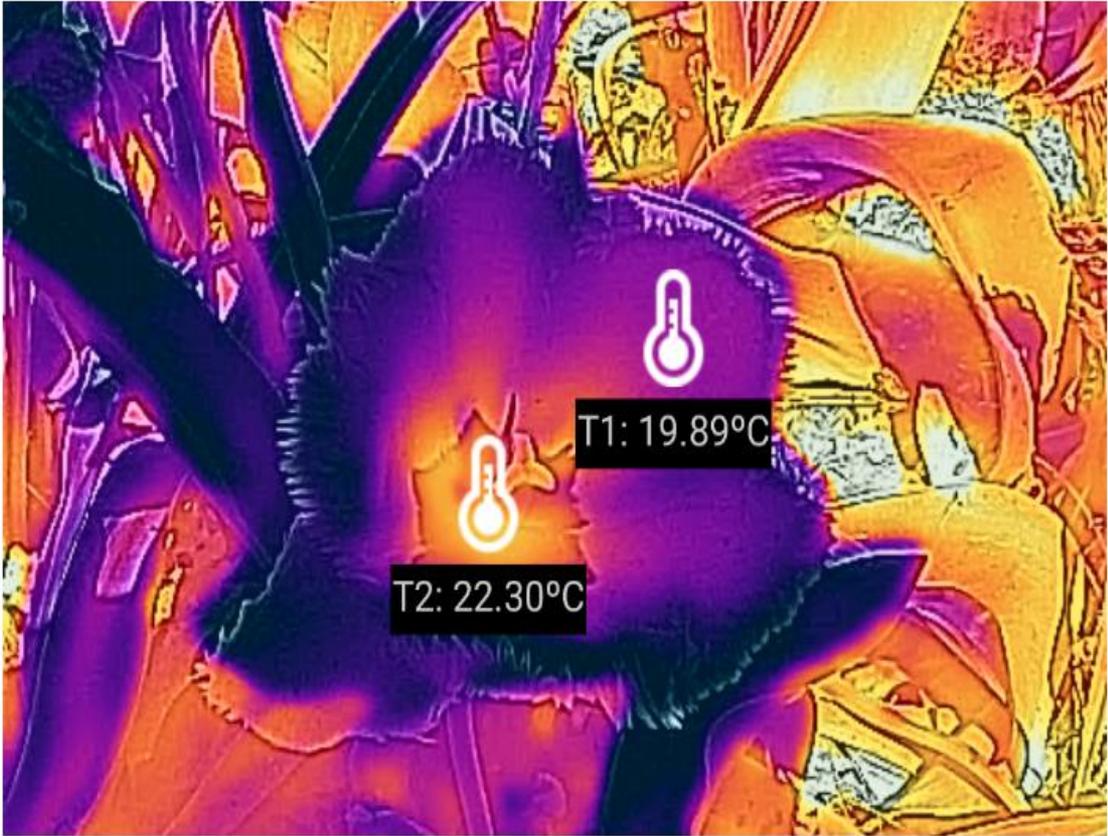
- Continue planning for a building move
- Continue taking over the school
- Build PBL capacity by leveraging projects with groups that support PBL

Existing: Concord Consortium, Harvard Smithsonian CFA, MIT, Office of Naval Research

Upcoming: Harvard CFA, Concord Consortium, ONR, MyRWA

Upcoming topics:

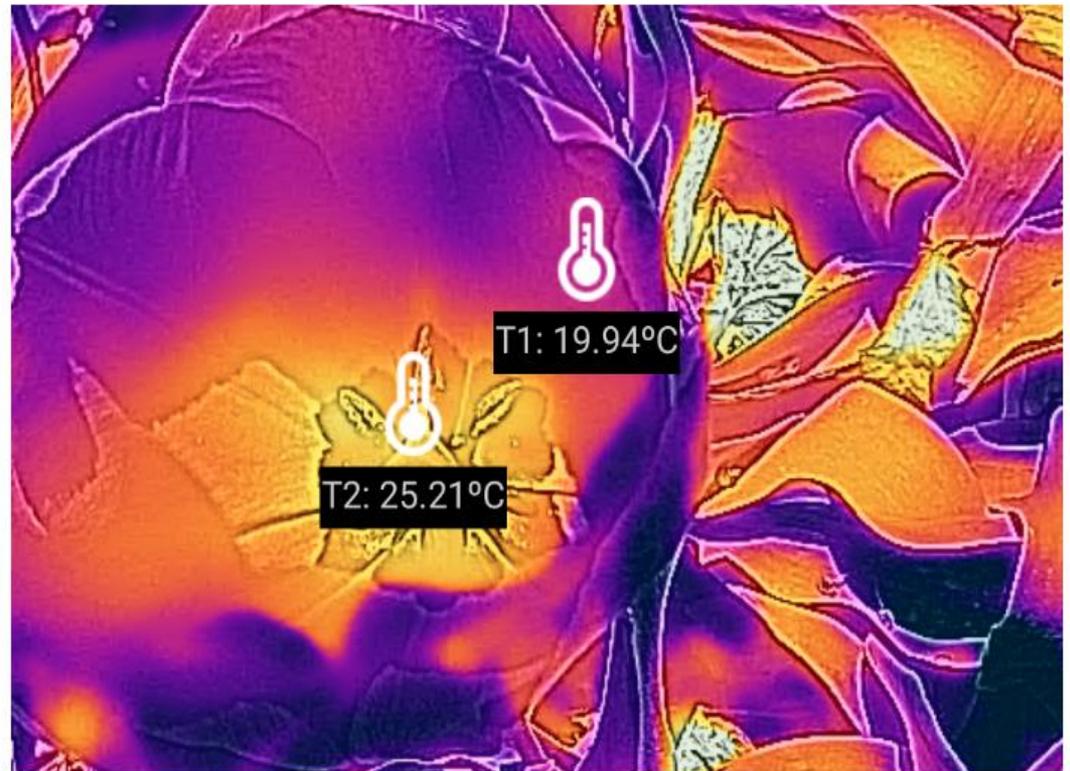
- Big data analysis using Mars Curiosity data (proposed)
- SmartIR
- Jason Project (proposed)
- Turning Narrative into Numbers (proposed)
- MyRWA - local watershed analysis
- Etc.



A tulip flower seen in infrared light around 2 pm.



A tulip flower seen in visible light around 2 nm.



A tulip flower seen in infrared light around 2 pm.

