Tap Water's Journey

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Subject/Grade: 7th Grade Science

1-2 Sentence Lesson Summary

Students will overlay a map of the Contra Costa Water District (CCWD) with a three dimensional model representing the movement of water throughout CCWD's infrastructure. Each major element of the model will be labeled with a description and environmental concerns it faces.

Driving Question that Students Will Explore

What does it take to get water to my house?

Water Industry Connection (e.g., an industry-related career, skill, or challenge; addresses reducing water pollutants, conserving water resources, and/or inspiring watershed stewardship)

This connects to the water industry by identifying major components of the system that students have a direct impact on due to proximity. It will also address how they can contribute to the process through practicing and educating others about environmentally sound practices surrounding their local infrastructure.

Learning Goals: Make sure to address how your lesson will:

- Involve your students in a Community Environmental Action
- Develop Critical Thinking Skills (e.g. CERs, Student Inquiry)

Students will be able to… identify the major infrastructural components of their local water district and environmental challenges each component faces.

Instructional Outline: This should be the bulk of your writing. Bullets of what the students will do throughout the lesson to reach the learning goals you have set.

Hook/Intro…Students will be asked to imagine they just came in from playing a sport or physical activity they enjoy. It's a hot day and they are very thirsty and in need of a shower. They open the tap and nothing comes out. Where did the water go? Come to think of it, where has it been coming from this whole time? What might have gone wrong?

Students can hypothesize different causes for the lack of water in a class discussion or in a pair share.

During…Part 1: Introduction to Water Infrastructure 20 min.

Students will receive a map of the CCWD with several key components highlighted and labeled. Highlighted components include local reservoirs, pumps, aqueducts, waterways, and

treatment plants. In a small group, students will research several key points of information about each on an accompanying worksheet.

These points include:

-A brief description of the component and Its function as a part of the CCWD infrastructure
-What problem it was engineered to overcome
-Careers associated with it
-Environmental concerns surrounding its maintenance

Part 2: Modeling the CCWD infrastructure 70 min

Using the lab materials provided, or any approved materials brought from home, students will construct a three dimensional model of the major components of the CCWD infrastructure. The model must include all of the major components included on their worksheet as well as label them.

Part 3: Presentation (Choice) (110 min.)

Students will present their model to the class with one of several options. This presentation will include a description of each component and all the information obtained via their research about it. They can present in person with an accompanying slide show or infographic. They can also choose to create a flipgrid video with each group member taking responsibility for one of the components modeled or a screencastify slide show.

Reflection…Students will be presented with the original scenario again and asked this time to imagine what could be responsible for the lack of water using their knowledge of the infrastructure. Students can share aloud during class discussion or in small groups.

Next steps…This lesson is meant to be the first step in a unit. During the remainder of the unit, students will take on the roles of water district employees to tackle several of the standards in MS. Matter and Energy in Organisms and Ecosystems. The unit will close with students creating a PSA about water stewardship in the California Delta.

Standards: Common Core, NGSS, CTE, GoalBook or another state or national list.
Assessment: How will you check your students' understanding? Check out these creative assessments if helpful.

MS. Matter and Energy in Organisms and Ecosystems

NGSS MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

LS2-A Interdependent Relationships in Ecosystem

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.

- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.
- Growth of organisms and population increases are limited by access to resources.

Materials/Resources

Laptops
Pencils
Paper for taking notes
CCWD Map
CCWD Infrastructure Worksheet

Crafting Materials for Modeling:
String
Straws
Construction paper
Scissors
Glue
Sand
Cardboard
Markers