

Room 17's H2O challenge

[Visit Our H2O Challenge Website!](#)



The project that our class is working on is called the Cal Water H2O Challenge and 65 other classes around California are participating. Every class that is competing wants to win. The goal of the project is to come up with an idea that conserves water. The reason that Cal Water wanted to have classes work on a project that conserves water is because California is in a severe drought that is causing people to not use so much water. The class with the best project wins a 3 day trip to the Channel Islands that are in Santa Cruz! Our class's goal is to help California by conserving water for our school. Then we will spread the idea to other schools and then those schools will spread it to the other schools. We have five different teams made up of our class working on the project. Those teams are the Financiers, Researchers, Engineers, Designers, and Execution Specialists. Our class is Room 17 at Shasta Elementary in Chico CA. We have 32 kids in our class and we are definitely excited for this project!

Did you know that water CANNOT be recreated by man? The water cycle is the process of how water moves throughout our world. When you become familiar with the water cycle, you will see how water actually moves through the Earth's atmosphere, the Earth's surface, and even underground! Water takes on various forms while it travels through the cycle. Do you know what the different forms are? You've got it! What takes the forms of SOLIDS, LIQUIDS, AND GASES through the cycle. Water is constantly on the move. Today you will learn about the different stages of the water cycle that include evaporation, condensation, precipitation, transportation, runoff, and collection. The temperature of the sun actually determines what happens during the water cycle. When water transforms between the different states, two things occur. Energy is either taken in taken in or absorbed OR energy is given off.

The main idea of this is how water moves throughout the water cycle takes on various forms throughout for example, Solid and gases. The water cycle also has to go through evaporation, condensation, precipitation, transportation, and collection.

- Materials:**
- *2 liter soda bottle
 - *Large ziplock bag
 - *Ice
 - *hot water
 - *Timer
 - *Flashlight
- Procedure:**
- 1.) Cut the top off of a 2 liter soda bottle
 - 2.) Fill the bottle 1/3 of the way with hot water
 - 3.) Fill a large zip lock bag with ice
 - 4.) Start the stop watch and cover the bottle with the bag of ice
 - 5.) Record your observations on the chart below
- Use the flashlight to better observe the inside of the bottle. Make sure to focus on the bottle and bag.

Time	Observations:
5 sec.	<ul style="list-style-type: none"> • Fog on Sides within 2 seconds • Water drops on sides half a centimeter long • heat starting to rise so ice is melting
1 min.	<ul style="list-style-type: none"> • the heat is melting ice so ice is getting heavier • Sides of bottle stay as before • millions of tiny water droplets are starting to form

Paraphrasing Notes

Make a list of important information below that you think is important to remember

The main idea of this passage is that 70% of the Earth's surface is covered in water. Water can be stored in underground reservoirs named aquifers for thousands of years. 2.5% of the Earth's water is fresh water and 68% of that

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Paraphrasing Notes

Make a list of important information below that you think is important to remember

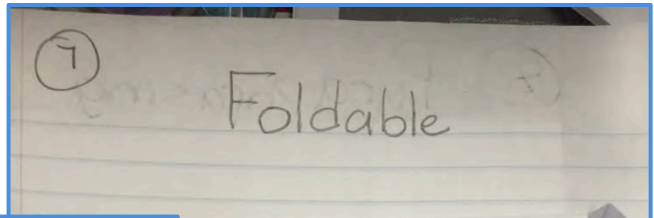
70% of earth's is covered in water. 2.5% of water is fresh water and 68% is frozen. Water can be under ground for thousands of years before going any where. Water can be stored in underground reservoirs named aquifers that are made from a variety of minerals and rocks.

First We Learned About Water

Standards:
 NGSS 5-ESS2.C
 CCSS ELA RI.5.4

CCSS ELA RI.5.1
 CCSS ELA W.5.8

CCSS ELA RI.5.2



Evaporation Observation Lab

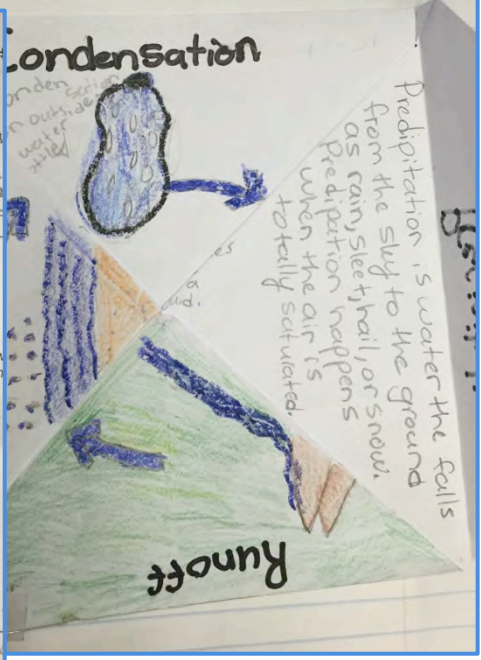
Question: Which location will cause water to evaporate the most?

Materials: plastic cups, Ruler, sharpie, Thermometer, Stirrer

Procedure: Cut cup 2/3 of the way full. Measure water level in cups. Use sharpie to trace water level on the outside of the cup. One cup outside in the sun, one outside in the shade, one inside in the dark.

	Day 1		Day 2	
	Water Level	Temperature	Water Level	Temperature
Outside Sunlight	2 in	63°F	1 1/2 in	63°F
Inside with Sunlight	2 in	61°F	2 in	65°F
Outside Shade	2 in	61°F	2 in	60°F
Darkness	2 in	61°F	2 in	61°F

Investigation Question Answered:



Before we began our H2O challenge our class learned about water in a variety of ways. We completed a close reading/paraphrasing and annotation activity about the water cycle that was informative and tied in great with our Language Arts curriculum. We completed a foldable and did several interactive labs that allowed students to see the water cycle in action! We also engaged in a station activity that used several sources to help our students learn about where our Earth's water is and helped them begin to see water as a valuable resource. We culminated this mini unit with a lesson on the drought. Videos and pictures really helped our students understand the severity of the water issue. This led us right into our challenge!

Then We Brainstormed Ways to Conserve

Conservation Ideas

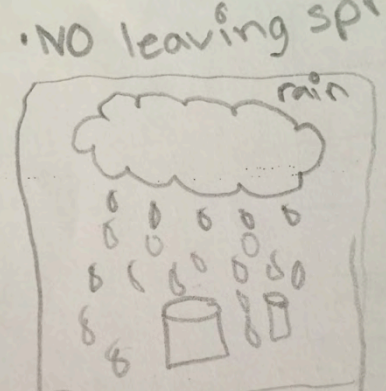
1. Not leave the drinking fountain running
2. Water plants with the water that is leftover from anything
3. Don't goof around with water
4. Catch as much water from the rain as you can
5. Do Not pour water down the drain water plants or drink it
6. Don't use so much water for dishes
7. Don't use so much water to wash your hands
8. Don't have pools
9. Don't water your yard
10. Don't waste water by throw

Natalie

We could build a machine that catches rain. I have the machine pictured in my head. All we need is a milk jug, cone with a hole in the top, and a plastic tube. We take shorter showers, not leaves running, only drink water when we and not splash water everywhere, that we fix leaky faucets, use rain don't flush the toilet everytime, do plants, and don't leave the hose run

Once the machine catches the rain, we can use it to do the same with normal water. The picture the machine will look like

- ### Ways to Conserve Water
1. We can take quick showers.
 2. We can remember to not leave the sink running.
 3. If we have extra water in a water bottle, pour it into plants.
 4. When it rains we can save it.
 5. Only wash your hands for 30 seconds.
 6. Check if you have leaking faucets.
 7. Use hand sanitizer.
 8. Don't have pools, you don't need them.
 9. Use Plants that need less water (cactus).
 10. Use rain to wash your car.
 11. Use less products with water (toys).
 12. Make use of lakes, ponds, creeks.

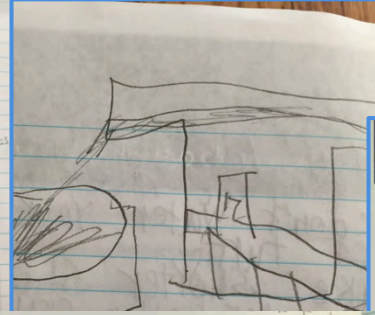
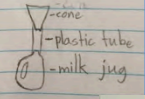


Olivia

Olivia

Sophia

- Not leave the water on.
- Don't have the rain.
- Don't have pools.
- Don't throw away full or half water bottles.
- Do not keep water running.
- Don't water lawn so much.
- Don't waste water in school labs.
- Wash hands fast or use hand sanitizer.
- Close water fountains when color.
- No water fights.
- Go swimming hot in pool in la.



Student Page Brainstorming your Cal Water H₂O Challenge

What water topics would you like to investigate? In a brainstorm list all your ideas. Remember, in brainstorming, all ideas are IMPORTANT. Think of as many as you can. STAR your top 2 ideas to share with the class!

Step 1	Step 2
<ul style="list-style-type: none"> wait until rain fills the bucket make sure the bucket does not leak 	<ul style="list-style-type: none"> use the water to water plant clean or even drink if you filter it

Use rain to wash your car save the Rain! ← Use rainwater for your pool

Drink

Water our Plants

Use buckets

Don't flush everytime check leaks faucets - collect - Don't over

Plants that need less water

Don't have pools - like succulents

wash hands quick (Use hand sanitizer)

Don't waste water in school labs



Don't over water plants

Put a hole in your gutter collect the water and give it to your garden

Put a hole in the gutter collect it with the bucket

Store the water when the plants are dry water it with the stored rain water

Heres What Our Class Decided To Do For Our H2O Challenge:



Next we applied for jobs and established our teams

Written By Peyton (student)



Financiers

An important team we have is the Financiers. The financiers are lead by RJ, and are Marina, Lucy, and David. The Financiers are in charge of looking up prices of materials we need. Without the Financiers we couldn't keep track of the money we spend and it would slow us down a lot. The Financiers are important to our project because without them we couldn't function.

Execution Specialists

The Execution Specialists are the doers of our five teams. Their leader is Parker and the group includes David, Zachary, John, Josue, Angel, Brooke, VJ, Tyler, and Tanner. They are the biggest group we have out of the five groups. The Specialists are out in our garden planting and weeding. Weeding is the first thing that they have to get done. The second thing that they get to do is they get to plant all of the plants that we buy. Once the plants are planted they are the ones that have to take care of them with a little bit of help from the other teams. They have to be able to not care if they get dirty, work hard, and work together as a team. The Execution Specialists are essential to our project because they go out and do what needs to be done.



Designers

One of our five teams is the Designers team. The Designers for Room 17, lead by Peyton, are Jatery, Sophia, Natalie, Emma, Ellie, and Grady. The Designer's job is to make a Powerpoint to submit to Cal Water, and make a website for our class, which is this awesome website! The Powerpoint we submit must be really good because that's what Cal Water sees. This makes the Designer's job crucial to our project.



Engineers

The Engineers are a key group in our project. They are led by Landon and include Spencer, Trent, Lexi, Taylor, and Megan. The Engineers are the people that design how our idea works and they bring it to life. They make smaller scale models, sketches, and take measurements. They work together with the Researchers and Financiers to determine the best materials for our project. Without the Engineers our idea wouldn't even be able to get off the ground.



Researchers

One of the five groups that are working on the Challenge is the Research group. They are co-lead by Anna and Alexa, and the rest are Kadence, Lauren, and Aliyah. Their job is to research materials and plants for other groups. We are planting a drought resistant garden, so researchers look up prices and types of plants for the garden. If we need scientific background on something the researchers find background on the material and tell us what it is. The researchers are important to our project because without them we wouldn't have enough information to do anything.

Once we were in our teams we made an action plan

NGSS Science and Engineering Practice 1
NGSS Science and Engineering Practice 2

Student Page #1
Our Goal

1. Our project goal(s) is... to figure out price, compare project cost, phone calls and spend than 500 dollars.

2. The evidence we will use to know that we me our goal is... that w less than 500 keeps track

Student Page #2
Planning the Cal Water H₂O Challenge

things to do:
• website
• power point } make em' awesome

Student Page #3
Planning the Cal Water H₂O Challenge

Activity	Persons Responsible	Materials Needed	Date
measure	Taylor	type measure	2/16
presentation	Landon	paper	2/16
model	Trent	model, supplies	2/16
model	Spencer	model, supplies	2/16
	Megan	paper	2/16
	Lexie	paper	2/16

Student Page #1
Our Goal

1. Our project goal(s) is... To help the other groups by researching and writing down information. We also have a goal that when they come to us we will give them information back real quick.

2. The evidence we will use to know that we me our goal is... That all of the other groups will have all our and tools they need for. Another way we will the garden will be filled with plants. Important because... Without the prices, plants the project. They

Student Page #2
Planning the Cal Water H₂O Challenge

things to do:
• other groups
• chrome books
• camera
• power point
• google images

Equipment:
• camera
• laptops/chrome books
• folder

Student Page #1
Our Goal

1. Our project goal(s) is... to make a website and powerpoint to send to cal water. Also to take photographs

2. The evidence we will use to know that we me our goal is...
• completed portfolio
• completed website
• completed info/powerpoint

3. Our goal is important because... because we can get the word we have a drought (big drought)

4. Explain how meeting this goal can make a difference and if will last at shasta for and make a difference

Student Page #3
Planning the Cal Water H₂O Challenge

Activity	Persons Responsible	Materials Needed
look up Cost	Lauren	chrome books
look up Places	Aliyah	chrome books
look up info	Alexa	chrome books
look up	A	chrome books

1. Our project goal(s) is... to model to save rain. draw a design plan build a model

2. The evidence we will use to know that we me our goal is... The way we know, we are saving rainwater and reach our goal is by if we have growing, healthy plants.

3. Our goal is important because... it will help with California's drought, and our school.

Student Page #2
Planning the Cal Water H₂O Challenge

things to do:
• website
• power point
• portfolio } make em' awesome

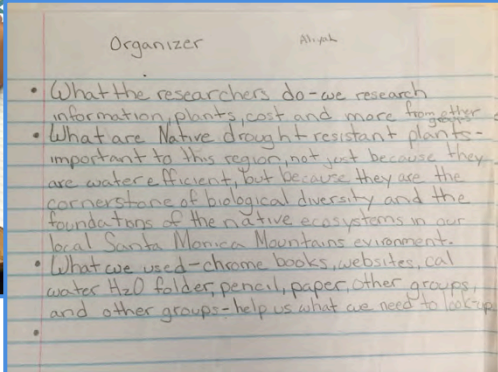
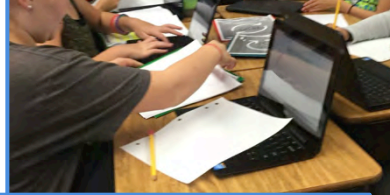
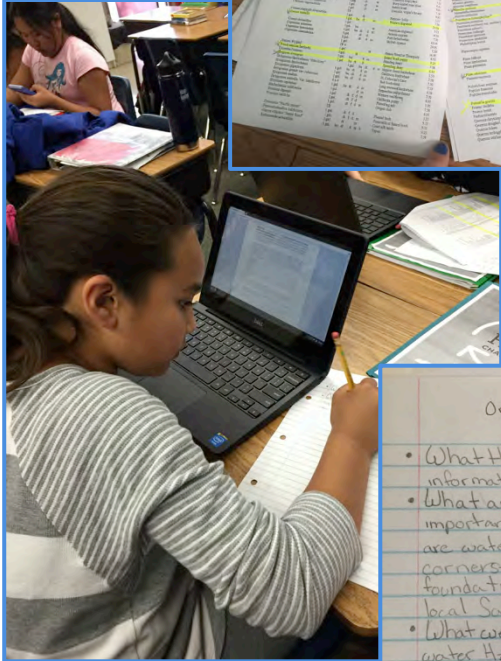
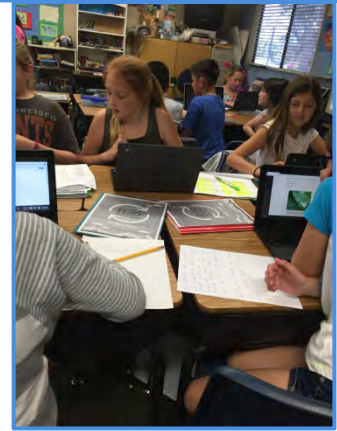
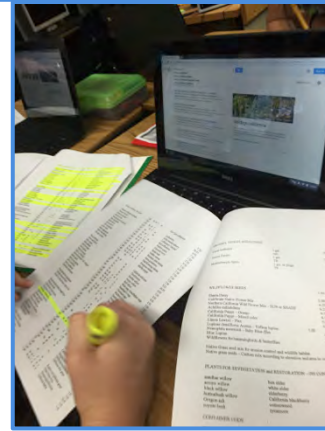
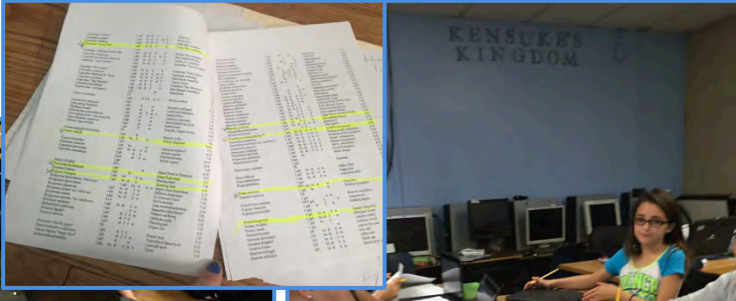
resources to use:

Student Page #3
Planning the Cal Water H₂O Challenge

Activity	Persons Responsible	Materials Needed
look up Cost	Lauren	chrome books
look up Places	Aliyah	chrome books
look up info	Alexa	chrome books
look up	A	chrome books

More From Our Research Team

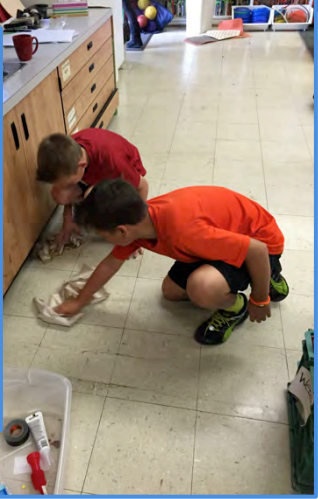
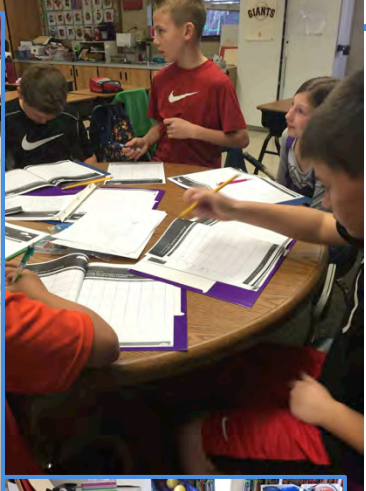
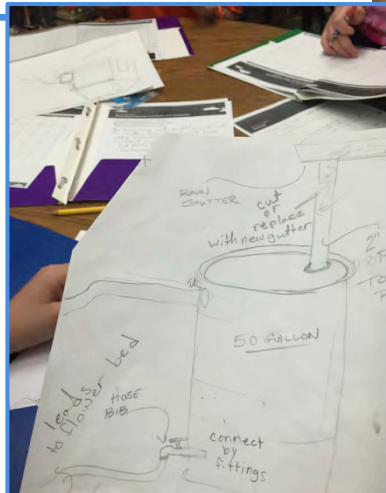
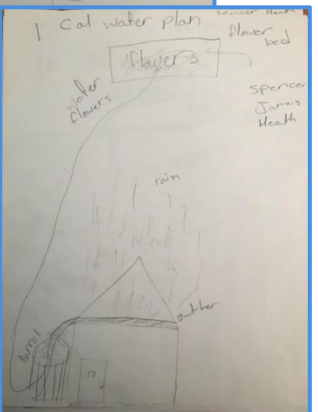
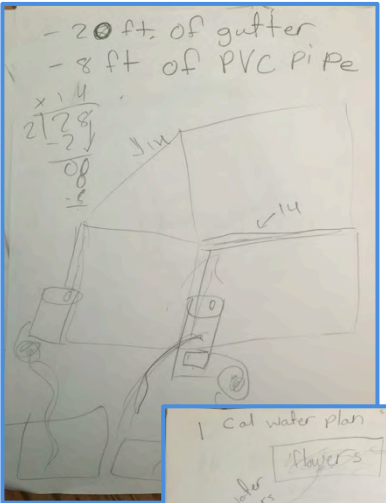
NGSS Science and Engineering Practice 4
NGSS Science and Engineering Practice 8



Play me I'm a video!

More From Our Engineer Team

NGSS Science and Engineering Practice 2
NGSS Science and Engineering Practice 3
NGSS Science and Engineering Practice 6



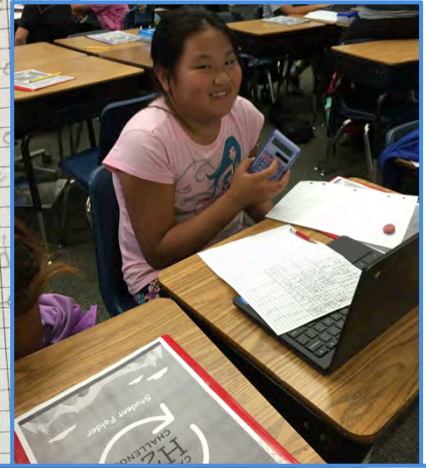
Play me I'm a video!

More From Our Finance Team

NGSS Science and Engineering Practice 4
 NGSS Science and Engineering Practice 5



Item	Quantity	Unit	Price	Total
gutters	28 ft	3.98	7.5	
gutter	28 ft	3.98	7.5	
end cap set		5.78	7.5	
end cap set		5.78	7.5	
2C	50 ft	9.97	7.5	
osc	50 ft	9.97	7.5	
PVC Pipe	8 ft	5.91	7.5	
rows	55 gal.	12.25	7.5	
PVC Pipe	8 ft	5.91	7.5	
hose bibbs	1/2 in.	1.82	7.5	
hose bibbs	1/2 in.	1.82	7.5	
block		19.84	7.5	
spca	1 lb	2.31	7.5	
bags		1.91	7.5	
end block		0	0	
Prosy		0	0	
end wheel		0	0	
end wheel		0	0	
end wheel		0	0	
off stone		0	0	
tarpet		0	0	
vet grass		0	0	
grass		0	0	

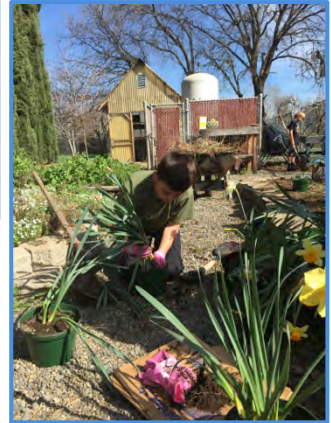


Play me I'm a video!

Item	Quantity	Unit	Price	Total
gutters	30 ft		\$3.98	
end cap set gutters	2		\$5.78	
hose	2-50 ft		\$4.97	
hose bibb	2-1/2 in.		\$1.82	
lumber block	12-8x8x6		\$1.54	
mulch				
-gutter connector	2			
-hose or pipe for over flow & tap				

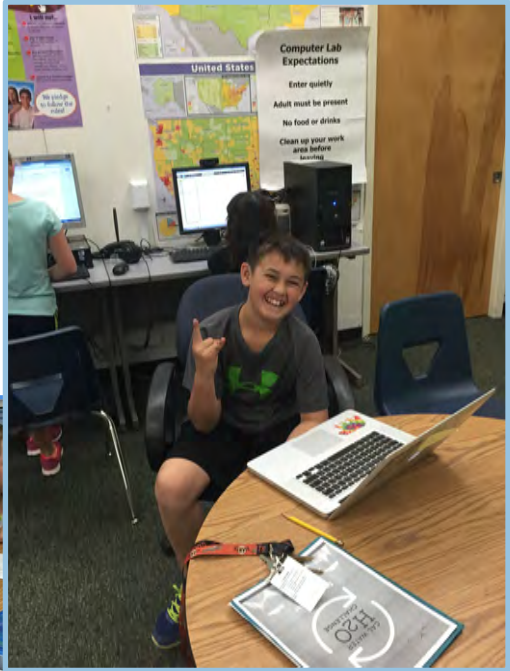
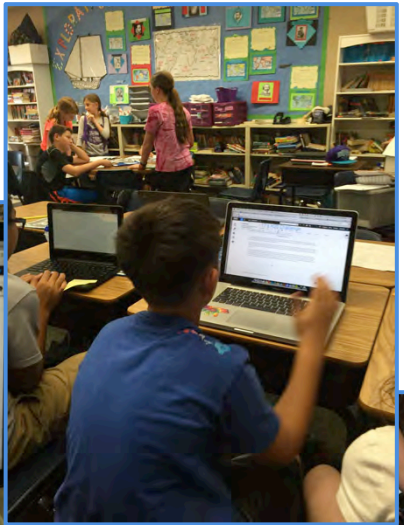
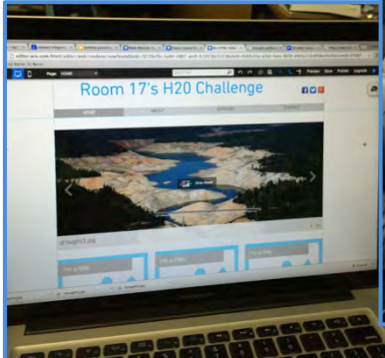
More From Our Execution Specialist Team

NGSS Science and Engineering Practice 3
NGSS Science and Engineering Practice 8



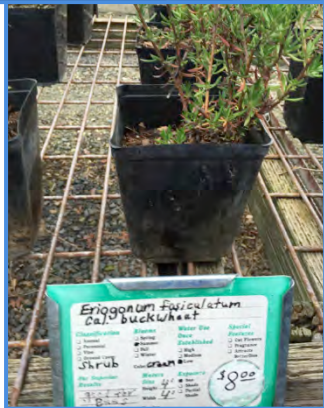
More From Our Design Team

NGSS Science and Engineering Practice 6



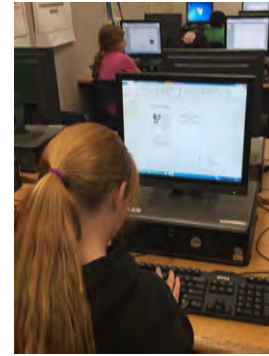
We took a field trip to learn more about native plants and conservation gardening

We would like to thank Zeb at Floral Native Nursery here in Chico for letting our class visit his nursery. Zeb gave us a fun tour of his nursery and taught us a lot about plants native to our area. Our research team worked hard before our field trip to prepare a list of native plants they were interested in growing and Zeb helped us select ones from their list that would work well with our garden space.



We mad a brochure

Once the planning stage was over our research and finance teams worked together to prepare a brochure which we are distributing throughout the district. The brochure offers information about our project, the drought in California, suggestions for conserving water, and information about creating a rain collection system like the one our class built.



Ways You Can Conserve Water

1. Take shorter showers
2. Not leave the sink running
3. Not leave the hose on
4. Only water your plants in the evening or early morning
5. Fix leaky faucets or put a bucket under a leaky faucet and use the water for plants
6. Use a bucket to wash dishes instead of running the faucet
7. Collect rainwater
8. Plant native drought resistant plants instead of plants that need a lot of water



For More Information:

droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA
This website will show you the latest news about California's drought problem.

http://www.watersmartsd.org/sites/default/files/nifty50_4_14final_1.pdf
This website will show you ways to save and improve your garden with drought resistant plants and lists of supplies.

www.savetherain.info/water-saving-the-rain.aspx
This website will show you designs to save rain water.

To Learn More About the H₂O Challenge

www.calwater.com/challenge/
Visit Our Website to See More From Our Project
<http://greenberg3.wix.com/room-17-challenge>

Chico Unified School District Shasta Elementary

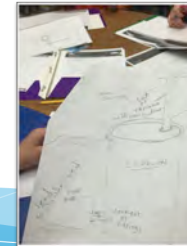


Mrs. Voss's Class's H₂O Challenge

What we did to make a difference in the drought and how you can help too!

The drought in California is bad because most of our lakes and rivers are significantly lower than usual. This major drought is heading into its fourth year. Lake Oroville is only at 32% of its full capacity. Lake Shasta is at its second lowest recorded elevation at 909 feet.

This could cause more earthquakes for the state. There are more expected wildfires this year. The snow packs are the lowest recorded in 100 years! It is also the hottest it has been in California's history.



About Our Process

1. We learned about water
2. We brainstormed ideas to conserve
3. We decided to build a rain collection system and plant a native garden
4. We asked questions -- How will we build it? What are native plants?
5. We made teams
6. We made drawings and built models
7. We did research
8. We measured our space and materials
9. We took a field trip to a native nursery
10. Prepared the garden space
11. We built our system and planted our garden

We Also: Built a Web Page
Designed Brochures
Made a Power point



Our Rain Collection System

Our Native Garden



Our area is affected by this drought because the Sacramento Valley runs off of agriculture. Your favorite fruits and other foods grown in California could cost more at the store. In the Bay Area, many people are tearing out their yards to save water by putting in plants that don't need as much water.

After a lot of hard work, research, and planning, we built our rain collection system

Curt, a local rancher visited our class to offer some expert advice about our rain collection system. Curt helped our engineers fine tune their design and lent us his hands and tools to build our system. It was great to hear from a local rancher about how the drought was effecting his profession.



And we planted our garden...





The Final Product!

We are so pleased with the final result of our project! Everyone worked so hard and it has payed off. We know we made an impact on the drought here at school and throughout the community. Although the project was complete the work wasn't done. We reflected as a class verbally, and through writing both individually and in groups. The reflection process was valuable for us to look back on all the work they did and everything they have learned. Thanks Cal Water!



Play me I'm a video!

We Hope It Rains!

