Project List

**Experiments**
Which is most polluted, tap water, natural water, or bottled water?
What pollutants does a Brita filter remove from (tap, bottled or natural) water?
How does (acidic, tap, fertilized, salt, limited, filtered) water affect plant growth?
How does residence time affect cleaning effectiveness of wetlands?
How does an oil spill spread over time?
How do leaves immersed in salt, stream, tap, and distilled water differ in appearance and mass?
How much water can you save by fixing a leaky faucet and turning off faucet while brushing teeth?
Which water tastes the best?
How do different filter substrates affect the performance of water treatment?
**How much water does my shower use?**

**Things to Build**
Water still
Sand filter
Solar still
Model of city-scale water system
Model to demonstrate leaching and runoff
Model of Bay Area/NoCal water cycle
Map of water usage levels per capita around the world
Water cycle in a bottle
Model of a water fountain
Where do chocolate chip cookies come from?
Food web
Food map
Model grey water system
Compost bin

**Surveys**
Water pollution knowledge survey
How does giving people information affect their intended actions about water pollution/conservation?
How much water do student

**Educational Materials**
Flyer/doorhanger to get people to conserve water
Flyer/doorhanger to get people to reduce water pollution
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

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<tr>
<td>OR List of survey questions</td>
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</table>
Materials List
1. Tap water, bottled water, natural water
2. Test tablets for nitrates, phosphates, pH, copper, chlorine, and dissolved oxygen
3. 3 test tubes
4. Timer
5. Color card
6. Wash bottle

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Test all 3 types of water for the first pollutant
2. Record results
3. Wash test tubes and repeat
4. Make a bar graph or table of your results
5.
# Project Plan

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Materials List
1. Tap water, bottled water or natural water
2. Test tablets for nitrates, phosphates, pH, copper, chlorine, and dissolved oxygen
3. 2 test tubes
4. Timer
5. Color card
6. Brita filter
7. Small plastic cups to handle water and waste water
8. 2 pipettes
9. Wash bottle

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Filter 1 cup of water through Brita filter, keeping plenty of water unfiltered
2. Test both the original and filtered water for the first pollutant
3. Record results
4. Wash test tubes and repeat
5. Make a bar graph or table of your results
**Project Plan**

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Materials List
1. At least 2 of: vinegar and water (acidic), fertilizer dissolved in water, tap water, filtered water, salt water
2. 1 small plant (that needs to be watered only once a week) for each water type, plus one for limited water (if you want to test this)
3. Closeable containers to keep water from week to week
4.
5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Water each plant thoroughly each week
2. In the third and fourth week, write down your observations about the plants
3. Most of the poster should be completed in the first 2 weeks!!
4. Make a table of your results
5.
Project Plan

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Materials List
1. Fake grass board
2. Dirty water (with small amounts of color, fine dirt, or oil)
3. Large Tupperware to collect water
4. Timer
5. Wood blocks (3-6 with thicknesses of 1-3 inches each)
6. Lots of clean water

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Set up the board so one end sits on some blocks and it is tipped.
2. Pour a lot of clean water over the board until it comes out clean
3. Start the timer and immediately pour 2 cups of water over the board. Stop the timer when most of the water stops flowing.
4. Record the time and an observation of how clean the water is
5. Repeat with a different number of blocks.
6. Make a table of your results
**Project Plan**

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**Research Question or Design Goal**
How does an oil spill spread over time?

*(This goes on your poster!!)*

**Diagram of your experiment or what you will design**
OR List of survey questions
Materials List
1. Large Tupperware or bowl filled halfway with water
2. Cooking oil
3. Timer
4. Paper with 4 outlined sections for drawings, each with a place to write time
5. Fan

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Pour a small amount (1/4 cup?) of oil on top of the water. It should float.
2. Start the timer
3. Draw what the water looks like immediately in the first box and write “0 min” for the time
4. Every few minutes, draw the spill and write the time
5. Clean up
6. Repeat the experiment the same way with a fan blowing lightly on the water (enough to make small ripples)
7. Display your drawings on your poster
Project Plan

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Materials List
1. Leaves
2. Salty, Tap, and distilled water (distilled optional, I can steal it from physics)
3. Small bowls and saran wrap
4. Timer
5. Balance (if available). Another option is to construct a simple balance that will compare the masses of 2 leaves at a time.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Put a leaf in each bowl.
2. Pour enough water to cover each leaf.
3. Every 5 minutes, write down observations about each leaf
4. After 20-30 minutes, take the leaves out of the water
5. Write down final observations
6. Take the mass of each leaf if possible, or compare and rank the relative masses
7. Make a table of your results
Project Plan

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Research Question or Design Goal
Determine how much water you can save by fixing a leaky faucet and turning off faucet while brushing teeth.

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions
**Materials List**

1. Faucet
2. stopwatch
3. measuring cup
4. paper and pencil
5. 1-gallon container or pitcher

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**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**

1. Find a leaky faucet or turn on a faucet just enough to make it drip.
2. Place cup under faucet.
3. Start timing.
4. See how much water accumulates in 30 min.
5. Repeat steps 1-4 at different faucet running speed.
6. Tabulate results:

<table>
<thead>
<tr>
<th>Faucet speed</th>
<th>Time</th>
<th>Amount of water collected</th>
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<td>Which water tastes best?</td>
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Test to see if students can tell the difference between 2 types of bottled water, tap water, and tap water that’s been filtered.
**Materials List**
1. 2 types of bottled water and tap water
2. Disposable camera
3. Brita water filter
4. Cups
5. Marker

**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**
1. Choose two types of bottled water.
3. Label the cups with A, B, C, D. Have a blind taste test of the 4 types of water and make students guess which water is which. Which one tastes the best?
4. Compile survey results.
5. Make poster. Post pictures of water and survey results.
Project Plan

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<td>How do different filter substrates affect the performance of water treatment?</td>
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Materials List
1. Filter materials
2. Clear lexan tube or other filter column
3. Funnel
4. Catchbasin
5. Basic water testing kit (turbidity meter, pH, etc.)
6. Stopwatch
7. Dirty water

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Create a series of water filters using different substrates
2. Test water prior to filtering for various parameters that might be of concern.
3. Run water through the filter, testing performance (e.g. flow rates)
4. Test water quality after filtration
5. Graph results for each filter media
6. Try another filter combining different substrates that combined will remove a variety of pollutants,
Project Plan

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(This goes on your poster!!)

Research Question or Design Goal
How much water does my shower use?

Diagram of your experiment or what you will design
OR List of survey questions

4. Why is it important to lower our use of water?
5. What are the sources of water where you live, in Oakland?
6. Do you try to think about saving water when you shower, wash your hands, or help in washing dishes? Hopefully, after this experiment you will.

Materials List
1. Large pot
2. Shower
3. A water or clock
4. Notebook for recording
5. *** Students need to work at home for this project. If you are not 100% confident your students will do this, DO NOT choose this project!

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)

Do this experiment when you next take a shower
1. Use a medium size cup to fill the pot with water. Record the number of full cups of water needed to fill the pot.

2. Each medium cup is approximately 1/4 litre of water. Find out how many litres of water are the pot as follows by multiplying the number of cups it took to fill the pot. For example, if it took 8 cups, then the total number of litres of water that fits in the pot is 8 multiplied by 1/4

\[ 8 \times \frac{1}{4} = 2 \]

3. Next time that you take a shower, take the pot to the shower and place it on the floor under the shower head.

4. Start the water as you start your shower, and record the start time. Find out how many minutes it took for the pot to be filled with water. For example, it may take 1-10 minutes depending on the water pressure in the shower and the size of your pot.

5. You can put the pot away after you recorded the time.

6. Now, measure the total time of your shower.

7. Record how many pots of water would get filled in one shower by dividing total minutes in the shower by the minutes it took to fill the pot. For example, if it took 2 minutes to fill the pot, and my shower took 9 minutes, then, we would have \( \frac{10}{2} = 5 \) pots of full water by the end of shower.

8. Now, record how many litres were consumed in the shower by multiplying the number you found above by the number of litres in the pot which you found in step 2. For example, for my case, there would be \( 5 \times 2 = 10 \) litres of water.

9. Think of ways that you can save water while you are showering. For example, you could do so by not leaving the water running when you are washing your face or head. Only use the water when needed. Write your ideas in your notebook.

10. Next time you shower, use one of your ideas: for example, turn off the water while washing your face. How would you measure how much water you saved? Think of some answers and write it down in your notebook.

11. One suggestion is to repeat step 2-8 but this time, but in step 7, subtract the amount of time the water was not running from the total time.

12. Record the amount of water saving.
**Project Plan**

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<td>Make a water still</td>
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Materials List
1. Pot and something to boil water (hot plate)
2. round bowl
3. strong magnet
4. glass jar
5. ice

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Make a still like the one we made in class, or use a different design. Your teacher will help you design and build the still
2. Put contaminants in the water and show that they come out clean.
3. On your poster, explain why cleaning water is important.
4. On your poster, explain the advantages and the disadvantages of cleaning water with a still. What are the other ways to clean water? Does our water come from a still?
Project Plan

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**Research Question or Design Goal**
Build a sand filter

(This goes on your poster!!)

**Diagram of your experiment or what you will design**
OR List of survey questions
Materials List
1. Gravel
2. Sand
3. Small soda bottle
4. Mesh fabric
5. Rubber band
6. Dirty water to test filter
7. Clean water and waste bucket to wash sand and gravel
8. Scissors
9. Plastic cups for testing

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Carefully wash sand and gravel until water poured over it comes out clean
2. Cut the bottom off the bottle
3. Put the mesh over the bottle’s top (take off the cap and turn over bottle)
4. Put the gravel on the top of the mesh
5. Put the sand on the gravel
6. Pour dirty water through to test filter
Project Plan

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Materials List
1. Salt
2. Water
3. Large bowl
4. Short cup
5. Saran wrap
6. Rock or small paperweight
7. Long spoon for stirring
8. Timer
9. Measuring cups

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Make salt water in the bowl until it is just 2-3 inches deep

2. Put the cup in the center of the bowl. Make sure it sinks!

3. Put saran wrap over the bowl. Make sure it sticks tightly at the edges

4. Put the rock or paperweight on the saran wrap above the cup

5. Put the still in the sun and start the timer

6. Every 5-20 minutes, see how much water is in the cup. Measure using the cups and add up the total water purified for each time

7. Make a line graph of your results
Project Plan

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(This goes on your poster!!)

Research Question or Design Goal
Build a model of a city-scale water system

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions
Materials List
1. Cardboard box for base
2. Cardboard
3. Manila folders/tagboard
4. Construction paper
5. Scissors
6. Tape
7. Glue
8. Markers
9. Crayons

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Draw a diagram of a city scale water system. Include sources, water treatment, use, wastewater treatment
2. Build a model of the system
3.
4.
5.
Project Plan

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**Materials List**
1. Tupperware
2. Dirt
3. Food coloring
4. Aluminum foil
5. Cotton balls
6. Wire mesh
7. Water and container to pour from

**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**
1. Put the dirt in the tupperware
2. Create a reservoir with wire mesh
3. Create a landfill with cotton balls
4. Create pollution with food coloring
5. Predict what will happen if it rains
6. Make rain and record observations of what happens
7. Make sure that vocabulary words leaching and runoff are defined on your poster!
Project Plan

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(This goes on your poster!!)

Research Question or Design Goal
Build a model of the Bay Area/Northern California water cycle

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions
**Materials List**
1. Cardboard box for base
2. Cardboard
3. Manila folders/tagboard
4. Construction paper
5. Scissors
6. Tape
7. Glue
8. Markers
9. Crayons

**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**
1. Draw a diagram of the water cycle for the water that we use in the Bay Area. Include mountain snow, reservoirs, use in the Bay Area, disposal, and transport back to the mountains.
2. Build a model of the system.
3. Make sure vocabulary words precipitation, evaporation, reservoir, water treatment, and wastewater are defined on your poster! (and any others that are important for others to understand your model.)
4. 
5. 
Project Plan

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Research Question or Design Goal
Draw a map of water usage levels per capita around the world

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions
**Materials List**

1. Large world map with countries outlined and labeled
2. Markers
3. You may need extra computer time for this project!
4. 
5. 

**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**

1. Use internet research day to find out how much water is used each day (directly and indirectly) by people in as many countries as possible
2. Make a scale for usage. Define several categories of usage within different ranges.
3. Assign each category a color.
4. Color each country with the color for the range its usage falls in.
5. 
6. 
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(This goes on your poster!!)

**Research Question or Design Goal**
Make a water cycle in a bottle

(This goes on your poster!!)

**Diagram of your experiment or what you will design**
OR List of survey questions
Materials List
1. 2-liter plastic bottle
2. Soil
3. Grass seeds
4. Water

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Open the bottle
2. Carefully pour about 2 inches of dirt in. Shake the bottle gently so the dirt is level on the bottom
3. Carefully pour the seeds in. Try to get them to distribute over the soil
4. Pour \( \frac{1}{4} \) cup of water in
5. Put the cap on
6. Put the bottle in a sunny place
7. Each week, look at the bottle and record your observations
8. Put your observations in a table for your poster
9. Make sure the vocabulary words evaporation, transpiration, precipitation are defined on your poster

SEED 2009
## Project Plan

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<td>Design and build a model of a new water fountain</td>
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<tr>
<td>Do you like your water fountain now?</td>
</tr>
<tr>
<td>What could make it better?</td>
</tr>
<tr>
<td>More fun?</td>
</tr>
<tr>
<td>Save water?</td>
</tr>
</tbody>
</table>

**Materials List**
1. Paper, pens and pencils for drawing

2. Card board, clay, paint, and other supplies tbd based on design

3.

4.

5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Draw the existing water fountains you use

2. Discuss the pros and cons of these water fountains

3. Design a new water fountain

4. Build your design prototype

5.
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

Research Question or Design Goal

Where do chocolate chip cookies come from?

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions

Find out all the ingredients in a chocolate chip cookie and research the source of the ingredients. Calculate the total distance “traveled” by the ingredients.

Materials List
1. US map and World map

2. Disposable camera

3. Ingredients for cookies (flour, white sugar, brown sugar, eggs, chocolate chips, butter, baking soda, salt)

4. Toaster oven, mixing bowl, wooden spoon, aluminum foil

5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)

1. Research chocolate chip cookie recipes Make notes of all the ingredients required.

2. Research where the ingredients come from.

3. Make chocolate chip cookies. Take pictures of the items/ingredients.

4. Calculate the total distance “traveled” by the ingredients while cookies are baking. Eat cookies. 😊

5. Make poster. Post ingredient pictures on poster. Mark on a map where the ingredients came from.
# Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

<table>
<thead>
<tr>
<th>Research Question or Design Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagram a food web of an ecosystem of the students' choice. Can be a local ecosystem (like Lake Merrit)</td>
</tr>
</tbody>
</table>

(This goes on your poster!!)

<table>
<thead>
<tr>
<th>Diagram of your experiment or what you will design OR List of survey questions</th>
</tr>
</thead>
</table>
Materials List
1. Large Poster Board

2. Glue

3. Markers

4. Colored Paper

5. Computer Printer (to print images for food web)

6. * You may need extra computer time for this project!

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)

1. Choose an ecosystem for which to draw a food web. It can be something close (like the Ocean or Lake Merritt) or it can be something far away (like a desert or a rainforest) or even a long time ago (like a pre-historic food chain with dinosaurs!)

2. Research the food web from that ecosystem. Including microbes and decomposers that put nutrients from dead things back into the soil.

3. Draw or print an image of each organism. Draw an arrow from the consumer to the consumed organism. Remember this is a food web, so more than one organism can eat or be eaten by another one.

4. Make sure to label interesting facts about your food web. Which are carnivores, omnivores, herbivores, plants, and decomposers? How does this system balance out so that one organism doesn't become too big or become extinct (remember our food chain game)?
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Energy Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

Research Question or Design Goal

Where does the food come from that we eat in one day?

(making a detailed map of all the places are food goes/comes from before it gets in our bellies)

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions

A food journal to keep track of all the ingredients of the food we eat in a day.

Who’s food travels the furthest? Why?

What do the foods with the longest distance traveled have in common?

What is processed food?

What are whole foods?

Materials List
1. Ingredient journal, pens, pencils
2. Large paper for map
3. Art supplies – collage materials, pens, colored paper
4. ** This project WILL require extra internet time!
5.  

**Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)**
1. Make ingredient journals
2. Track the food that you eat for a day
3. Research for where the food comes from
4. Draw it out on the map
5.
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Energy Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

**Research Question or Design Goal**
Design a grey water system for your home.

(This goes on your poster!!)

**Diagram of your experiment or what you will design**
OR List of survey questions
Materials List
8. Various tubs, buckets, tubing and valves
9. Sample Grey-water
10. Calculators, stopwatches
11. Testing materials
12. Sample plants, etc.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
7. Determine how much grey water your house could use.
8. Measure the amount of grey water your house creates
9. Design a system to collect grey water and treat it for use in your house
10. Build a small model of a grey water system.
# Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Energy Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

| Research Question or Design Goal     | Understanding the cycle of food chain through building a compost |

| Diagram of your experiment or what you will design  
OR List of survey questions |

1. What is composting?
2. What is compost used for?
3. How do you think compost relates to food chain cycle?

Useful website:
[http://sustainable.tamu.edu/slidesets/kidscompost/cover.html](http://sustainable.tamu.edu/slidesets/kidscompost/cover.html)

For the following research questions you may use library books, websites, or ask questions from your teachers. Once you find the answer, you need to write the answer in your notebook.

1. What is composting?
Now that you learned about composting, you will learn how to build compost.

1. Start with the brown stuff by spreading a layer of leaves or pine needles about 6 inches thick.

2. Next, for the green stuff, add a layer of grass clippings a few inches thick. It is helpful to mix the layers up a little as you make them.

3. Then sprinkle a shovelful of soil or compost (you would need to find some compost from somewhere) to add microorganisms to the bin.

4. Each layer gets a good sprinkling of water to wet the ingredients. It is important to wet each layer as you build it.

5. Repeat each of the layers until the bin is full and then

6. Every week for 3 weeks, check the bin and record if you see a change. Write down detailed observations.

7. You should spend your class time in weeks 2 and 3 getting your poster ready so you have time in weeks 3 and 4 to complete observations

Materials

1. Leaves or pine needles
2. Grass clippings
3. Soil
4. Water
5. bin
# Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

*(This goes on your poster!!)*

<table>
<thead>
<tr>
<th>Research Question or Design Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>How much do Learning for Life (or La Escuelita after school program) students know about water pollution?</td>
</tr>
</tbody>
</table>

*(This goes on your poster!!)*

<table>
<thead>
<tr>
<th>Diagram of your experiment or what you will design</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR List of survey questions (choose which of these questions to use)</td>
</tr>
<tr>
<td>1. Define water pollution.</td>
</tr>
<tr>
<td>2. Name a chemical that is bad for you and can get into your water</td>
</tr>
<tr>
<td>3. Describe how chemicals get into your water</td>
</tr>
<tr>
<td>4. Can metals get into your water from pipes?</td>
</tr>
<tr>
<td>5. Does the city clean your water before you drink it?</td>
</tr>
<tr>
<td>6. Does your water get reused after you use it?</td>
</tr>
<tr>
<td>7. If you pour motor oil on the street, and it goes into the storm drain, where does it go?</td>
</tr>
<tr>
<td>8. Is pouring fertilizer into a lake good or bad for the plants and animals in the lake?</td>
</tr>
</tbody>
</table>
Materials List
1. Photocopies of surveys
2. Pencils
3.
4.
5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Choose/write survey questions.
2. Give survey to several groups of students outside the group.
3. Record how many total students took the survey.
4. For each question, record how many students got it right. Calculate the percentage of students who got it right.
5. Make a bar graph of your results.
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

Research Question or Design Goal
How does giving people information about water resources affect their intended actions?

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions (Can use 1-3 or 4-6 separately)
1. Should we try to conserve water?
2. Name 2 ways to conserve water.
3. Will you do anything to conserve water today? What?
4. What is water pollution?
5. Name 2 ways to reduce water pollution.
6. Will you do anything to reduce water pollution this week? What?
Materials List
1. Photocopies of survey
2. Pencils
3.
4.
5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Write survey questions

2. Plan to give the survey to at least 2 groups of students. Divide the students/groups you are giving the survey to into an **information group** and a **control group**

3. Give the survey to the control group without telling them anything.

4. Take 5 minutes to explain the answers to questions 1 and 2 or questions 4 and 5 on the survey to the information group.

5. After you explain, give the survey to the information group.

6. Keep the control group and information group surveys separate.

7. Record what percentage of students in each group got questions 1 and 2 or questions 4 and 5 correct.

8. Record what percentage of students in each group said yes to question 3 or question 6.

9. Make a bar graph of your results comparing the control and the information groups.
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

Research Question or Design Goal
What is the average daily water consumption by Horace Mann’s students and their families?

(This goes on your poster!!)

Diagram of your experiment or what you will design
OR List of survey questions

1. How much water do you drink per day?
2. How many people are in your family?
3. How much water is used in cooking?
4. How much water is used in cleaning (dishes, clothes, general cleaning)?
5. How much water is used in showering/bathing?
6. Do they have a garden at home? If so, how much water is used for gardening?
7. Can we find out monthly consumption through their water bill?
8. How many gallons of water is consumed in a family of 3, 4 or 5?
Materials List
1. Pencil and paper
2. Two 1-gallon containers for easy measuring

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Write survey questions
2. Give survey to students in after school program – or it may be sufficient to do the calculation for the students in the group
3. Students in the group can bring containers home to measure water usage in the home for one day
4. Tabulate results. Calculate the average for each question
5. Make a bar graph of your results
6. Suggest ways to reduce water use
# Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

*(This goes on your poster!!)*

<table>
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<tr>
<td>Make a flyer or door hanger that will help people conserve water</td>
</tr>
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</table>

*(This goes on your poster!!)*

<table>
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<tr>
<th>Diagram of your experiment or what you will design</th>
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</thead>
<tbody>
<tr>
<td>OR List of survey questions</td>
</tr>
</tbody>
</table>

**Materials List**
1. Paper
2. Markers/Crayons/Pencils
3. Photocopier
4.
5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Write down ideas for conserving water
2. Design a flyer that will encourage people to do them
3. Draw one master copy of the flyer and make photocopies
4.
5.
Project Plan

Your project should be a design challenge or research question. You will spend 1 session researching, 2 doing the experiment or building, including making any graphs, and 1 making a poster to present at the Water Fair. Today your job is to choose a project and write a project plan, including a diagram for your poster.

(This goes on your poster!!)

**Research Question or Design Goal**
Make a flyer or door hanger that will help people reduce water pollution

(This goes on your poster!!)

**Diagram of your experiment or what you will design**
OR List of survey questions

Materials List
1. Paper
2. Markers/Crayons/Pencils
3. Photocopier
4.
5.

Step-by-Step Instructions for experiment, survey, or design process (include creating diagram/graph/chart for poster)
1. Write down ideas for reducing water pollution
2. Design a flyer that will encourage people to do them
3. Draw one master copy of the flyer and make photocopies
4.
5.