

Potential Energy Water Wheel

Grades (5th-12th)



You will use your knowledge and understanding on potential energy and learn how to apply it in order to calculate the energy in the system and the power output.

Follow the instructions provided.
Remember to be creative and have fun!



Final Product

Materials Needed for Project:

Quantity	Item	Item Label	Included Yes/No
1	Plastic Bottle	A	Yes
2	Plastic Cup	B	Yes
1	Large Food Tray	C	Yes
1	Bending Straw	D	Yes
8	Popsicle Sticks	E	Yes
8	Bottle Caps	F	Yes
1	Wooden Rod	G	Yes
1	Hot Glue Gun	H	Yes
5	Glue Sticks	I	Yes
1	Scissors	J	Yes
1	Pencil	K	Yes



Materials Needed

Procedure:

For more information, please visit the website: <https://www.utep.edu/engineering/chres>

1. Turn the plastic bottle upside down and cut the lower part of the plastic bottle off. Hot glue gun the bottle's cap on the plastic bottle. This is so when it is full of water, the bottle does not leak.



2. Fill up the plastic bottle with water and place the entire bottle inside the plastic cup with the top down. Make sure the plastic cup is balanced and does not tip

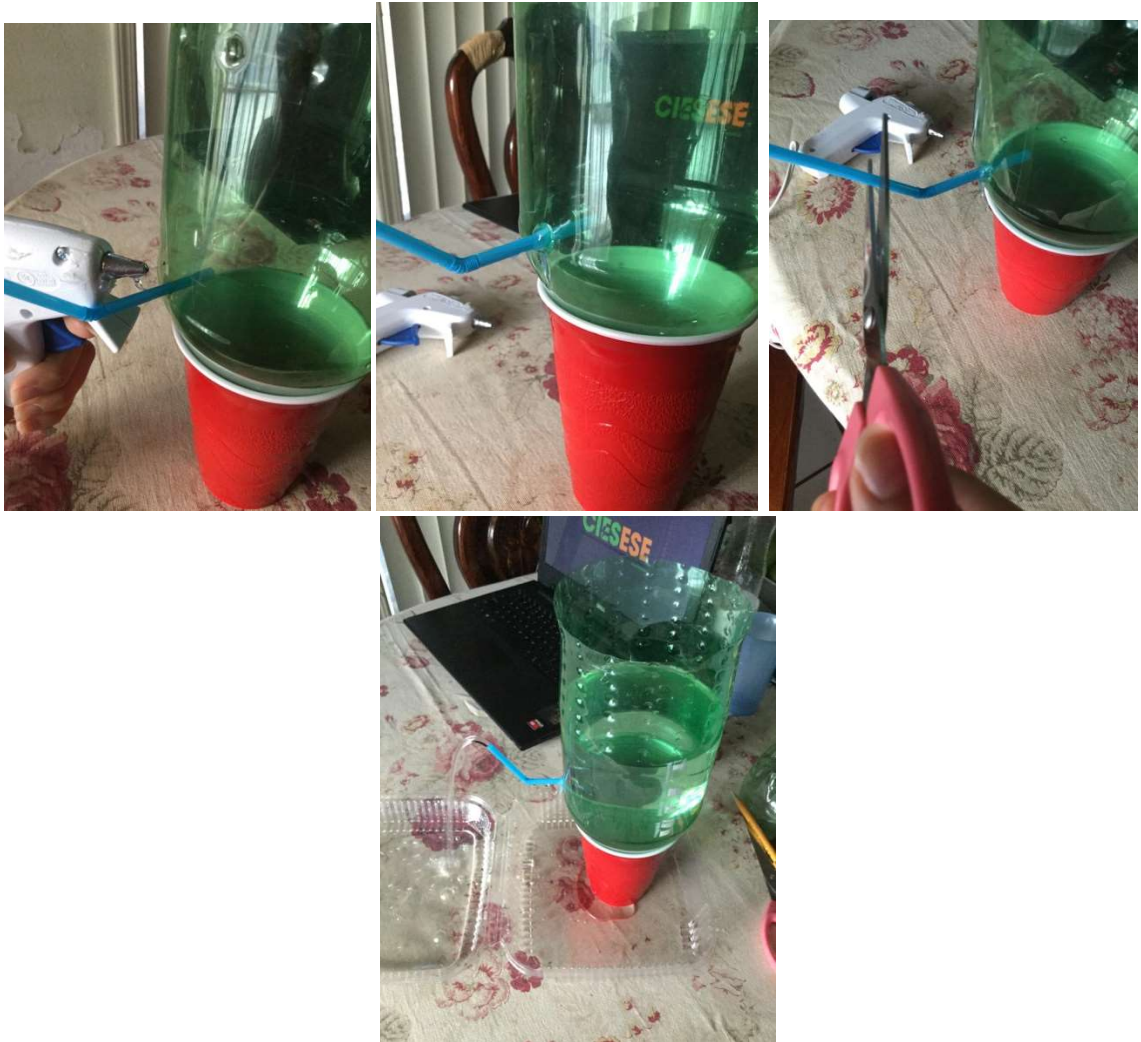
over when you fill it full of water. If it does support it, hot glue gun the plastic cup and bottle together.



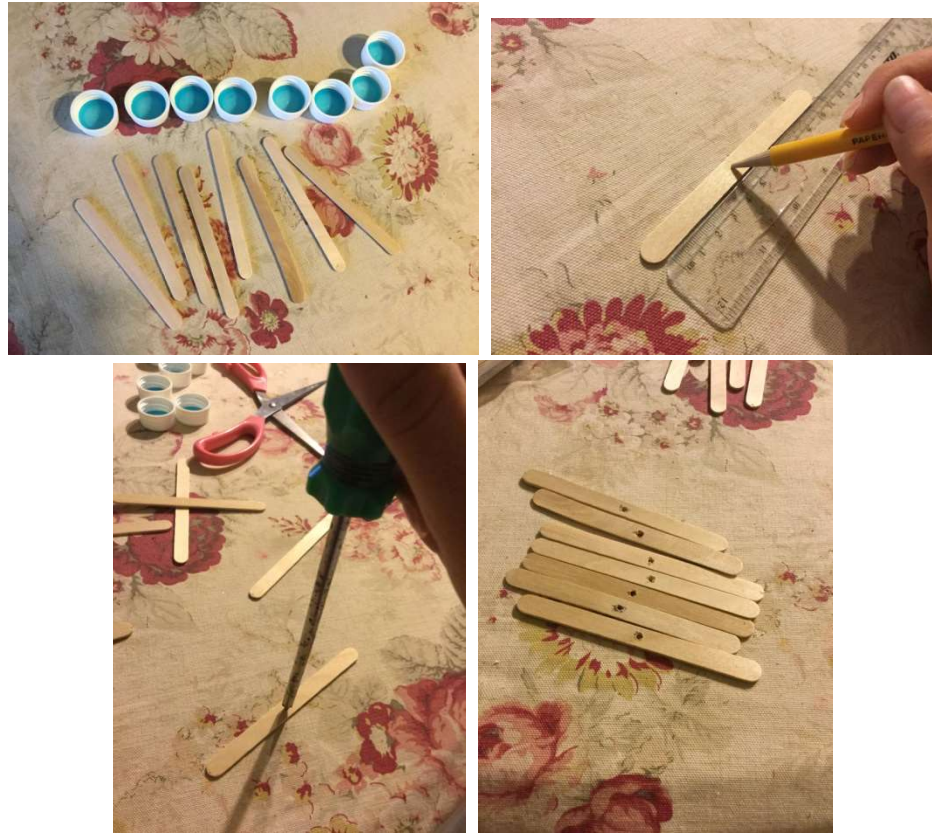
3. Find a spot at the top of the bottle and pierce a small hole in it. Use a pencil to enlarge the hole. Grab a plastic straw and insert it into the hole. Make sure the hole has a diameter of 0.5 cm. Note: The hole should be 0.2 cm larger than the straw's diameter, so that leaks can be avoided.



4. Hot glue gun the straw into place. Carefully bend the straw at an angle of 120° and cut the straw so that it has a total length of 7.5 cm.



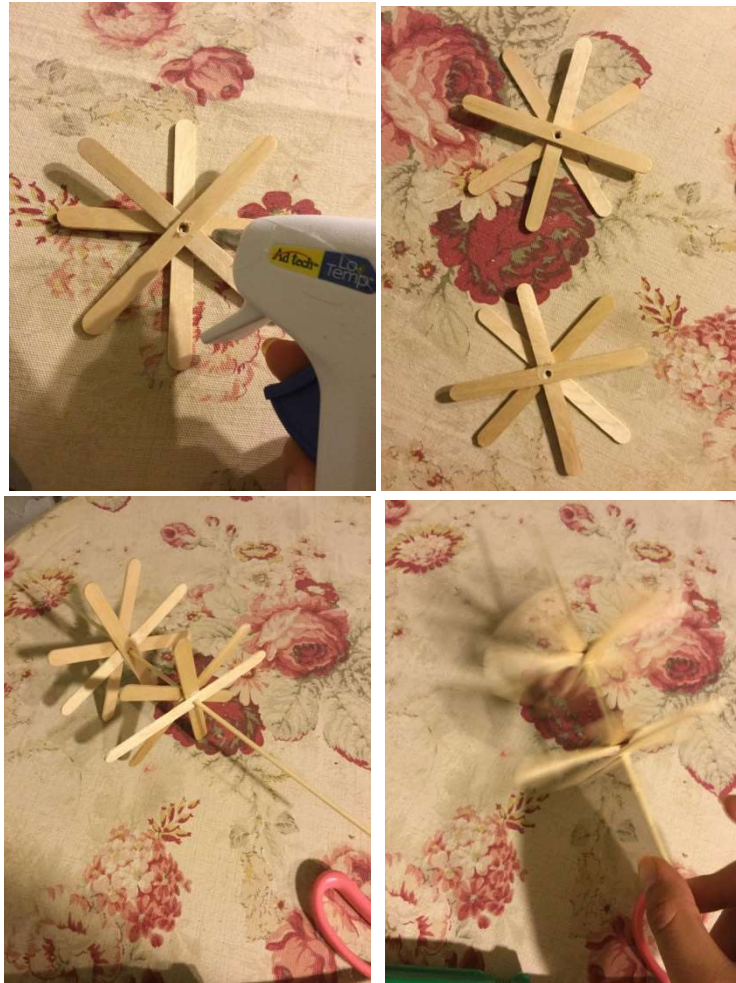
5. Grab 1 popsicle stick and mark a dot on the center of it with a pencil and do the same for the rest of the 7 popsicle sticks. Pierce a hole on the dot and make sure that the wooden rod fits through the holes marked on the popsicle sticks.



6. Take two popsicle sticks and hot glue gun them into a cross. Make sure you don't glue the hole. Do the same for all the popsicle sticks. You should have four crosses that could fit the wooden rod through the center.



7. Take two of the crosses that you just made and form an asterisk. Do the same for the other sets of crosses. Try to fit the wooden rod into the two asterisks. Make sure that they are able to spin.



8. Grab each bottle cap and glue the side of each on top of the end of each popsicle stick on one asterisk. They bottle caps should be facing in one direction.



9. Take the other asterisk and place it on top of the caps. Position the asterisk in a way that the largest gap is 1 cm and hot glue gun the gaps so that they are closed. Insert the wooden rod into your newly created wheel.



10. Use your scissors to cut the plastic cup in half. Place the plastic cup upside down. The two halves will be a support for the water wheel.



11. Pierce a hole on the upper part of the cup and make sure that a wooden rod can fit through. Make sure that the hole allows the water wheel to not touch the surface. The wooden rod and water wheel should spin. Cut any remaining portion of the wooden rod.

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12. Place the plastic bottle and water wheel inside the plastic food tray. Put water inside the bottle and test if it works! It should spin as the water impacts the different cup lids.

