



Beachside Science: Fun Experiments by the Sea for Curious Kids

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A day at the beach is a perfect opportunity to use the sand and the sun with your children to engage in hands-on science experiments that are both fun and educational. In this article you will find engaging and exciting experiments that kids will love and learn complex concepts in a simple manner, plus a few additional suggestions for the most curious explorers.



Experiment 1: Creating a Sand Volcano

This first experiment introduces concepts of chemistry, specifically chemical reactions. Children can learn about chemical reactions in a spectacular and engaging way; young chemists are guaranteed to have loads of fun seeing the effects and reactions firsthand.



Fun fact about volcanoes: Mauna Loa in Hawaii, the largest active volcano, is 13,681 feet above sea level, but from floor to the very top, it is over 30,000 feet tall!

Materials Needed:

- baking soda
- vinegar
- food coloring
- a small container (like a plastic cup)
- sand
- a tray (optional)

Steps:

1. Build a small mound (volcano) of sand with a small hole in the center to act as the volcano.
2. Place the container in the hole in the center of the mound (volcano).
3. Fill the container with baking soda and add a few drops of food coloring.
4. Pour vinegar into the container and watch the eruption.

After-experiment discussions:

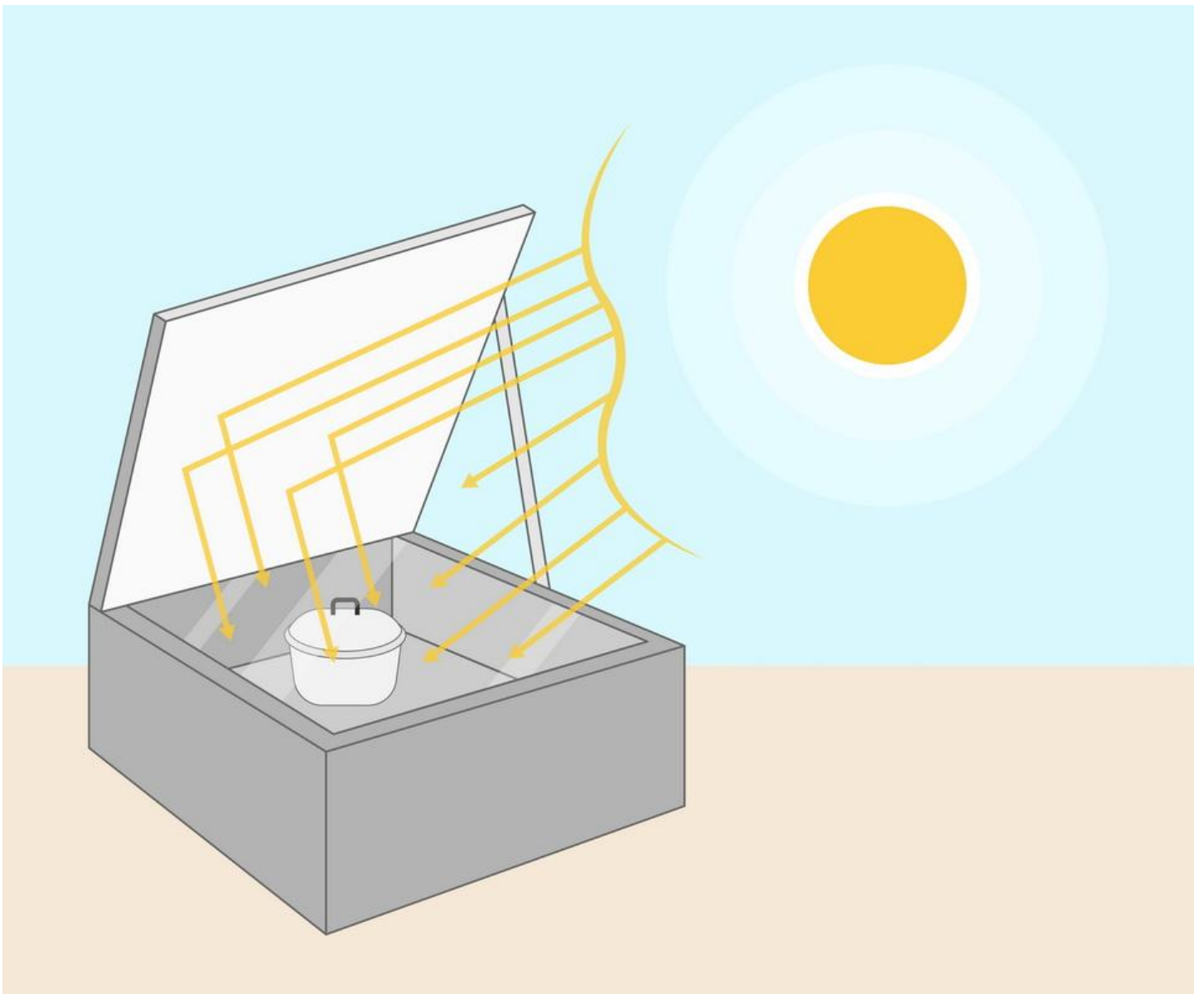
- Chemical Reactions: When baking soda and vinegar mix together they have a chemical reaction and create a lot of bubbles. These bubbles are made of carbon dioxide gas. The gas quickly builds up and makes the mixture fizz and foam, causing an eruption.
- Real Volcanic Eruptions: Real volcanoes erupt because there's hot, melted rock called magma under the ground. This magma has gasses trapped inside it, and when the pressure from the gasses gets too strong, it pushes the magma up and out of the volcano. The eruption happens just like the reaction that you saw today!
- More baking soda experiments! If you kids enjoy this experiment, you can follow up on it by exploring more chemistry projects with science teacher Andrew [in this video](#):



Watch on [YouTube](#)

Experiment 2: Building a Solar Oven

This experiment needs the most equipment but can add a sweet treat to your beach trip. It introduces children to renewable resources as well as solar energy. By building and using a solar oven, kids can learn about the sun's power and how it can be used to cook food. Children can also learn about heat transfer and energy conversion in this experiment.



Fun fact about solar ovens: In France the world's largest solar oven is located. It can reach temperatures of up to 3,500 degrees Celsius (6,332 degrees Fahrenheit). See if the temperatures of your solar oven get close to those high temps!

Materials Needed:

- pizza box
- aluminum foil
- plastic wrap
- black construction paper
- tape
- Thermometer
- stick
- graham crackers
- chocolate

- marshmallows

Steps:

1. Line the inside of the pizza box with the foil.
2. Place black construction paper at the bottom of the box to absorb heat.
3. Cover the opening with plastic wrap.
4. Tape the plastic wrap securely to prevent heat from escaping.
5. Arrange the s'mores ingredients inside the oven. (or other foods wanting to cook)
6. Position the pizza box in sunlight and position the lid using a stick to reflect sunlight into the box.
7. Use the thermometer to help track the temperature inside the oven.
8. Wait up to 60 minutes, or until melted.
9. Enjoy!

After experiment discussions:

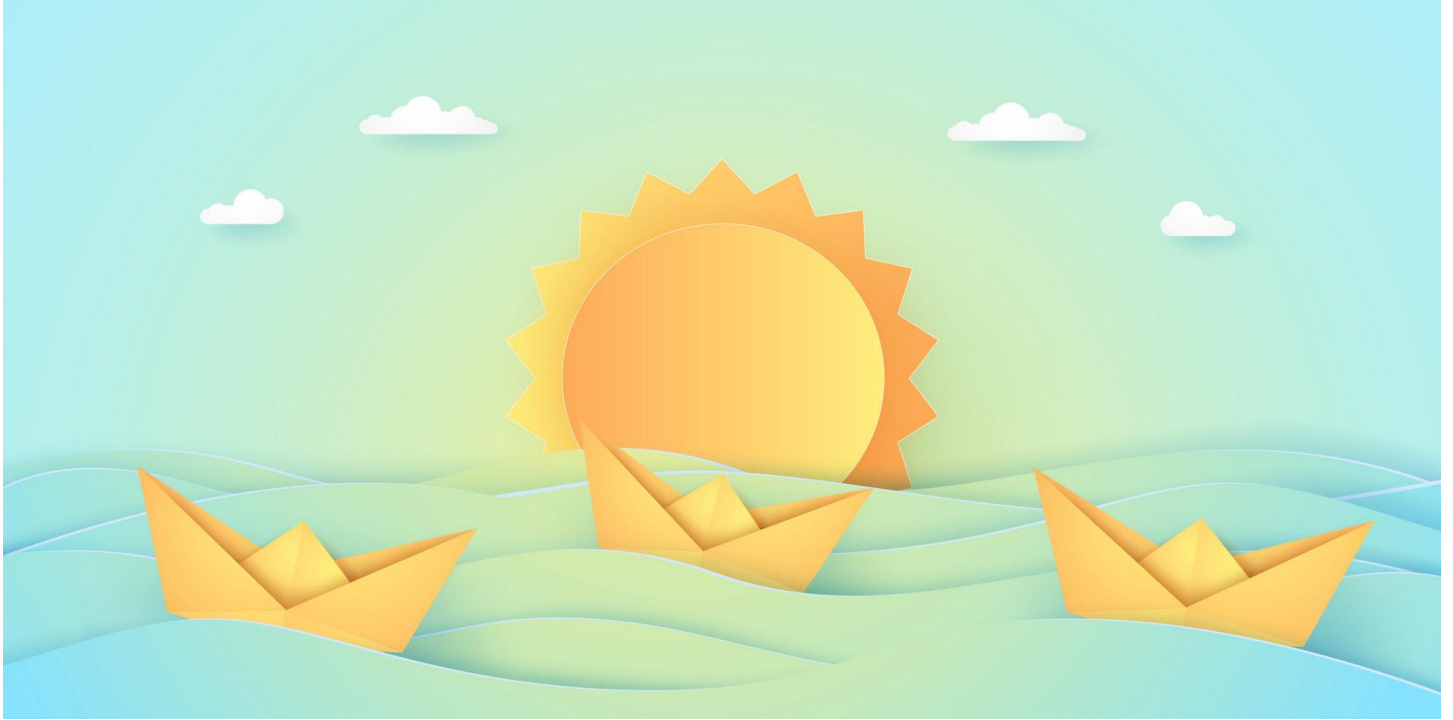
- Solar oven: The pizza box traps sunlight inside and then turns the sunlight into heat energy. The foil and plastic wrap help keep the heat inside, making it hot enough to cook food.
- Renewable Energy Sources: Sunlight, wind, and water are all energy sources that never run out and we can get them from the Earth naturally. These are called renewable resources. Using renewable energy helps us save resources and protect the environment. We can use them for many different things like powering our homes, cars, and even cooking our food, just like with the solar oven!
- Wind Energy: Watch [this science video lesson for kids](#) to learn more about energy, its sources, and wind energy in particular.



Watch on [YouTube](#)

Experiment 3: Exploring Buoyancy

This simple and fun experiment helps children understand buoyancy and density. By predicting and testing whether different objects sink or float, children can learn about why some things float while others sink, growing their observational and reasoning skills.



Fun fact about floating: The giant ocean sunfish, the mola mola, can weigh up to 2,200 pounds but their unique body allows it to float easily in the ocean!



Materials Needed:

- A large clear container filled with sea water
- Various small objects (a rock, a piece of driftwood, a seashell, a plastic toy, a feather, a piece of fruit)
- A notebook and a pen (for observations)

Steps:

1. Collect a variety of objects from around the beach or bring some from home. (rocks, seashells, sticks)
2. Before placing each object in the water, predict whether it will sink or float and write down predictions in the notebook.
3. One by one, place each object in the container of water and observe what happens.(sinks or floats)
4. Record the results in the notebook, noting which items sank and which floated.

After experiment discussions:

- Float or Sink: When objects are lighter than water ,or less dense, they will float. When objects are heavier, or more dense, they will sink.
- Buoyancy in the ocean: Boats are made to float by their shape, so even though they are heavy their shape helps them float. Sea animals have special parts filled with air

that help them float and move up and down in the water. This helps them survive and find food in the ocean.

- Properties of materials: You can also follow up this experiment by talking about about different other properties materials have. Use this [physics video lesson](#) as a starting point for your discussion:



Watch on [YouTube](#)

For more beachside scientific exploration, consider these activities:

- Collecting and Classifying Shells: Children can learn about different shell types and the marine creatures that live in them.
- Building Sand Structures: Explore principles of engineering by building sandcastles or bridges and testing their stability against waves.
- Tracking Wildlife: Grab some binoculars and a guidebook to identify birds, crabs, fish, or any other wildlife spotted. Children can track their observations in their notebooks.



Each of these activities offers a fun way to explore scientific concepts all the while enjoying the beach. These hands-on activities promote curiosity, critical thinking, and a deeper appreciation for the outside world, making a family trip to the beach fun and educational!

If your child is a fan of science experiments, check out [this science article on our blog](#) for more cool ideas of experimental activities.

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