Sound

Grades K-1

Overview

The students will explore sound energy by creating different vibrations using rulers, rubber bands, craft sticks and toilet paper tube kazoos.

Objectives

- To help students understand that energy must be used to produce sound.
- To help students understand that energy causes an object to vibrate, producing sound.

Materials

For the presenter:

- a violin, guitar or any string instrument
- a triangle (metal playing instrument)
- bell
- whistle
- book
- a piece of newspaper
- stapler

For students:

- 1 craft stick
- a wooden ruler
- Two - rubber bands - 1 large enough to fit around the length of the ruler & 1 small enough to fit around the top of a toilet paper tube
- a pencil
- One - 5" x 5" piece of wax paper
- 1 piece of string - 24 inches long
- 1 toilet paper tube
- 1 sandwich bag

Getting Ready

Activity 1

Put all the items for the presenter on a table in front of the class. Cover the objects with a cloth so the students can't see them.

Activity 2

Put all the things each student will need, except for the ruler, in a sandwich bag. This will help the students keep their materials organized and make it easier for you to hand the materials out. Write the words ***energy***, ***vibration*** and ***sound*** on the chalkboard.

Procedures

Activity 1: - What's That Sound

1. Tell the students that you would like them to close their eyes and see if they can guess what sounds they hear. When they know the sound, ask them to raise their hand. Once heads are down, make a sound with all the objects that you brought. After each sound ask one of the students to guess what made the sound and then show them the object.

2. Ask: "How did the sounds get from my table to you? How do you think sound is made?" Listen to all the students' responses. Some students may know the answers, but many of them will be discovering these concepts for the first time. As you teach this lesson, some students may not make the connection between the words on the board and what they are experiencing. That's OK. The students will take from this experience what they are ready for developmentally. Tell the students that today they are going to explore ***sound*** and what makes it travel.

Activity 2:- Exploring Sound

1. Before handing out a ruler & the bag of materials to each child, tell them they will have two minutes to see what's in the bag. When they hear you clap your hands twice, they need to put everything back and close the bag. Have one student demonstrate for the class what to do when you clap, to make sure that everyone understands what to do.

2. Hand out the materials. At the end of 2 minutes, clap your hands twice. Wait for everyone to have their bags closed before you begin.

   The students should watch you demonstrate the activity and then follow along. Have them put each object back in the bag before taking out another.

3. Place a ruler on the side of your desk or table, hold it down with one hand. The end should stick out over the edge. Using your finger, flip the end of it to produce a vibration. Move the ruler in farther on the table and see if the sound changes.

4. Ask: "What do you hear? Can you feel anything? These are called vibrations." Refer to the word ***vibration*** on the chalkboard. "What caused the vibration to happen? (***I flipped my ruler***) What did the vibration make?"(***sound***) Write the word ***sound*** on the board. Let the students experiment with the ruler for a few minutes.

5. "Take out the craft stick. Put it between you teeth and bite down. With you finger, flip the end of the stick. What do you feel?" (***vibrations***)? Continue to use the word ***vibrations*** during discussion so they will begin to relate the word to the vibrations they are producing. "Does it make a sound like the ruler did? Can you see a vibration? How does it feel?"

6. Take out the large rubber band and your ruler. Put the rubber band around the ruler. Push a pencil under the rubber band. You have a mini guitar. Pluck the rubber band with your finger. Try moving the pencil up and down the ruler and see if you get a different sound.

7. Ask: "What sound do you hear? What is making the sound? (***When I pluck the rubber band it makes vibrations***) ***Discussion***: The energy from my finger causes the vibration, which produces sound. Whenever you hear a sound, something is vibrating. It takes energy to make the vibration."

8. "Take out the piece of string. Hold one end of the string up by your ear. Do you hear any sound coming from the string? (***no***) Why not? (***nothing is making a vibration***) Now stretch the string between your two hands. If you need to shorten it, wrap the end around your hand. Hold one end of the string against your ear. Pluck the string with your thumb. What do you hear? Does it sound the same as the rubber band did? Where did the energy come from that made the vibrations? Where did the sound come from?"

9. "Take out the toilet paper tube, wax paper and small rubber band. Put the wax paper over the top of the tube and use the rubber band to keep it in place. Hum into the tube. Place you finger on the end of the tube to see how it feels."

10. "Can you feel the vibrations? Where is the energy coming from to make the vibrations? (***air blowing from my mouth***) Can you change the sound by humming soft or loud? Try watching your neighbor's tube to see if the wax paper moves. Can you see the vibrations?"

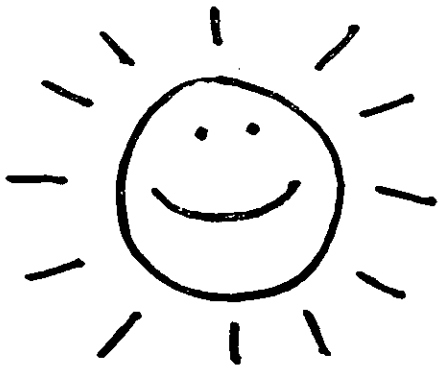
11. Have the students put all the items in their bag. They may take them home to share what they learned today about sound.

Closure

Hold up the string instrument you brought. Strum it once. Ask the students what they heard (***sound***). "What made the sound? (***vibrations***) What caused the vibrations?" ***(your energy when you plucked the strings)***

Clean up

Students put their bags away.



The Sun

Grades K-1

Overview

The students will discuss the sun's energy. Using old magazines, the students will look for pictures of things that get their energy from the sun. They will plant seeds and observe how the sun gives the seeds energy to grow into a plant.

Objectives

- To help students identify the sun as a source of energy.
- To help students understand that energy makes things grow.
- To help students identify things that get their energy from the sun.

Materials

For the presenter:

- a large piece of white butcher paper 6' x 4'
- colored marking pens
- a plant
- a couple of bean seeds
- a fish or some small animal (optional)
- pictures of people, animals, etc. (anything that needs the sun to grow)
- glue
- black marking pen
- water
- measuring cup for watering plants

For each student:

- old magazine
- scissors
- One - 1/2 pint milk carton with the top cut off or 8 oz. plastic glass
- potting soil
- bean seeds

Getting Ready

Activity 1

Draw a large colorful sun in the middle of the butcher paper and hang it up in front of the room. The students will glue their energy pictures on it. Put the fish, plant, and pictures, etc. on a table by the butcher paper.

Activity 2

Cover a table with old newspaper for planting. Cut the tops off the milk cartons. Put the cartons, soil, water, cup for watering, bean seeds and black marking pen on the table.

Procedures

Activity 1: The Sun's Energy

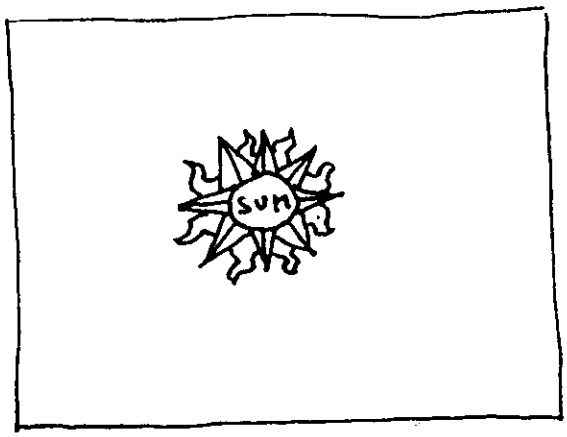
Use the questions below to spark the students' interest and get them thinking about the sun as a source of energy. Refer to the sun on your large paper to start the discussion. Share the pictures and objects with the students as you discuss the sun's energy with them.

Questions

"What do you know about the sun? Why is it important to all living things? Do you know what energy means?" Write ***energy*** on the chalkboard for future reference. "Can you think of something that gets its energy from the sun? How do you use the sun's energy?" Hold up the green plant. "Where does this plant get its energy? What would happen if we put it in the closet in the dark?" Hold up the seeds. "What do these seeds need to grow? What would happen if they were put in the closet where it is dark? Do you think a plant could live with only soil and water?" Ask a volunteer to walk across the room. "Where does your friend get his/her energy? Could he/she live without the sun? Why not?" Follow the same procedure with the other things and pictures that you brought.

Tell the students that they will each receive a magazine. You would like them to cut out pictures of things that get their energy from the sun. Explain that they will also have a chance to go to the planting table. They will plant seeds and observe what happens when their seeds are put in the sunshine.

When the students finish cutting, have them share their picture with you and glue them on the poster.

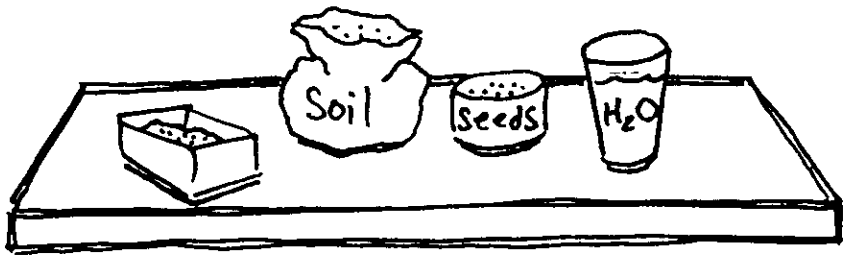


Activity 2 Planting (Have the planting table set up in another area.)

While the students are cutting out pictures, have groups of four students do the planting. It would work best if another adult or older student was able to supervise the planting at the same time the cutting activity is going on.

Student directions for planting:

1. Write your name on the side of a milk carton with a black marker.
2. Fill carton half full of soil.
3. Place 3 bean seeds on soil and cover with about 1 inch of soil.
4. Water your plant.
5. Put your plant on the counter in the sun.

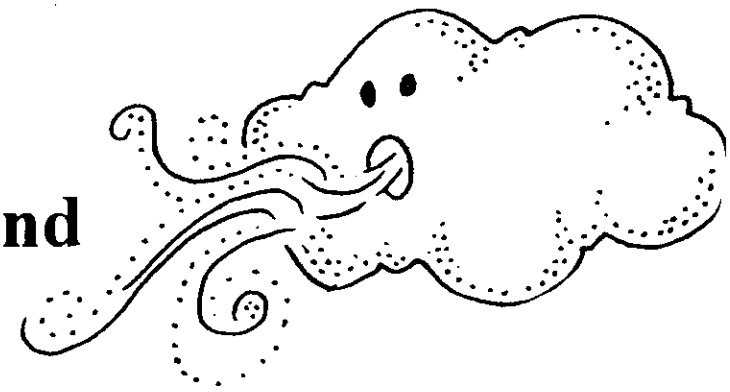


Closure

Have the class look at the sun chart in front of the class. Ask them all to point to one thing on the poster that gets its energy from the sun. Have them share with their neighbor why it needs energy. Ask a couple of students to share their ideas with the whole class. Remind the students to watch their seeds each day to see what happens when the sun gives them energy.

Clean Up

Each child is responsible to make sure all scraps are picked up at his/her desk.



The Wind

Grade K-1

Overview

The students will discuss the wind's energy. They will make kites to experiment with the wind's energy.

Objectives

- To help students understand that energy makes things move.
- To help students understand the wind is a source of energy.
- To help students understand that people use the wind's energy to make things move.

Materials

For the presenter:

- a fan
- a kite, pinwheel, etc. (anything that uses the wind's energy)
- pictures of windmills, kites, sailboats, etc. (things that use the wind's energy)
- a sample of the kite the students will make
- paper punch
- scotch tape

For each student:

- 1 piece of 11 1/2" x 18" colored construction paper, folded
- markers or crayons
- Four - crepe paper streamers 2" x 24" long
- 1 piece of string about 70" long

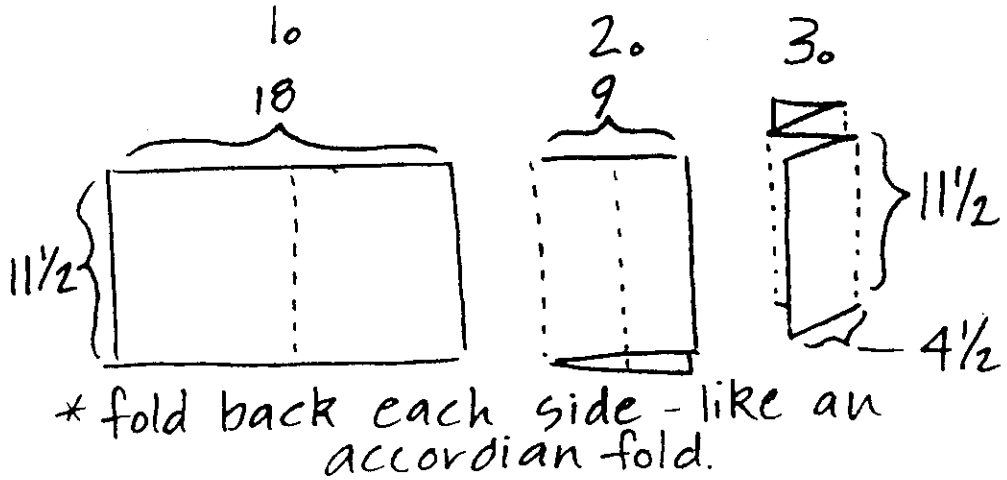
Getting Ready

Activity 1

Put the fan, kite and pictures, etc. on a table in front of the class. Write the words ***wind*** and ***energy*** on the chalkboard.

Activity 2:

Fold the 11 1/2" x 18" pieces of paper for the kites (see the example below). If you are using this with older students, they could do the folding themselves. Cut an assortment of 2" x 24" colored crepe paper streamers. Each student will need 4 streamers. Cut enough pieces of 70" long string so each student has one piece. Put the string, crepe paper and the folded 11 1/2" x 18" colored construction paper on a table that is easily accessed by the students. Make sure the students have crayons or markers at their desks to use. Make a sample of the kite the students will make. Use markers or crayons to decorate it.



Procedures

Activity 1: The Wind's Energy

Use the questions below to spark the student's interest and get them thinking about the wind's energy. Start by turning on the fan. Tell the students that this is our inside wind. Put a piece of paper in front of the fan so students can see what happens. Have a student stand in front of the fan. Refer to the word ***wind*** on the board. Share the objects and pictures with the students as you discuss the wind's energy.

Questions

"What do you know about the wind? How does it feel? What happens when it is windy? Do you like to play in the wind? Do people use the wind for anything ***(it moves things)***? When the wind moves things we call it ***energy.*** Show them the word energy on the board. The wind's energy makes things move. Can you think of ways people use the wind's energy (windmill - for electricity, sailboats, etc.)? Can you think of things you might play with that use the wind's energy?"

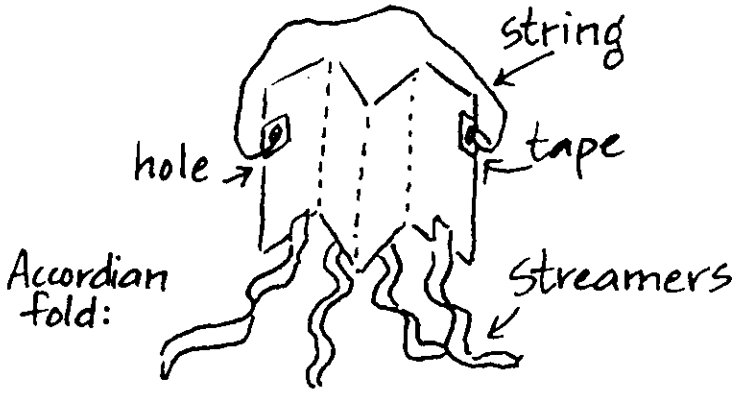
Activity 2: Making Kites

Tell the students that they are going to make a toy that uses the wind's energy. After we are finished making them, we can go out and experiment with them in the wind.

Before handing out any materials, show the students the materials and what the kite will look like when it is finished. Go over the directions for making the kite with the students.

1. Let the students choose 1 piece of folded 11 1/2" x 18" colored construction paper.
2. Have the students color a design on their paper. Refer to the kites you brought to give them some ideas on how they could design their kites.
3. Each child can choose 4 strips of crepe paper and glue them on the bottom of his/her kite(see example below).
4. A volunteer or teacher can help punch holes on the sides of the kite and reinforce with tape (see example below).
5. Let the students attach the string to both sides of their kite.
6. You are ready to fly your kite.
7. If some students are finished early, they may clean up and read a book until everyone is ready to go outside.

When everyone is ready, take the kites outside. Tell the students to run, holding their arms up high above their heads and the kites should fly. If it is a windy day the kites should fly by themselves.



Closure

After the kites are put away, ask the students to whisper to their neighbor how they used the wind's energy? What did the wind's energy do? Have one student share with the whole class.

Clean up

Students are responsible for cleaning up their space before they go outside to fly the kites.