

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: SENSES

Students will learn to use their five senses to learn about the world. Students will be challenged to identify mystery substances and objects by using a single sense.

Pre Activity:

Do!

I Spy!

Invite students to play an all-sense version of I Spy! Prepare cards with sentence prompts on that read “It feels” “It looks” “It tastes” “It sounds” and “It smells.” Use these cards to begin each clue, giving hints about an object that you spy in the room. For example, you could select a clock. Give simple clues, such as “It feels hard” “It sounds like ticking” and “It looks like a circle with numbers on it.” After the children understand how to use the cards to start their clues, invite them to pick their own object to challenge the class.

Think! Discuss or Write

What parts of your body do you use to learn about the world? Don’t stop at just hands, eyes, ears and other sensing body parts. Some students might come up with creative answers, such as brain and stomach!

Post Activity:

Do!

Popcorn Party!

Make a secret popcorn treat for the children, explaining that they will get their treat once the class figures out what it is. Prepare by pre-popping a lot of popcorn for the class! Also, fill a hidden popcorn popper with popcorn kernels and fill an enclosed box with a small slit on top with popcorn. Begin by telling students that in order to win their treat, they will have to use all their senses to figure out what it is. Remind them- no calling out! They can share their guesses after everyone gets all the clues. First, use your ears. Shake the filled box and start your popper, explaining that the box is what it sounds like after it is made and the other sound is what happens when you make it. Second, use your nose. Pass the box and allow students to sniff through the hole with their eyes closed. Third, use your fingers. Pass the box again, asking students to stick one finger in to feel what is on the inside. Fourth is a tricky one- use your mouth without peeking! Put their heads down with eyes closed and hand each student a piece to quickly put in their mouth. Before letting students use their eyes to see the treat, ask them to share their guesses. Finally- the big reveal! Use your eyes to see what the special treat really is! Pass out your reserved supply of popcorn as celebrate their good thinking skills.

Learning Goals Reinforced:

- We use senses to learn about the world.
- The five senses are touch, sight, smell, hearing, and taste.

Think! Discuss or Write

If the lights go out at your house and you’re stuck in the dark, what other senses can help you get around safely?

Link:

<http://pbskids.org/clifford/games/hide-and-peek-game.html>

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: MAGNETS

Students will learn how magnets work and experience a number of stations that challenge them to use magnets in various ways.

Pre Activity:

Do!

Nail Magnets

Collect 1 strong bar magnet, 1 paper clip, 1 eraser, and 1 steel nail. Gather students in a circle. Place one paper clip on a sheet of paper in the middle of the circle. Introduce your magnet to the students and ask the students what will happen to that paper clip if you put the magnet over it. Place the magnet over the clip. Next, ask what will happen when the nail goes over the paper clip. Show them that the paper clip does not move. Explain to students that you can use the magnetic power of the magnet to turn this nail into a magnet. Ask students to count to 100 for each rub of the magnet over the nail. (Move from top to bottom, in the same direction every time, like petting a cat). Put the nail over the paper clip again and watch as it lifts the paperclip into the air! Repeat this process, using an eraser. Ask students to predict if the eraser can be turned into a magnet. Count to 100 again, rubbing the eraser with the bar magnet, and hold it above the paperclip. Nothing will happen. Ask students to think about why one material was magnetized and the other material was not.

Think! Discuss or Write

Show pictures of magnets being used in different environments and ask students how they help make some jobs easier. For sample pictures, see below.

Post Activity:

Do!

Stopping Magnet Power

What can block a magnet's pull on a paper clip? Find out in this experiment. Collect a magnet, a paper clip, a paper or plastic cup of water, a thin piece of wood, and a few other thin or thick materials to test. Begin by demonstrating the magnet's strength. Pick up the paper clip from the floor. Begin to challenge the magnet. Before each challenge, students should make predictions about the results. Put the paper clip in a cup of water and place the magnet on the side of the cup to see if the magnet lifts the clip. Next, put a piece of wood between the magnet and paperclip to see what happens. Try other materials that you have around the classroom. You could use a big cardboard box and a thin piece of cardboard, a hand-held dry erase board, or even an eraser. Be sure to discuss different factors, such as size and material, both when students make predictions and when you discuss the results.

Think! Discuss or Write

Where do you see magnets in our classroom? Make a list.

Link:

http://ksnn.larc.nasa.gov/k2/s_magnetsWork_v.html

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: ROCKS

Students will learn how rocks are made. Students will observe and touch sample rocks from the museum collection.

Pre Activity:

Do!

Rock Gardens

Show students pictures of rocks from around the world. Discuss their differences and similarities. Explain that cultures have used rocks in many ways: sometimes for decoration (see below) and sometimes for important jobs (see below). Collect rocks from the school yard. Have students create rock sculptures at their table groups. Encourage them to use rocks to either decorate (like a garden) or do a job (like a wall). Once all groups have finished, share the creations with their classmates.

Think! Discuss or Write

Show students a rock and lead them to describe it as thoroughly as possible using their prior knowledge and senses. What does this rock look like? What does this rock feel like? What does this rock smell like? How heavy is this rock? Record the answers and comments on a chart to demonstrate the many ways of describing this simple object.

Post Activity:

Do!

Rock Sorting

Collect rocks (or use existing classroom rock collection). Lead students in a close-observation exercise. Provide each group of students with a small assortment of rocks. Ask groups to sort rocks according to a simple characteristic: color, size or texture, for example. Model rock sorting for children if they need extra reinforcement, sometimes showing examples as simple as “white rocks” and “not white rocks” groups. For a real challenge, encourage students to see if they can sort rocks into the scientific categories introduced by the science teachers (metamorphic, igneous, and sedimentary). Make time for students to share some of their creative sorting groups with their classmates.

Think! Discuss or Write

Can you name any materials that look like rocks, but are not made by the earth? Some rock-like materials are made by people in factories. Possible answers include concrete and bricks.

Link:

<http://www.learner.org/interactives/rockcycle/types2.html>

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: WATER CYCLE

Students will learn that water is constantly being recycled on our planet in the water cycle. Students will come to appreciate the value of water and learn how to preserve it.

Pre Activity:

Do!

Where'd the Water Go?

Fill a small cup or glass with water and show it to your students. Ask them to identify the liquid. Next, ask students to identify how full the glass is (all the way full, half full, or almost empty, for example). Mark the water line with a black marker. Explain that you are going to do an experiment by putting the water cup on a sunny windowsill in your classroom. Ask students to predict if the water cup will change or stay the same. Everyday that week, check and chart the water level. On the day of your science lesson, record the new lower water level and ask students if they know where the water went.

Think! Discuss or Write

Where do we see water outside? Make a word web that includes the many places water comes from in our world.

Post Activity:

Do!

Water Cycle Wiggling

Invite students to use their fingers to tell the story of the water cycle. Begin with students wiggling their fingers down low, explaining that right now the water drops are on the earth in lakes, oceans, and plants. Next, explain that the sun is out and is heating up their little fingers. Lead students to slowly lift their wiggling fingers high over head, explaining that the water drops are being lifted into the air. Once those fingers are up high, explain that they are sticking together and growing into a large cloud. Watch as students begin by making small circles about the heads and encourage them to allow that cloud to grow as the wiggle their fingers in a large circle over their heads. Now that their clouds are so big, they are too heavy! Show students how to quickly drop their fingers from the clouds back to the ground. As they wiggle their fingers down low, ask them if this reminds them of something else they had done in the activity. (The first step!) Begin the wiggle play all over again.

Learning Goals Reinforced:

- Water is recycled.
- Water is constantly moving in the water cycle.

Think! Discuss or Write

The same water we use today was used by the dinosaurs! We need to keep it safe so that people thousands of years in the future still have good water to use. What can we do to save water and keep it clean?

Link:

http://www.epa.gov/ogwdw000/kids/flash/flash_watercycle.html

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: TOWERS/CONSTRUCTION

Students will learn basic geometric shapes as they relate to construction. Students will build tall paper structures by creating strong bases.

Pre Activity:

Do!

Story Time

Read the story of The Three Little Pigs. Ask students to identify the three materials used for building houses and discuss why bricks work best for protecting the pigs from the wolf. If you have time, have groups of students “build” the houses themselves, with students pretending to be straw, sticks, or bricks. Huff and puff and watch as the “houses” crumble!

Think! Discuss or Write

What are buildings made of? Make a list of materials that people use to make different kinds of buildings: houses, skyscrapers, offices, stores, sheds and schools.

Post Activity:

Do!

Gumdrop Towers!

Provide groups of students with a bag of gumdrops, toothpicks, popsicle sticks, and pipe cleaners. Invite each group to build three small towers, each using different materials to connect the drops. Ask students to predict what will be the best connecting materials and what will be the worst. Discuss as a class the students’ thoughts on the pipe cleaners, popsicle sticks and toothpicks and which made the best connecting material.

Learning Goals Reinforced:

- Buildings are made with many materials.
- Towers are tall buildings that need a good base and lots of support.

Think! Discuss or Write

If you could build your own playhouse, what materials would you use? Why? Let children be as silly and creative as possible in designing their playhouses!

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: CENTER OF GRAVITY

Students will learn about center of gravity and balance in a series of engaging exercises. Students will build superhero toys that appear to fly off their fingertips.

Pre Activity:

Do!

Balancing Act

Pick two students to volunteer for this balance experiment. Obtain two identical copies of a light, hardcover book. Center one book on top of the first student's head and ask him or her to hold it in place. Place the other book on the second student's head so that it is off-center (in other words, the far edge of the book should be on the very top of the student's head), again asking the student to hold it in place. Ask the class to predict which book will stay in place when the students let go of the books. Ask the students to slowly let go of the books on the count of three. Discuss why the book laying flat and centered on a student's head stayed in place, while the off-center book did not. Show that the off-center book was heavier on one side, while the centered book had equal weight on both sides. To experiment further, provide different objects for balancing, including pencils, rulers, balls, and construction paper, and ask students why some may be harder to balance than others.

Think! Discuss or Write

What games and sports do you play where you need to be good at balancing?

Post Activity:

Do!

Story Time

Read *Bears on Wheels* by Jan and Stan Berenstain to teach students why balance is important while riding on bicycles and unicycles. Let students use blocks as you read and share the pictures so that students can recreate some of the silly bear configurations.

KINDERGARTEN SCIENCE SAMPLER STUDY

CLASS: SCIENCE SAMPLER: CHEMISTRY

Students will learn about scientists who mix various substances to make new discoveries. Students will create chemical reactions using household materials.

Pre Activity:

Do!

Make it Disappear!

Set up five cups of water in the front of the classroom and also five materials for mixing. Be sure to collect a variety of materials, including some that will dissolve and some that won't dissolve. Possible materials include sugar, beans, sand, salt, and Kool-Aid powder. Ask students to predict what materials will dissolve if dropped in water and stirred. Record the class predictions. Then, pour some sugar in the first cup and stir. Record the results (the sugar should dissolve in the water). Continue with all the other items until you get to the Kool-Aid powder. Pour a little in the water and stir, then ask students to look closely. Ask the students if, although they can no longer see the powder particles, the water looks the same. Use the colored water to explain that, even though some substances look like they "disappear" in the water, they are actually still present. Allow students to taste test the sugar and salt water to further demonstrate that, even if you can't see the sugar and salt, it's still there.

Think! Discuss or Write

Have you ever cooked in your kitchen? What can you make? What do you need to use to make that recipe? Collect students stories about mixing, cooking, cutting, and baking.

Post Activity:

Do!

Gooey Oobleck

Give your students the chance to play with a very special, oozy substance! Oobleck is a special substance (a non-Newtonian fluid) that has the properties of both a solid and liquid depending on how it is handled. Oobleck is 1 part water to 2 parts cornstarch. Begin by placing the cornstarch in a bowl, and then slowly add water, stirring constantly. Once the cornstarch has been noticeably absorbed into the water, it has the consistency of a thick glue. You can allow students to make their own oobleck, or make one big batch for the class in a bucket. Now, experiment! When pressure is applied to oobleck, it acts like a solid. However, it also behaves like a liquid in that you can pour it from one bottle to another. Allow students to experiment with the oobleck to see just what it can do! If you have time, read Dr. Seuss's "Bartholomew and the Oobleck" to introduce this gooey substance.

Link:

<http://www.science-house.org/CO2/activities/polymer/oobleck.html> (for teachers

Magnets used in Transportation

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Magnets used in Clean Up



Magnets Used in Travelling

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Magnets used in Medicine

QuickTime™ and a
TIFF (Uncompressed) decompressor
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Rock Garden Art

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Rock Wall

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Rock Wall (close up)

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Rock Sculpture in San Francisco

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Rock Zen Sculpture

QuickTime™ and a
TIFF (Uncompressed) decompressor
are needed to see this picture.

Rock Water Dam