GOOD YEAR BOOKS

Sample Pages

Sample pages from this product are provided for evaluation purposes. The entire product is available for purchase at www.socialstudies.com or www.goodyearbooks.com

To browse eBook titles, visit
http://www.goodyearbooks.com/ebooks.html

To learn more about eBooks, visit our help page at
http://www.goodyearbooks.com/ebookshelp.html

For questions, please e-mail access@goodyearbooks.com

Free E-mail Newsletter—Sign up Today!

To learn about new eBook and print titles, professional development resources, and catalogs in the mail, sign up for our monthly e-mail newsletter at
http://www.goodyearbooks.com/newsletter/

For more information:

10200 Jefferson Blvd., Box 802, Culver City, CA 90232
Call: 800-421-4246 • Fax: 800-944-5432 (U.S. and Canada)
Call: 310-839-2436 • Fax: 310-839-2249 (International)

Small Wonders

Hands-On Science Activities for Young Children

Peggy K. Perdue

Illustrated by Karen Waiksnis DiSorbo

GOOD YEAR BOOKS

GOOD YEAR BOOKS
are available for preschool through Grade 12 and for every basic curriculum subject plus many enrichment areas. For more Good Year Books, contact your local bookseller or educational dealer. For a complete catalog with information about other Good Year Books, please write to:

Good Year Books
A Division of Social Studies School Service
10200 Jefferson Boulevard
Culver City, CA 90232-0802
www.goodyearbooks.com
(800) 421-4246

ISBN 978-1-59647-309-6
Previous ISBN 0-673-38198-6

Contents

More Than Meets the Eye

This lab has students examining invisible air as they find out that an empty glass is not really empty.

Materials per student

Clear plastic glass / Water (to go in glass) / Straw / Balloon

Materials per class

Aquarium / Water / Blue food coloring / Clear plastic glass / Large self-sealing plastic bag

Preparation

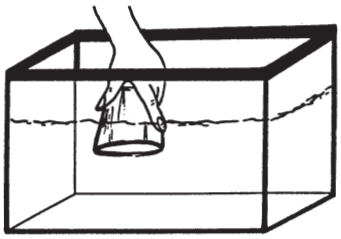
Fill an aquarium two-thirds full of water. Add several drops of food coloring. Stir to mix. Fill plastic glasses half full of clear water.

Focusing activity

Gather students around the aquarium, with water already in it. Hold up a plastic glass for students to see. Ask students, "What is inside this glass?"

Turn the glass upside down and sideways while students respond. Most students will reply that the glass is empty, but do not acknowledge if the answers given are right or wrong.

Procedure for lab



Invert the glass, and slowly lower it straight into the water. Act amazed when no water goes into the glass. Ask students why the water is not going into the glass. What is keeping the water out?

Slowly tip the glass. When an air bubble escapes, act surprised. Ask, "What was that? I thought the glass was empty. What came out of the glass?" Allow students to hypothesize (guess). Repeat the demonstration if necessary.

Have students go back to their seats. Give each student a plastic glass of water and a straw. What will happen if students put the straw into the water and blow into the straw? Have students try. What is coming out of the "empty" straw? After observing, students will answer, "Bubbles." Ask what is inside the bubbles. What did they put into the straw that came out into the water?

Discuss air. Can they see air? Can they see the effects of air? What are some things that air (wind) can do?

Hold up an opened self-sealing plastic bag. Zip it shut, and hold it between your hands. Why can't your hands come together? What is inside the bag that prevents your hands from coming together? Is the air in one corner? Students should be able to see that air fills the entire bag.

Give each student a balloon. Have students inflate and hold the end of the balloons. (Inflating the balloons may be difficult, depending on your class and the quality of balloon. Be sure to

test the balloons first.) How much of the balloon is filled with air? Is the air on only one side? Explain that air fills up the entire balloon. Have students allow the air to come out slowly so that they can feel it against their skin. What do they feel? Have students inflate the balloons again, using only a little air. What difference is there? What caused the difference?

Discuss what else contains air. Review that air is invisible and fills whatever container it is in.

Evaluation activity

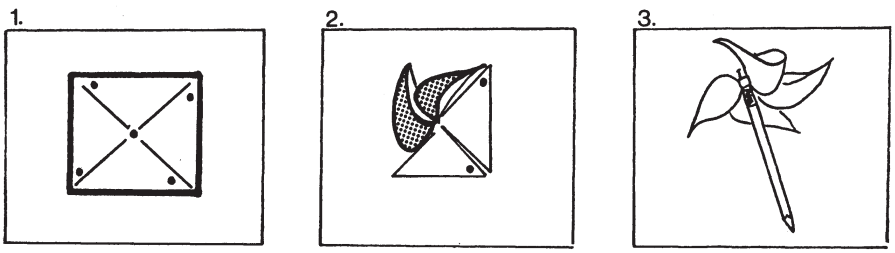
Have students bring in items or pictures of items that contain air. Place the items in a learning center, and display the pictures on the bulletin board for students to examine.

Extension activities

Have students put their hands on their sides and feel their lungs expand when they breathe. What is making their lungs get larger?

Have the class fly a kite. What is keeping the kite up?

Have students make pinwheels. Cut a piece of paper four to eight inches square for each student. Draw a line toward the center of the paper from each corner, stopping approximately one inch from the center. Put a dot on the left corner of each triangular section (make sure it is the same corner on each triangle) and one in the center of the paper. Have students cut along the lines. (This is an excellent chance for them to practice using scissors!) After all four lines have been cut, the corners with the dots should be brought to the center of the paper. Poke a straight pin through the center of the paper, making sure the pin goes through each corner brought to the center. Stick the pin into the eraser end of a pencil.



Bubbles, Bubbles Everywhere!

Preschool children love bubbles. Bubbles offer you an excellent way to review colors, shapes, size, and gravity! This is a good lab to do outside so that if any bubble solution spills, the cleanup is minimal.

Materials per student

Bubble solution / Paper cup /
Pipe cleaner (available in most craft stores)

Materials per class

None

Preparation

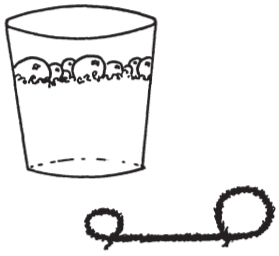
Before starting this lab, students should be able to identify basic colors, shapes, and sizes.

Pour a small amount of bubble solution into paper cups (enough cups so that each student has one). You can make an inexpensive bubble solution by mixing one part liquid dish soap with ten parts water.

Focusing activity

Before going outside, give each student a pipe cleaner. Let each student investigate the pipe cleaner for a few minutes. Ask how it feels. What color is it? Can it bend, or not? What do the students think it could be used for?

Procedure for lab



Have each student make a circle overhead with his or her arms. Then tell the students to make a tiny circle at one end of the pipe cleaner. Now tell them to make a big circle at the other end of the pipe cleaner. What does this reshaped pipe cleaner remind them of? Explain that they have just made a bubble wand. This Magic Wand will help them to make beautiful bubbles.

Take students outside. Pass out cups with bubble solution inside. Tell students you want them to dip the end that has the *little* circle into the bubble solution, hold the little circle up, and gently blow through it. "What colors do you see?" Students should name a variety of colors. "Are the bubbles big or little? Which direction do the bubbles go? Why? Can you make the bubbles go up? How? What shape are bubbles? Can you catch a bubble without popping it?"

Now have students dip the end that has the *large* circle into the bubble solution. Gently blow. "How are the bubbles different? How are the bubbles the same?"

Have students carefully push the sides of the large circle together so that it is now an oval instead of a circle. Dip it into the bubble solution. "What shape are the bubbles? Are they the same or different?"

Encourage students to experiment. Can any of the students carry a bubble to you? Which bubbles are stronger, the small ones or the large ones? How many bubbles can students get from one blow?

Bring students inside for a circle discussion. Ask students what colors they saw in the bubbles. Did the little circle make big or little bubbles? Did the big circle make big or little bubbles? What shape were the bubbles from the round wand? What shape were the bubbles from the oval wand? Which direction did the bubbles go? What pulled the bubbles down? What could make the bubbles go up?

Make a square out of a pipe cleaner. Pour some bubble solution into a dish. Ask students what shape they think the bubble will be. After all students have had an opportunity to hypothesize (guess), dip the square into the solution. Gently blow. What are the similarities? The differences?

Evaluation activity

Have students pretend they are bubbles and float around the room. Remind students that bubbles are graceful and quiet! Ask them what colors they are. Watch how they move.

Extension activities

Learn "One Little, Two Little, Three Little Bubbles" (to the tune of "One Little, Two Little, Three Little Indians").

One little, two little, three little bubbles,
Four little, five little, six little bubbles,
Seven little, eight little, nine little bubbles,
Ten little bubbles go pop, pop, pop!

Learn "There Are Bubbles All Around" (to the tune of "If You're Happy and You Know It, Clap Your Hands").

There are bubbles all around, all around.
There are bubbles all around, all around.
There are bubbles all around,
In the air and on the ground,
There are bubbles all around, all around.

Pour a small amount of soda water into clear glasses. Have students observe the bubbles. Talk about the shape, size, and color of the bubbles and the direction in which the bubbles are moving.

Have students try different shapes of bubble wands. If students have commercial bubble wands at home, encourage students to bring the wands to class.

Try different bubble solutions. Does a different solution change the color, shape, or size of the bubbles? Does it make the bubbles last longer?

Bug Off!

This lab will have students searching for insects as they try to determine how insects move and where they live.

Materials per student

Toilet paper tube / Magnifying glass (if possible)

Materials per class

Magnifying glass if one is not available for every one or two students

Preparation

Have students bring in empty toilet paper tubes.

Focusing activity

Tell students that they are going to play hide-and-seek outside. Explain that they are not going to be the hiders; they are going to be the seekers. Something is already hiding outside. Can they guess what it might be? Tell students that you will give them some hints, and proceed to name the characteristics of insects without telling the students what you are describing. Tell them that the hidden thing is a group of animals. Allow students to guess. The animals are very small. Again allow students to guess. The animals have six legs. Allow guessing. Continue giving hints until students either say, "Insects" (or "Bugs"), or give an example, such as "Ants."

Procedure for lab

Give each student a toilet paper tube. Explain that these are their Bug Finders. Bug Finders will help them locate the insects. The tube narrows students' field of vision and helps them focus on a single item.

Ask students where they might find insects around the school. Where would they hide if they were an insect? Discuss some possibilities. Stress to students that they are *not* to harm an insect. They are to look at it. How does it move? Does it move in a straight line or a crooked one? What color is it? Is it bigger than their fingernail, or smaller?

Take students outside. Give each student a magnifying glass if available. If one is not available for every one or two students, have students take turns using the classroom magnifying glass. (This is a good opportunity for students to practice sharing!) Guide students around the school yard in search of insects. Encourage students to share their finds.

Evaluation activity

Have a Bug Day on which each student brings a live bug in a jar with air holes in the lid or cheesecloth over the top. Did students bring in only bugs, or did they also bring in worms or spiders? Have students compare. Students should release the insects as close as possible to the place the insects were found.

Extension activities

Play Red Light, Green Light, having students move like a butterfly, a grasshopper, an ant, and so forth. Select a leader to decide when the light is green and when it is red. When the leader says, "Green light," students move. When the leader says, "Red light," students stop.

Have pictures of insects at a learning center for students to look at. How many legs does each insect have?

Quite a Handful!

Counting! Classifying! Estimating! Graphing! Hypothesizing! Color identification! Your students will work with all these concepts in this lab by using Fruit Loops.* (You'll be amazed at how many Fruit Loops students can hold.)

Materials per student

Lab sheet (page 52) / Paper towel / Glue

Materials per class

Box of Fruit Loops /
Red, orange, and yellow circles (cut from construction paper) to represent Fruit Loops /
Tape

Preparation

Students should know how to count to ten. Duplicate the lab sheet so that each student can have a copy. Draw a graph on the board that is like the one on the lab sheet, for students to see.

Focusing activity

Hold up a Fruit Loop, and ask students to describe what you are holding. If necessary, prompt students with questions such as "What shape is it? What color is it? Is it smooth? What size is it?" When students have listed several of the cereal's characteristics ask, "Does anyone know the name of what I am holding?" At least one student will probably be able to identify the cereal as Fruit Loops.

Procedure for lab

Ask each student to hold up a hand. Is the hand bigger or smaller than the Fruit Loop? Ask each student how many Fruit Loops would fit in his or her hand. Expect some wild estimates! How could they find out? Allow students to come up with ways they would test their hypotheses.

Prior to testing, remind students that they are *not* to eat the Fruit Loops because they will be doing something special with them. Give each student a paper towel. Have each student

*Fruit Loops is a registered trademark of the Kellogg Company.

reach into the cereal box and pull out a handful of Fruit Loops. Tell students to put their handful on the paper towel. Encourage students to count how many Fruit Loops fit into their hand. Was their hypothesis right or wrong? Most students will tell you it was right, no matter what they originally said. You may wish to say that your own hypothesis was wrong so that they understand that a hypothesis can be wrong without anything bad happening.

Have students look at the handful they gathered. What colors are in Fruit Loops? Have students separate the Fruit Loops by color.

Direct students' attention to the board. Tell students that the squares on the board will help show how many Fruit Loops of each color the students have. Point to the word *Red*. Ask what color they think this word is. Tell students that in your handful, you have three red Fruit Loops. Take three red circles and tape one in each square in the *Red* column, starting at the bottom and going up. Explain that each red Fruit Loop can fit in one square on the graph.

Hand out a lab sheet to each student. Tell students to put their red Fruit Loops in the *Red* column of their paper, starting at the bottom and going up. Have students put a little glue on each red Fruit Loop and position it on the paper. Repeat the procedure for the orange and yellow Fruit Loops.

Have students count and share how many of each color they had in their handful. Of which color Fruit Loops did they have the most? Of which color did they have the least? Did anyone get only one color? Did anyone get at least one of each color? Allow the graphs to dry undisturbed on a flat surface. Display the graphs so that students can compare results.

Evaluation activity

Repeat the experiment with other materials. How does the size of the material affect how many will fit into a hand? With practice, students will refine their ability to predict results.

Extension activities

As a math exercise, ask students how many red pieces and orange pieces they have. How many orange and yellow? How many yellow and red?

Have students practice hand-eye coordination by stringing the Fruit Loops on yarn. Display a pattern of colors, and have students repeat the pattern as they string. (This gives students good practice in a prereading skill.)