A Reason to Write

By Peggy Ashbrook

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Children love seeing their work and photos of themselves at work. Make this an opportunity for an early literacy experience by creating a book about a classroom investigation. Document each step of a process with photographs and student drawings. With help, young children can add further explanation, describing their actions or thoughts. A National Institute for Early Education Research Preschool Policy Brief (see Internet Resource) states that "young children build vocabulary when they engage in activities that are cognitively and linguistically stimulating by encouraging them to describe events and build background knowledge."

Lessons on buoyancy work well as explorations to document and are part of the National Science Education Content Standards A: science as inquiry and B: physical science, properties of objects and materials. Children know that some objects sink in water and others float. The relation between volume and density and floating can be explored—if not measured—in the early years with the following materials (some of which challenge assumptions): sponges, pumice, fruit, small-lidded containers (some filled with water, some with air), soap, dense plastic models of animals that swim, various balls, jar-and-bottle lids, keys, coins, Plasticine, and sea shells.

Teachers may find it helpful to review resources before doing a "sink or float" activity with students (Robertson 2007). When talking about testing for sinking or floating, use the complete phrase "sink in water" to invite trying this activity with other liquids such as milk, vegetable oil, or corn syrup. Discovery bottles filled with liquids such as corn syrup offer additional nonmessy experiences (Watson 2008).

Before putting anything in the water, children can draw objects they think will float and label them as such. Children often reveal their incomplete understanding when telling why they think something will sink. Challenging incomplete understanding with heavy objects that float presents additional experiences on which to base their ideas. If they say "all rocks sink," give them a piece of pumice (often sold at hardware stores) among a varied set of rocks to test this hypothesis. Reviewing an assembled class book, students will first look for evidence of their participation, shouting out, "I drew that!" At later readings they will be interested in discussing the meaning of the work. Help the children refine their vocabulary and thinking by asking, "Do all hard things sink?" "What is the difference between 'hard' and 'heavy'?" "Can heavy things float?" Plans can be made to revisit the activity to test new predictions. The book can be amended. Buoyancy is a complicated topic that will require repeated experiences for understanding, but students will be well on their way—and will be ready to document their next scientific investigation.

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References

National Research Council (NRC). 1996. *National science education standards.* Washington, DC: National Academy Press.

Robertson, W.C. 2007. How can an ocean liner made of steel float on water? *Science and Children* 44 (9): 56–59.

Watson, S. 2008. Discovery bottles. *Science and Children* 45 (9): 20–24.

Internet Resource

Preschool Policy Matters
http://nieer.org/resources/policybriefs/10.pdf

Sink or Float

Objective:

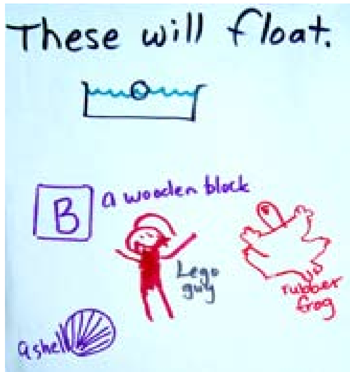
To gain experience with the nature of density for the creation of a book

Procedure:

1. Propose that the class make a book about a science activity for others to read and follow to do the activity. Examine a recipe-type book about science activities as an example of what might be useful to other student scientists (see Resource). The book can contain drawings, writings, and photographs. Choose an activity to document; here we describe a sink/float activity.
2. If students are new to journaling their work, explain the idea of recording their thoughts and observations to refer to later.
3. Prepare materials for students to document their work (e.g., writing/drawing materials, camera).
4. Demonstrate *float* and *sink* with two objects in a tub of water.
5. Explain the concept of prediction, and ask, "Which group do you predict each object will be in, floaters or sinkers, when you put it in water? Why do you think it will do that?"
6. Have the children choose a few objects that they think will sink and a few that they think will float. Then have them draw the items ("floaters" on one page and "sinkers" on another page). Older children can write a label or sentence. All children can take photographs to document the experience.
7. Let the children discover whether their predictions are true through experience, supporting their explorations with open-ended questions such as "What happens when you put the (object) in the water?" and "Does it always do that?"
8. Have the children view objects through the side of the tub and check to see if the object actually touches the bottom or if it floats above it (they can also feel gently with their fingers). Ask, "Is the (object) touching the bottom of the container? Is it near the top of the water?"
9. Have the children record the results they observe, drawing the objects on a teacher-drawn cross-section or outline of the container with the water level drawn with a symbolic wavy line. Children's understanding of representation, and of sinking and floating, can be assessed by their placement of the object in the picture relative to the waterline.
10. Assemble the children's documentation into a book. Page protectors cover the documentation during reading. Read it aloud, and refer back to it later.

Materials

- Water table or large tub (clear plastic is best for easy viewing)
- Water
- Towels
- Some objects that will sink and some that will float in water: plastic and metal bottle lids, small pieces of wood (sticks or slices), old keys, stones (including pumice), small pieces of cloth, shells, sponges, fruit, small-lidded containers (some filled with water, some with air), soap, plastic toys (including dense plastic models of animals that swim), coins, Plasticine, golf balls, and balls that do and do not float
- Writing and drawing materials
- Camera (optional)
- Page protectors and notebook



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This activity requires some teacher follow-up time to format the documentation for book form. Much of the work can be done with students—a few pages at a time or in small discussion groups to allow for varying attention spans—over several sessions. To switch things up, have students create an audio book, voice recording their initial predictions, data, and observations. You can even revisit this activity with seasonal natural objects such as pumpkins, seeds, snowballs, or leaves to renew interest in buoyancy. By repeating their play, children will find that the objects act in predictable ways. Each time students read the book about their work they will discuss their ideas again.

Resource

Ardley, N. 2006. *101 great science experiments.* New York: Dorling Kindersley Children.

NSTA Connection

View sample book pages at *www.nsta.org/SC0911.* Visit the Early Years blog at *http://blogs.nsta.org/EarlyYearsBlog* to read more about using early literacy strategies in science—and share your own!

So, what's the reason to write that keyword, or why does it even exist? Specifying this explicitly helps denote your intention to make the type private, very explicitly. This helps with maintainability of your code over time.Â Not quite - the default is "the most restricted access available for this declaration". So for example, with a top-level type the default is internal; for a nested type the default is private. So, what's the reason to write that keyword, or why does it even exist? It makes it explicit, which is good for two reasons: It makes it clearer for those who don't know the defaults, as per your question (I've never liked this argument, personally, but I figured it's worth mentioning). It gives an impression that you've deliberately decided to make it private, rather t