Learning to Grow
MAKING A DIFFERENCE TOGETHER
CENTER ON THE FAMILY ❤ UNIVERSITY OF HAWAI'I

Building a Love of Science for Your Young Child

Being "scientific" involves being curious, observing, asking how things happen and learning how to find the answers. Curiosity is natural to children, but they need help understanding how to make sense of what they see and to relate their observations to their existing ideas and understanding. When you encourage children to ask questions, make predictions, offer explanations and explore in a safe environment, it supports scientific thinking.

Science "happens" all around us every day. You don't need expensive chemistry sets, equipment or kits to introduce a child to the natural world and encourage him to think about what he sees. Instead, use your everyday routines, but be intentional in pointing out or setting up opportunities for your child to observe, engage, and predict how things work in the natural world. Here are some things to keep in mind:

- ❤ Young children already encounter science experiences through their everyday play and interactions with others. You can enhance this learning by focusing on his interests and abilities to explore and discover in a safe environment.
- ❤ Engage in repeated and varied opportunities for him to explore and experiment.
- ❤ Create a setting that encourages discovery, exploration, and thinking. When your child asks questions, ask him to propose possible answers, test them out, and check them by using reference books, the Internet, or by asking someone who is likely to know the correct answers.

This newsletter will provide tips for you to use with your infant, toddler, or preschooler, as well as suggest activities that promote scientific thinking that you can do with your child at home.

In This Newsletter:

To support you in fostering your child's healthy development and school readiness, this newsletter includes:

- ❤ ***Age-specific information and suggestions*** about activities to do with your infant, toddler, or preschooler,
- ❤ ***Featured activities*** for each age group,
- ❤ ***How This Helps:*** a summary of your child's development as a result of doing these activities together,
- ❤ ***Community Resources:*** for more information about this topic, and
- ❤ ***Suggested Books:*** a list of books to read with your child.

Infants

One of the major concepts of scientific thinking is discovery and using the information gathered to create ideas about how things work. This type of thinking starts from infancy. Babies use their five senses to gather physical knowledge about their brand new world. They use their eyes, ears, skin, fingers, and mouths to investigate and experiment. Even though it doesn't look like it, when your child puts an item into his mouth, he is determining its shape, texture, and whether it tastes good!

You can build his scientific thinking by using everyday occurrences to introduce activities to your child that promote discovery and exploration. Here are some ideas:

- **Food textures:** As you cook, keep your baby nearby to use his senses to look at, feel, smell, and even taste (when appropriate) the food during the process of preparation. Talk throughout the process to describe the various shapes, colors, textures and smells with statements like: "This dough is so smooth—and look how we can stretch it!" "Let's see what vanilla smells like!" "The spinach is bright green."
- **Introduction of nature:** Go on a nature walk and see plants and animals in their natural environment. Gather leaves, sticks, or rocks and have your child look at them closely and carefully. Your infant may be interested in feeling the veins of the leaves and discovering the various shapes and textures.

Activity for Infants: *Watching a Toy Go Out of Sight*

Materials:
Toys

What to Do:

1. Support your baby on your lap so that you can see his eyes. Hold a toy where his eyes are looking.
2. Move the toy slowly and notice the way he follows it with his eyes. After a few moments, give him the toy to play with while offering kisses and encouraging words. "You watched me move your rattle back and forth and up and down."
3. To keep his interest, change the directions of the moving object and by using different toys.
4. Choose a toy that makes noise and move it out of his sight after he has had success following a toy with his eyes.
5. Observe how he reacts when he can no longer see or hear the toy. Think of creative ways to make the toy disappear and reappear. The toy can hide under a blanket or shirt, peek behind a curtain, or sit under a hat.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

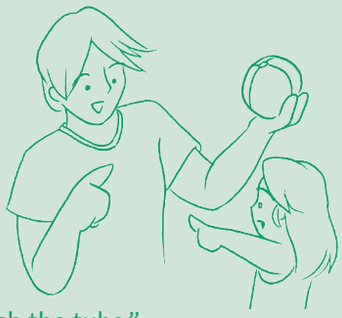
Toddlers

Toddlers are active and mobile, and are eager to explore and apply language to their experiences. Your toddler may be asking questions about things he sees and how they work. This type of thinking is the beginning of the scientific process – observing, making sense of observations, predicting what might happen, and testing those predictions. You can use these times as opportunities to engage your child in conversation about what he is observing, and extend his learning by asking open-ended questions that may spark more questions or a new direction to explore.

There are numerous everyday opportunities for engaging in scientific thinking with your child, and any of these experiences can happen indoors or out, day and night. Here are some ideas:

- **See your shadow.** Point out his shadow to your child: "There's your shadow! It seems to stay on this side of you. What do you think happens when you try to step on the shadow? Try it out and see what happens."
- **Use a mirror.** Encourage your toddler to look at himself in the mirror to experience reflection. As he does, act as a "narrator," by asking a question like "What do you see?" or "Do you see your eyes?" or making a statement such as "When I look in the mirror I can see my ears!" Very young children benefit from many experiences with mirrors in order to get a sense of what a mirror can do, and the narration can help them to associate language with what they see.

Activity for Toddlers: *Learning to Predict*



Materials:

Cardboard tube (e.g., paper towel or wrapping paper roll)
Small ball

What to Do:

1. Hold the tube higher at one end.
2. Have your child put the ball in the higher end of the tube.
3. Guide his attention as you play. "There goes the ball! It's coming through the tube."
4. At first, he may look into the tube to find the ball. After a few times, he will begin to expect the ball to appear at the other end.
5. Hold the tube in different ways to make the ball move fast or slow.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

Preschoolers

Your preschooler may already know quite a bit about the natural world, from his prior experiences, including cause and effect, properties of an object, and differences between objects. He may be eager to expand his knowledge and you can support this through repeated exposure to a variety of experiences that allows him to research and experiment about his world – testing theories, exploring properties, and learning how things work. You can have him engage in trips to the park and the playground, water and sand play, making fruit salad, rolling toys down a ramp, and building with blocks. Here are some ideas that you can do with your child:

- **Transformations:** Experiment with how things change. For example, freeze/melt water, grow a plant, put a piece of bread or fruit into a large clear glass and tighten the lid. Have your child make predictions of what will happen, point out details as you observe it at different intervals, and talk about the outcome, using books, Internet, or people as resources.
- **Outdoor adventures:** Look for worms, ants, or pill bugs (aka sow bugs or "roly-polies") under rocks, leaves, or pieces of wood. Look around your home with your child for likely places to find these animals. Once you've located some, pay attention to how they move or their various body parts. Ask questions to engage your child to think about big ideas such as, "I wonder how that bug's shell helps it," or "I wonder what the ant finds to eat here."

Activities for Preschoolers: *Does It Float or Sink?*

Materials:

Beach objects such as driftwood, coconuts, rocks, shells, and seaweed
Paper, Pencil

What to Do:

1. When you and your child are at the beach, find several natural objects to experiment with.
2. Ask your child to describe each object's appearance and texture. If he has difficulty, prompt him with questions such as, "What does it look like?" and "How does it feel?"
3. Ask him to guess which objects will float or sink in the water, then have him toss each one into the water to find out what happens to it.
4. After each toss, talk about the reasons why objects float or sink: "Did the rock sink because it was heavy or light?"
5. Make a chart to show which objects floated and which sank.
6. Have him count the number of objects that floated and the number that sank.

(See page 5 for information on how doing these kinds of activities with your child helps his development and school readiness.)

How This Helps

The activities suggested in this newsletter help promote many different aspects of development:

Physical Development
- ❤ Learn to use his body with intention.
- ❤ Learn through his senses: seeing, hearing, smelling, tasting, and touching.

Social and Emotional Development
- ❤ Learn to interact with others.
- ❤ Develop a close bond with you.

Language and Literacy Development
- ❤ Build verbal skills and vocabulary.
- ❤ Learn to ask and answer questions.

Cognitive Development
- ❤ Begin to understand cause and effect.
- ❤ Develop his thinking and problem-solving skills.

Kids in the Kitchen

Cooking teaches valuable lessons. As you do this recipe with your child, show him how to safely handle the items and allow him to do as much as he is capable of. Ask questions throughout the process to encourage his thinking skills. Make sure to wash your hands and your child's hands before preparing any food.

Stuffed Portabella Mushrooms

Adapted from: http://healthyliving.tamu.edu/dinners/

Ingredients:

4 portabella mushrooms
1 zucchini, chopped
1 bell pepper of any color, chopped
1 small onion, diced
Dash of Worcestershire Sauce
½ cup fat-free cheddar cheese, grated

Instructions:

1. Preheat oven to 350 degrees.
2. Remove the stems from the mushroom caps and chop stems, leaving mushroom cap intact.
3. Add chopped vegetables to the mushroom stems and sauté in a hot pan with non-stick cooking spray until vegetables are tender. Drain off any excess liquid.
4. When vegetables are cool to the touch, have your child place mushroom caps on a baking sheet and have him scoop approximately ½ cup of sautéed vegetables onto each mushroom cap and have him top each mushroom with cheddar cheese.
5. Bake for approximately 10 minutes.

Community Resources

PBS Parents – Science
http://www.pbs.org/parents/education/science/
Science-building activities, tips, and games for parents and care providers that you can do with your child.

National Geographic Kids
http://kids.nationalgeographic.com/
Site with information about animals, science, and nature through cool facts, funny videos, games, and more!

Kitchen Science
https://eclkc.ohs.acf.hhs.gov/hslc/tta-system/teaching/eecd/domains%20of%20child%20development/science/kitchen%20science.pdf
A teaching kit for care providers that focus on everyday substances and how to encourage children to explore the properties and experiment with ways to change them.

Suggested Books

Recommended by **Hawaii State Public Library** www.librarieshawaii.org.

Infants and Toddlers

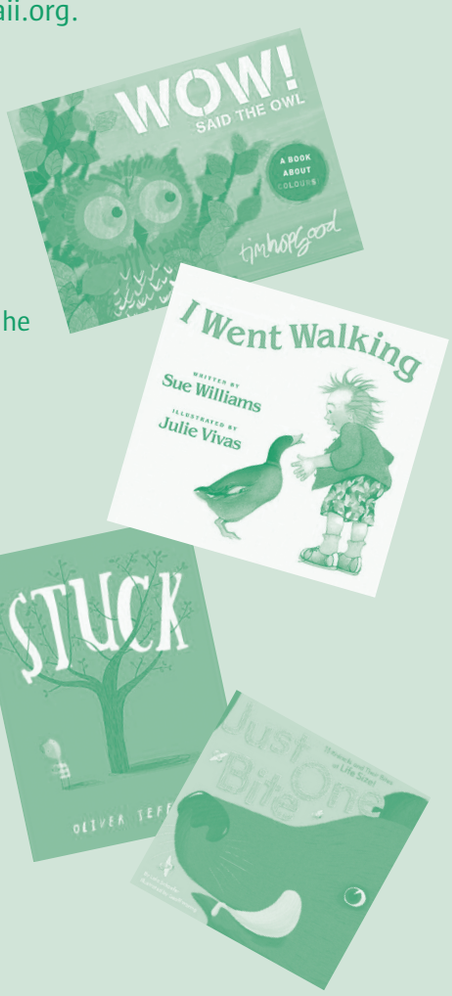
Wow! Said the Owl by Tim Hopgood
A curious little owl explores the daytime world of colors for the first time. The repetitive text is excellent for participatory reading.

I Went Walking by Sue Williams
A toddler goes walking and ends up playing with the farmyard animals he meets along the way.

Preschoolers

Stuck by Oliver Jeffers
What do you do when your kite gets stuck in a tree?
Throw something else up to knock it down, of course! Floyd sends increasingly larger and more ridiculous objects into the tree in his determined efforts to retrieve his kite.

Just One Bite: 11 Animals and Their Bites at Life Size
by Lola Schaefer
A life-sized introduction to what animals eat, how they eat it, and how much they eat in a single bite.



Learning to Grow is a project of the Center on the Family at the University of Hawai'i, College of Tropical Agriculture & Human Resources, with funding from the Hawai'i Department of Human Services. www.learningtogrowhawaii.org