

# BACK TO BASICS

## Science and discovery

The wonder of exploration and discovery drives every scientist—and young child. Provide activities that satisfy children's curiosity, and answer questions about the world and the things in it with a well-equipped science or discovery center. You'll be supporting cognitive, social, language, and physical skills as children step into the worlds of biology, physics, mechanics, and climate.

### Guidelines for science activities

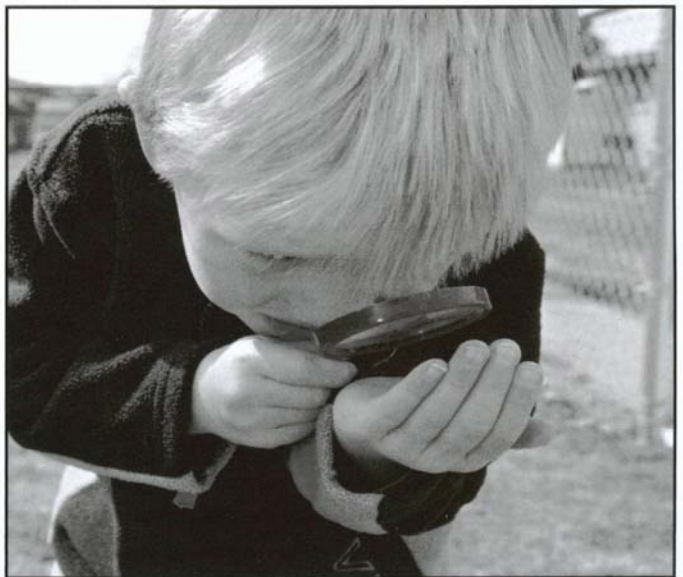
- Develop and model a curious and enthusiastic attitude toward science activities. Children find it difficult to explore the habits of insects if you are squeamish and distant.
- Position the science center in good light, near an electrical outlet, and in a quiet corner.
- Place a collection of science and nature magazines and books in the library center. Invite parents to borrow reading materials to share with their children at home.
- Offer an outdoor discovery area and equip it with weather-proof tools like plastic magnifiers, collection bowls, measuring tools, and a balance scale.
- Use a water table as an extension of the science center. It will help you contain messy experiments.
- Offer everyday materials to explore. Include objects that children can take apart safely. Encourage investigations of the inner workings of an analog clock, for example. Point out gears, dials, and other mechanical features.
- Introduce and use scientific vocabulary appropriate to the ages and developmental levels of the children.
- Help children use their senses—eyes, ears, mouth, nose, and skin—to gain information.
- Resist teaching facts and principles. Instead, involve children in observing, manipulating, exploring, predicting, analyzing, and understanding. Active sensory participation with materials makes learning meaningful.

- Ask open-ended questions to learn what children understand about their observations. Plan subsequent activities to build curiosity and scaffold learning.
- Avoid making science magic. Instead, help children explore the natural properties and functions of real things in the environment.
- Don't be afraid to say, "I don't know." Help children find answers in books, through experiments, or by asking an expert. If the answer to the question is unknown, say, "No one knows the answer to that question now. Maybe one day you will be the scientist who answers that question for the whole world."

### Science center basics

Gather these materials to use in the science center. Provide duplicates of equipment to encourage collaboration and cooperation. Rotate materials and modify experiments to keep curiosity and creativity levels high.

- balance scales
- batteries
- thermometer
- horseshoe and bar magnets
- rain gauge
- measuring utensils
- magnifiers
- spray bottle
- aquarium
- bulb baster
- flashlight
- pulleys, levers, and ramps
- classroom pets
- sifters
- prism
- string
- feathers
- scissors
- leaves and twigs
- tape
- plants and soil
- clipboard and pencil
- shells and rocks
- safety goggles
- live insects



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This is the first of several pages of development information. Look for each one, printed on cardstock for durability, in our upcoming newsletters; we encourage you to collect each one for your files.

# Easy, Everyday Science Activities

Too many young children - and their teachers - think of science as magic. Rather than supporting this misconception, plan experiments and activities that help explain scientific facts.

Help children observe and compare things around them. Collect rocks from the play yard and discuss color, shape and weight for example. Ask which is the heaviest? Encourage them to predict and test their ideas. In this example, you might provide a balance scale and chart the results.

Make science - science that is real, concrete, tangible and practical - an essential part of the curriculum. Tie science activities to questions children have about their world. Help children answer their "How?" and "Why?" questions with activities that progress them from the more familiar to the less familiar. A sequence like this helps them build knowledge. Avoid teacher show-and-tell activities that are disjointed and unrelated.

Reinforce concepts with art, construction, movement, math, field trips (if possible) and dramatic play activities. And remember to allow children to use all of their senses in their experiences.

Use children's picture books as a starting point for your science curriculum. Both life science concepts and physical science concepts can be found in many entertaining children's literature.



## Absorb Light and Heat (3 years and older)

### Here's what you need:

- 3 plastic bins
- Clay
- Soil
- Sand
- Sunny window
- 3 index cards
- Tape
- Pencil



1. Talk with the children about how light gives off heat. Different materials absorb different amounts of heat.
2. Write the words *soil*, *clay*, and *sand* on each of the index cards. Tape the index cards to the three boxes.
3. Fill the appropriate bin with clay, sand or soil.
4. Place the containers near a sunny window.
5. Ask the children to feel the clay, sand and soil each day. Let each child decide which material is the warmest.
6. Ask the children to chart their findings by making a check mark on the label of the warmest of the three bins.
7. At the end of the week, compare the findings with all the children.

**Science Note:** Besides the differences in color, there is much more mineral mass to heat up with the sand. Plus, sands are often lighter in color than clays and so reflect more heat than clay.

## Seeing and Feeling Sound (3 years and older)

### Here's what you need:

- 18 inch wooden ruler
  - Sheet of paper
1. Talk with the children about noise - the higher the pitch, the faster the sound wave is moving (much like waves on the ocean). Show them the sheet of paper and ask, "Does this make noise?" (No.) Rattle the sheet of paper and ask, "Now do you hear noise?" (Yes.) Then ask, "When do you hear noise?" (When the paper is moved.)
  2. Place the ruler on a sturdy table. Extend the ruler about 10 inches over the table edge and hold the other end firmly with one hand. With your other hand, pluck the extended edge with a finger. Listen to and discuss the sound. Move the ruler so that more or less of it is extended over the table. Compare the sounds. Help the children observe the fast vibration of the ruler - it moves back and forth quickly and creates a sound.
  3. Ask the children to place their fingers on their throats and hum. Let them describe what they feel. Encourage them to hum low and high tones and compare what they feel.
  4. Invite the children to find a partner. Let them feel each other's throats while talking to each other. Every sound has a different feel.
  5. Discuss other vibrations the children might be familiar with: a cat purring, a car engine running, a radio speaker when the volume is up and a snapping rubber band for example.