Exploring Materials

Science: Structure & Properties of Materials

Every child is different. Do what works best for encouraging each child's exploration of this suggested activity.

OBJECTIVE OF THIS INVESTIGATION:

Children will explore the properties of a given material through play.

VOCABULARY:

- Soft
- Hard
- Cold
- Warm
- Full
- Empty
- Coarse

MATERIALS:

- one type of sensory material for children to explore (e.g., sand, rice, seeds, water, cake mix)
- bin or tray to hold material
- tools to explore material with (e.g., spoons, cups, bowls, tweezers)
- tools with holes (e.g., slotted spoon, colander, sifter)

PROGRESSION STEPS (SCIENCE: STRUCTURE & PROPERTIES OF MATERIALS):

Visit **STEMIE Learning Trajectories** for details

- Properties Observer
- Properties Recognizer
- Function Recognizer
- Properties Identifier

THIS INVESTIGATION:

- Invite children to explore the chosen material first with their five senses before introducing the available tools.
- Ask children to describe how the material feels. **(Properties Identifier)**
- If children do not identify the properties of the material, provide a forced choice. Use visuals to support as necessary. **(Properties Recognizer)**
  - **"Is the rice hard or squishy and soft?"**
  - **"Is the sand smooth or rough and gritty?"**
- If children still do not respond, narrate their exploration, adding language to the experience. **(Properties Observer)**
  - **"The rice is cold and smooth. You're making a pile!"**
- Next, introduce tools to the exploration.

ADAPTATIONS:

See **A Guide to Adaptations** for general ideas and strategies

Environment:

- Ensure all children can access the sensory experience. Placing the materials in a bin on the floor with tarp underneath is one option.

Materials:

- Provide gloves or a stick to investigate materials with if children have sensory aversion to any materials.

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This Investigation (Continued):

- Ask children to choose between a tool with holes (e.g., slotted spoon) and one without holes (e.g., a measuring cup) for scooping. **(Function Recognizer)**
  - **"Which material do you want to dig with? Why?"**
  - Whichever material children choose, let them explore and see what happens. Children might change their minds if they originally chose the tool with holes for digging once they see the sensory material fall through the holes.
- Encourage children to try using different tools for scooping and holding the material.
- Compare the sensory material to other materials you know the child has previously experienced..
  - **"How is the rice like water? How is it different?"**

Adaptations (Continued)

- Choose materials children are comfortable with.
- Provide a variety of tools that support grasping including ones with long and short handles.

Instruction:

- Use visual supports both to support learning and for children to use to communicate their findings. Provide visuals that represent descriptions of the materials like rough, smooth, etc., and visuals to guide children to explore the materials and tools.
- For some children, you may take a step-by-step approach while exploring new materials. First, have the material next to the child, then let the child explore with a stick, then try gloves, so the child is able to get used to exploring the material.

How to Continue This Investigation:

- Challenge children to make the tallest mountain that they can build or dig the deepest hole they can dig. **(Function Recognizer; Properties Identifier)**
  - **"What happens to the mountain when it won't get any taller? "**
  - **"What happens to the hole when it won't get any deeper? "**

• Challenge children to compare which container holds the most (pouring into each other or counting scoops/small cups to fill). **(Properties Recognizer)**

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SCIENCE: STRUCTURE & PROPERTIES OF MATERIALS

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SUPPORT MATERIALS:

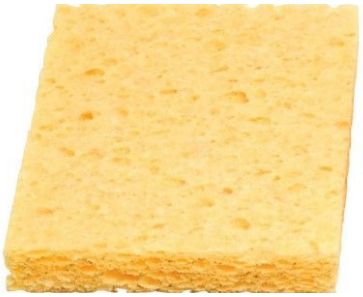
Stiff

Coarse/Gritty

Crunchy/Crispy/Brittle

Hard

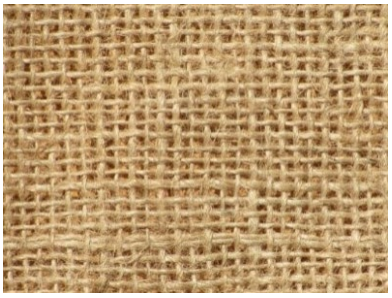
Soft



Holey/Spongy

Prickly/Bristly/ Spiky

Ridged



Scaly/Scratchy