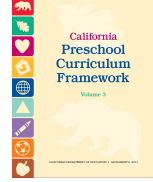


HANDOUT 8

Open-Ended Questions and Science Materials



Scientific Inquiry



Types of Open-Ended Questions

Example Questions

<p>Questions to encourage children to share their observations:</p>	<ul style="list-style-type: none"> • “What <i>did you notice</i> when you observed the snail?” • “What <i>happened</i> to the ice cube when we left it outside?” • •
<p>Questions to facilitate children’s problem-solving and investigations:</p>	<ul style="list-style-type: none"> • “What <i>do you think we could do</i> to make the ball roll down in this direction?” • “Can you <i>think of another way</i> to make the clay softer?” • “How <i>could we find out</i> what worms like to eat?” • •
<p>Questions to elicit children’s predictions and explanations:</p>	<ul style="list-style-type: none"> • “Why <i>do you think</i> this plant grew and this one did not?” • “Why <i>do you think</i> the pill bug turned its body into a ball shape?” • “What <i>do you think</i> will happen if you mix salt with water?” • •

“Having an adult encourage, prompt, and scaffold the use of expressive language in English and in the child’s home language whenever possible, would support the child’s overall development of scientific knowledge and language skills” (PCF 2013, 169).

Open-Ended Question in English	Open-Ended Question in Spanish
<ul style="list-style-type: none"> • What does this make you think of? • In what ways are these different? • In what ways are they the same? • What materials did you use? • What would happen if...? • What might you try instead? 	<ul style="list-style-type: none"> • ¿En qué te hace pensar esto? • ¿En qué maneras son estas diferentes? • ¿En qué maneras son estas iguales? • ¿Qué materiales usaste? • ¿Qué pasaría si...? • ¿Qué podrías intentar en vez de...?

SCIENCE

A Wide Range of Open-Ended Objects and Materials

TYPES OF MATERIALS	SAMPLE MATERIALS
<p>Materials for Building and Construction: Open-ended materials can be used in multiple ways; this allows for investigation, creativity, and problem- solving.</p>	<p>Blocks of various shapes, sizes, and materials (e.g., wood, foam, cardboard) Boxes Cardboard, planks, ramps Carpentry tools Gutters, hollow tubes Logs Nuts and bolts Screws Sticks Straws Wheels, wheeled objects Other construction materials</p>
<p>Collections of Objects and Reclaimed Materials: For exploration of diverse materials and use in sorting, classifying, and ordering activities.</p>	<p>Bottles Boxes of various sizes Buttons Collection of balls of different sizes Collection of different types of animals (for sorting and pretend play) Collection of household tools made from metal, wood, plastic Collection of musical instruments Corks Fabrics (e.g., a collection of gloves made of wool, rubber, leather) Glass nuggets Metal lids Plastic lids Screws Shakers, maracas, castanets Styrofoam pieces Wind chimes Woodchips</p>
<p>A Variety of Substances/ Materials</p>	<p>Cooking utensils Corn starch Dough Eggshells Flour Liquids Salt Sugar</p>
<p>Natural Materials - Earth Materials: Natural materials found on earth.</p>	<p>Clay Crystals Minerals Rocks Sand Seashells Soil Tools to dig and explore soil (e.g., trowels, containers, magnifiers, trays) Tools to explore water (e.g., water table, clear plastic tubes, connectors, funnels, containers) Water</p>
<p>Natural Materials - Plant Materials: Materials derived from plants and animals.</p>	<p>Bark Cotton Feathers Fruits Fur Leaves Seeds, seed pods (e.g., pinecones) Tree logs Twigs</p>