



STEM Investigation 1: Hands-On Investigating



Description: Children will use their sense of touch to study the physical objects in the classroom. They will feel the specific textures, hardness, size, shape, and flexibility of the objects in the classroom and learn to describe objects by how they feel. Children will record data by sorting the objects into labeled bins.

Throughout the activity the children and teacher together will build a common understanding and vocabulary of classroom materials. During this investigation teachers should 'bank' children's questions and ideas as they come up; there will be an opportunity at the end of this investigation to discuss children's additional questions about the subject.

Standards Addressed:

K-ESS3-2

Science Practice Standard: Obtaining, Evaluating, and Communicating Information

Enduring Understanding:

- Communities are affected by their environments. People use their senses to observe the environment and materials in their community, and may describe and label materials according to their observable properties.

Essential Question:

- Where do you find what you need in your community, including information, help, and companionship?

Materials:

- 10 paper lunch bags
- small objects from around the classroom
- 4-6 empty bins
- word bank cards to label the bins with appropriate words: smooth, rough, pointy, soft, hard, sticky, etc.

Vocabulary:

- data
- describe
- objects
- sense
- texture

Preparation:

Prepare two bins with labels "rough" and smooth."

Write Focus Question on chart paper: ***"How can we observe and describe objects in our classroom using our sense of touch?"***

Make sure to have one (1) unsharpened pencil.

Place one or two objects with particular properties in the bins labeled as such to offer suggestion and clarification of those properties.

Intro to Centers:

“As scientists this week you will investigate the focus question that is written here, on this chart paper: **How can we describe classroom objects using our sense of touch?**”

“What are some important words that we need to understand as scientists in order to answer this question?”

“What does it mean to describe something?”

“What are some objects in our classroom we might describe?”

“This week we will use our sense of touch. What body part do we often use for touching?”

“What will we do as scientists to answer the focus question?”

“Yes, we’ll be touching objects in our classroom in order to be able to describe them, tell what they are like. I have placed some objects in these paper bags, which I’ll put in the STEM Center. You will reach into the paper bag and feel the object with your fingers and hand. Describe what you feel, and then guess what the object might be. Let’s try one.”

“Describe the object: ‘It feels...’ How does it feel?”

“Can you guess what it might be?”

“It’s a pencil! I have two bins here, one labeled ‘smooth’ and the other labeled ‘rough.’ Which bin does this pencil belong in?”

“As you use more describing words this week, we’ll add more bins to the STEM center with those labels so you can describe objects in lots of different ways.”

Indicate and read the focus question.

*Circle, discuss, and annotate key words (**describe, objects, sense, touch**)*

*Define **describe**: to tell about an object. Use the talking frame “It feels...”*

Invite children to name some objects in the classroom.

Draw a hand above the word ‘touch’ on the focus question.

Show one paper bag (with a non-sharpened pencil inside). Invite one child to demonstrate with you, prompting her to describe the qualities of what she feels in more than one way.

Show two empty bins, one labeled “smooth” and the other, “rough”. Invite another child to suggest which bin to put the pencil in.

During Centers:

Throughout the week children will make observations about classroom objects by feeling and describing them. You can place the objects in the paper bags ahead of time, or you can make the activity more child-centered by inviting children to place an item in the bag and having other children describe and guess what the object is. In the STEM Center children will sort the objects into bins by the objects' properties of texture and hardness.

Guiding Questions during Centers:

- What do you notice about an object from feeling it?
- What can you *not* notice about an object when you can only feel it?
- Why do you think that object has that texture, shape, size, hardness, or flexibility?
- Would a pencil still work for writing if it were as soft and flexible as a shoelace? And would a shoelace work if it were as hard and rigid as a pencil?

Sharing our Research:

- What did you do this week as scientists in the STEM center?
- Revisit the focus question, ***“How can we describe objects using our sense of touch?”*** Children turn and talk to a classmate about an object that they felt and share how they described it.
- Looking at the data we collected (objects in bins), what did we find out about the objects in our classroom? (Objects have different textures, like smooth and rough.) Introduce the vocabulary word *texture* for how smooth or rough an object is. Children might also share ideas about hardness, shape, size, and flexibility.
- Ask, “What could we *not* tell by only feeling an object?” Children might be surprised at how much you can tell by feeling. (You cannot tell color or printed designs.)

Additional Questions:

- When you go outside for recess, think about the different textures you can feel on the playground. Are the textures outside the same as the textures inside?
- Why is it important for us to describe objects by touching them?
- Are there any other questions that you have about texture or the sense of touch? This is also the time to review and discuss any questions from children that were ‘banked’ during the week.

Documentation:

Take pictures of children sorting and of the sorted materials to document the process and the various properties children identified to sort by. Display the pictures in the STEM center or show them to children at a later time to reinforce the concepts.

Using this as a Provocation:

Encourage children to consider the different textures of the objects in all the classroom centers. Have them hunt for soft or hard objects around the room. Consider how soft objects are different to construct with than hard objects.

Note: Children’s Own Questions

Children will generate any number of authentic questions as they work. During each STEM investigation in *Our Community*, keep a large piece of chart paper on the wall near the STEM Center with a marker attached by string. Throughout the week, adults record or “bank” any spontaneous questions you hear children ask as they are engaging in the investigation. On the fifth day of each investigation, during the Sharing our Research session, the teacher will review these child-generated questions with the class, following the directions in the written investigation. After Investigation 4 in *Our Community*, if you would like, work with children to develop their own investigation to try and answer one of the child-generated questions that were banked during Investigations 1-4. This investigation could take place during the fifth week when there is no written, required STEM investigation.