



# Active Learning Community Partnership

## Mystery Bag Science

**STEM Focus Area:** Properties of Materials

**Learning Goal:** Youth will investigate and describe objects in terms of their properties (size, shape, color, texture, etc.).

### LEARNING ENVIRONMENT

**Activity Duration:** 30 minutes

**Class Size:** Large or Small

**Type of Space:** Indoor

**Age of Youth:** Preschool

**Guiding Question:** *What is the question to explore OR the problem or challenge to solve?*

#1: Can you describe what is in the Science Mystery Bag?

#2: Can you guess what the object is?

**Through this activity, youth will:**

- Observe and describe the properties of different objects and the materials they are made of.

**Facilitator Checklist in the Learning Environment:**

- Predict and hypothesize
- Develop and use models
- Measure materials
- ✓ Observe
- ✓ Investigate
- Record observations
- Analyze and infer
- ✓ Share and communicate data
- ✓ Interpret data
- Test and revise
- Draw conclusions and relationships
- ✓ Have voice and agency, make decisions and guide their own learning

### PREPARATION

**Facilitator prep:**

Youth need to have a diverse array of experiences exploring different materials in order to make sense of their world. Understanding how materials behave in their natural state and

under certain conditions will help them to understand why objects are made of specific materials. This science activity begins with the reading (or watching) of a wonderful multicultural storybook about shapes to introduce youth to circle, squares, ovals, triangles, stars, etc. Once youth begin observing shapes around them, you'll introduce the Science Mystery Bags to stretch their thinking and expand their use of descriptive words.

**Literacy Connection:** Read Round is a Tortilla by Roseanne Greenfield Thong (Chronical Publishing) to engage you in thinking about the properties of shapes while learning about Hispanic culture! You can also find a fun reading of the story created by a native Spanish speaker from Miami Children's Museum on YouTube at <https://www.youtube.com/watch?v=8Mj6a46AjAM>

**Materials:** Facilitator will need to prepare the following materials before the science activity.

- Copy of Round is a Tortilla: A Book of Shapes by Roseanne Greenfield Thong, Chronicle Publishing
- Science Mystery Bags: Create 4-10 mystery bags (depending on the size of your class)

*You can use any type of cloth drawstring bag or a pillowcase for the bag. Each bag should be filled with an object that very distinctly represents different properties and easily identifiable to preschoolers such as:*

*Square = wooden block, lunch box, book, Rubik's cube*

*Circle = CD, ball, plastic plate, ball of yarn*

*Rectangle = laminated dollar bill, box of cereal, domino, box of Kleenex*

*Oval = plastic egg, football, lemon*

*Star = plastic star, pretend sheriff's badge, starfish*

*Triangle = clothes hanger, plastic slice of pizza, musical triangle*

**Room:** This activity is best facilitated in a circle time space where all youth can see the facilitator during the story time, followed by ample open floor space for Science Mystery Bags exploration.

**Content:** Children investigate and discover the properties of matter by using their senses as they observe and describe an object's color, size, texture, and shape.

**Inquiry:** The book Round is a Tortilla is naturally interactive when after every shape section, it asks listeners to name objects they know that are round, square, triangle, etc. Be sure to allow time for youth to make these connections by naming aloud the shapes of objects in their everyday life.

During the Science Mystery Bags activity, you can encourage youth to describe what they feel in the bag without looking.



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- What does it feel like?
- What do you think it is made of?
- Is it smooth or bumpy?
- Is it soft or hard?
- Is it light or heavy?
- What shape is the object?

## Facilitator Checklist for Preparation:

- ✓ Organization: I practiced the activity/technology, prepared materials/extras/place to record youth ideas, completed an activity (including timings).
- ✓ Materials: Materials are appropriate for teaching the learning goals; youth will be able to use them and will think they are appealing.
- ✓ Space Utilization: The space is set up appropriately for the activity and there will be no safety issues or distractions.
- ✓ Relevance: I have researched why the content matters to youth's everyday lives.
- ✓ Content Learning: I have become familiar with the content.
- ✓ Inquiry: I have become familiar with how authentic, age-appropriate inquiry practices look in this activity.

## INTRODUCTION TO ACTIVITY (5 MINUTES)

Introduce the following vocabulary words.

### 1. Properties

Definition: Things that can be observed about an object (color, shape, weight, size, etc.)

Example: A pizza is round.

Ask: What else do you see in this room that is round?

### 2. Senses

Definition: We use our senses every day to get to know and understand the world around us. Humans have five senses – seeing, hearing, smelling, tasting, and touching.

Example: When I see that an apple is red, I'm using my eyes to see.

Ask: Tell about when you use your sense of smell (hearing, tasting, touch).

Talk about today's Learning Targets with the class so that youth are aware of your expectations.

- ✓ "I can recognize and name the shapes of objects that I see around me."
- ✓ "I can use my words to describe objects."
- ✓ "I can use my sense of sight, hearing, taste, smell, and touch to describe objects."

**Facilitator Checklist for Introduction to Activity:**

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Purposeful Activities: This intro section gets youth on track for the learning goal.
- ✓ Content Learning: If age appropriate, I will accurately present content.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Relationships: I will make each youth feel welcome.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

**ACTIVITY ENGAGEMENT (20 MINUTES)**

Have youth sit in a semi-circle on the floor (rugs make it comfy for the kids if you have one) in preparation for your reading or watching the video of Round is a Tortilla by Roseanne Thong. Whether you read or watch the video, be sure to allow time for your listeners to respond to the questions in the story asking for examples of objects that are circles, squares, etc.

Next bring out your Science Mystery Bags! Divide youth into small teams of 2-3 per mystery bag. Be sure to remind youth that every person will get a turn to examine a Mystery Bag, but that you will be taking turns.

#1) Instruct youth to first put their hand into the bag without looking inside the bag.

#2) Ask the youth to use words (including shape) to describe what they feel in the bag to their team.

#3) After describing the properties of the object, ask the youth to guess what is in the Mystery Bag.

#4) Open the bag!

You should have enough mystery bags so that each youth in your class have an opportunity to explore a Science Mystery Bag.

**Facilitator Checklist for Activity Engagement:**

- ✓ Space Utilization: I will use the space informally avoiding the lecture hall format.
- ✓ Participation: All youth will have access to the activity.
- ✓ Purposeful Activities: This core section helps youth to move toward the learning goal.
- ✓ Engagement: This activity has youth physically engaged with their hands while engaged with their minds.



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- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection: If appropriate, I will ask youth questions during the core activity that will help them make sense of what they are learning.
- ✓ Relationships: I will take steps to share my enthusiasm and create a nurturing, safe learning environment.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.

## **FINAL REFLECTION AND RELEVANCE (5 MINUTES)**

Scientists observe with their 5 senses like you did today with the Mystery Bags. This helps them learn about the world around them by measuring, classifying, comparing and predicting. They also use these senses with tools like microscopes to take more accurate observations. Be on the lookout for ways you are being a scientist and using those tools to learn about our world.

#1) Ask each team to create a Science Mystery Bag for the facilitator by emptying out one bag and putting an object from the classroom into the bag.

#2) With the entire group watching, ask each team member to describe one property of the object in the bag.

#3) Time for the facilitator to feel the object from the outside of the bag and Guess the name of the object!

Cycle through each team's Mystery Bags.

### **Facilitator Checklist for Activity Reflection & Relevance:**

- ✓ Space Utilization: Again, I will use the space informally.
- ✓ Participation: I will prompt youth who do not have access to the activity to participate.
- ✓ Purposeful Activities: The closing section helps youth to reach the learning goal.
- ✓ Content Learning: I will help youth make connections between different ideas. I will create opportunities for youth to ask questions/provide ideas that show a deeper level of understanding.
- ✓ Inquiry: In this or another section of the activity, youth carry out one or more inquiry practices.
- ✓ Reflection. I will provide youth with a sustained opportunity to make sense of their learning.
- ✓ Relevance: In this or another section, I will guide the youth in a sustained discussion of how the activity relates to their everyday lives.
- ✓ Youth Voice: In this or another section, I will allow youth the opportunity to make decisions about their learning experiences.