



INVESTIGATING THE MYSTERIES OF THIRD GRADE

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Lesson Summary for Grade 3

This four-day, cross-curricular project was done at the beginning of the year as an overview of the science skills that we expected to be developed during the third-grade curriculum. The theme of mysteries seemed especially appropriate since the students were new to this building and the new school year brought many changes to investigate. This cross-curricular lesson also includes activities that integrate mathematics, art, music, social studies, and multicultural and gender equity.

Science Activity 1: Mystery Boxes

Students use logic and knowledge of mathematics facts to solve problems.

Source: Sarquis, M. *Exploring Matter with TOYS*; McGraw-Hill: New York, 1997; pp 197–199. (ISBN 0-07-064724-0)

Key Science Topics:

- hearing
- touch
- smell
- multiple senses
- properties of solids
- properties of sound

Key Process Skills:

- logic
- knowledge of mathematics

Ohio Proficiency Learning Outcomes for Science:

- Given a collection of evidence resulting from an event, the learner will seek clarification, and propose an explanation for the event.
- Given several opportunities to observe, the learner will use both quantitative and qualitative descriptions to explain the attributes of an object.

Science Activity 2: Paper Chromatography

Students see that pigments can be broken down into separate colors.

Source: *Just Add Water for Great Science* (classroom kit); Terrific Science Books, Kits, & More: Middletown, Ohio, 1998; p 22.

Ohio Proficiency Learning Outcomes for Science:

- Given a collection of evidence resulting from an event, the learner will seek clarification, and propose an explanation for the event.
- Given several opportunities to observe, the learner will use both quantitative and qualitative descriptions to explain the attributes of an object.

Science Activity 3: Inky Elevators

Students recognize the capacity of water to move upward and measure the height water travels up strips of paper towels.

Source: Sarquis, M. and Hogue, L. *Family Science from A to Z*; Terrific Science Press: Middletown Ohio, 2000; pp 115–124. (ISBN 188382221-1)

Key Science Topics:

- capillary action
- chromatography

Ohio Proficiency Learning Outcomes for Science:

- Given a collection of evidence resulting from an event, the learner will seek clarification, and propose an explanation for the event.
- Given several opportunities to observe, the learner will use both quantitative and qualitative descriptions to explain the attributes of an object.
- The learner will use whole number counts and measures to compare and classify familiar objects.

Science Activity 4: Kooky Pencils

Students recognize that sometimes colors don't mix and apply this principle to create an individual work of art.

Source: Sarquis, M. and Hogue, L. *Family Science from A to Z*; Terrific Science Press: Middletown Ohio, 2000; pp 135–146. (ISBN 188382221-1)

Key Science Topics:

- adhesion
- density
- mixtures

Ohio Proficiency Learning Outcomes for Science:

- Given a collection of evidence resulting from an event, the learner will seek clarification, and propose an explanation for the event.
- Given several opportunities to observe, the learner will use both quantitative and qualitative descriptions to explain the attributes of an object.

Science Activity 5: Big Ben

Students make a noise amplifier and discover how sound travels through solids.

Source: Sarquis, M. *Exploring Matter with TOYS*; McGraw-Hill: New York, 1997; pp 121–125. (ISBN 0-07-064724-0)

Key Science Topics:

- properties of sound
- hearing
- effects on matter energy

Key Process Skills:

- observation
- hearing

Ohio Proficiency Learning Outcomes for Science:

- Given a collection of evidence resulting from an event, the learner will seek clarification, and propose an explanation for the event.
- Given several opportunities to observe, the learner will use both quantitative and qualitative descriptions to explain the attributes of an object.

Possible Playout of Lesson

Day One Focus: Using the Senses of Hearing and Seeing to Solve Mysteries

8:40 – 9:45 --- Opening Procedures/Rules/Organization

9:45 – 10:30 --- Short Recess and Tour of Building/Cafeteria

10:30 – 11:20 -- Mathematics and Science Integration

Science Objective: Use sense of hearing to gather data. Use sense of hearing to identify objects.

Mathematics Objective: Use logic and knowledge of mathematics facts to solve problems. Begin with “Mystery Boxes” on page 197 of *Exploring Matter with TOYS*.

11:25 – 12:05 --- Lunch and Recess

12:05 – 12:55 --- Literature and Science Integration

Language Arts Objectives: Model to students while reading the integration of the three cueing systems. Use writing to convey ideas and create an informational text.

Science Objectives: Recognize the importance of the sense of hearing. Recognize that some animals rely on one sense more than others. Begin by reading aloud *Horton Hears a Who* by Dr. Seuss. Discuss the text together while reading, paying particular attention to Horton’s superior sense of hearing. Next, through pictures, guide a class discussion reviewing/providing background knowledge on eagles, focusing on the eagle’s keen sense of sight. Students then each complete the sentence “Eagle-Eye Edith eyes...” by writing about an animal or object an eagle is able to see while flying. Students also draw a picture to accompany their text. Compile all pages into a class book.

12:55 – 1:25 --- Music

1:25 – 2:05 --- Social Studies and Science Integration

Social Studies Objective: Recognize the elements of a community. Compare and contrast the elements within communities.

Science Objective: Develop classification skills. Discuss with children the classroom as a community and the elements found within the community. With a partner, students then compile lists of elements found within the larger community, outside of the school

community. All groups share their lists orally while all elements are listed on a chart. As a group, students then identify elements found in Horton's community and the community of the Who's and add each to the existing chart. Through a group discussion, compare and contrast the elements each community has in common and those elements that are unique to each community.

2:05 – 2:20 --- Recess

2:20 – 3:30 --- Art and Science Integration

Art Objective: Develop outlet for self-expression by decorating the outside of the "Mystery Boxes" that deal with smell, without giving a clue as to what the smell is inside.

Science Objective: Use the sense of smell to identify a familiar substance. Students apply flavor extracts to a piece of felt, and then put the felt into a box with a lid.

3:30 – 3:40 --- Cleanup and dismissal

Day Two Focus: The Mystery of Color

8:40 – 9:30 --- Opening Procedures. Students exchange Smelly Boxes created yesterday and use their sense of smell to determine the specific extract used in each.

9:30 – 10:30 --- Science Integration

Science Objective: Recognize that pigments can be broken down into their component parts. Begin the activity by mixing colors in water on an overhead projector. Students then complete the "Paper Chromatography" activity on page 22 *Just Add Water for Great Science*.

10:30 – 11:20 --- Mathematics and Science Integration

Mathematics Objective: Measure linearly using standard units such as centimeters.

Science Objective: Recognize the capacity of water to move upward. Complete the "Inky Elevators" activity on page 115 of *Family Science From A to Z*, and measure the height the water travels up the strips of paper towels.

11:25 – 12:05 --- Lunch and Recess

12:10 – 12:55 --- Art and Science Integration

Science Objective: Recognize that colors, at times, don't mix.

Art Objective: Apply this principle to create an individual work of art. Complete the "Kooky Pencils" activity on page 136 of *Family Science from A to Z*.

12:55 – 2:05 --- Art

2:05 – 2:20 --- Recess

2:20 – 3:30 --- Language Arts and Social Studies Integration

Language Arts Objective: Use written language for self-expression.

Social Studies Objectives: Identify locations on a world map; recognize communities each have unique colors.

Multicultural/Gender Equity Objective: The students discuss whether Miss Rumphius is a

scientist. The fact that she is a woman plays a part in this discussion. The students also discuss the various places in the world she travels to and evidence from the book that shows she experiences different cultures.

Science Objective: Discuss ways seeds are distributed and how plants can repopulate in new areas.

Read aloud and discuss *Miss Rumphius* by Barbara Cooney. After reading is complete, go back through the story and identify the various locations to which Miss Rumphius traveled and label each on a world map. When the map has been labeled, refer to the story to discuss the different colors found in the different communities. Next, students draw a picture of themselves and complete the sentence “I could add color to my community by...” on the back of their self-portrait.

3:30 – 3:40 --- Cleanup and dismissal

Day Three Focus: The Mystery of Movement and Measurement

8:40 – 9:00 --- Opening Procedures

9:00 – 11:00 --- Mathematics and Language Arts Integration

Mathematics and Science Objective: Recognize the need for a standard unit of measurement; introduce the standard units for linear measurement in the metric system (centimeter and meter).

Language Arts Objective: Introduce a format for writing a lab report. Read *How Big Is a Foot?* by Rolf Myller and discuss together. Working in pairs, students measure ten predetermined objects in the classroom. To measure, each pair uses straw links made with straws of various lengths. When measurements are complete, share information as a group and discuss possible reasons for the discrepancies. Introduce the centimeter and meter as the standard units of measurement in the metric system. Using standard units, each pair measures the predetermined objects. Discuss the results when measurements are completed. Next, model for students how to complete a lab report that includes a title, purpose, procedure, and conclusion. Students follow along and complete a lab report.

11:25 – 12:05 --- Lunch and Recess

12:10 – 12:45 --- Health

12:45 – 2:00 --- Science Integration

Science Objectives: Measure the displacement of various vehicles to the nearest centimeter and compare the results. Students work in small groups and visit each of the following stations: Ramps and Cars, Walker Toys, Frisbees, and Push and Go Cars. Students propel each vehicle and then measure the distance each traveled. As a class, discuss and compare the results.

2:05 – 2:20 --- Recess

2:20 – 3:30 --- Social Studies and Art Integration

Social Studies Objective: Recognize the various methods of transportation in a community.

Art Objective: Recycle materials to create a work of art. Begin by debriefing from station activities. Next, students work with a partner or on their own to create a vehicle using

discarded materials (paper tubes, cups, plastic containers, lids, etc.).

Science Objective: Discuss the concept of motion and how it relates to transportation.

3:30 – 3:40 --- Cleanup and dismissal

Day Four Focus: The Mystery of Balloons and Sound

8:40 – 9:15 --- Opening procedures. Students share vehicles created on day three.

9:15 – 10:00 --- Language Arts Integration

Language Arts Objective: Use writing for personal expression. Read aloud and discuss together *The Red Balloon* by Albert Lamorisse. On paper balloon cutouts, students each complete the sentence, “If I could ride in a balloon....” Each student shares his or her balloon with the class.

10:00 – 11:20 --- Science and Mathematics Integration

Mathematics Objectives: Introduce the concept of circumference. Determine the circumference of a balloon.

Science Objective: Classify objects based on their characteristics. Blow up a balloon. Using yarn, students work in pairs to determine the balloon’s circumference. Trace around the balloon on tag board paper and cut out the shape. On the balloon cutout, students record the circumference of their balloon. Attach the string (cut to the length of the balloon’s circumference) to the balloon cutout and display throughout the room. In small groups the students sort their balloons according to a specific characteristic. Students then visit the other groups and hypothesize about what characteristic they chose to sort their balloons.

11:25 – 12:05 --- Lunch and Recess

12:10 – 12:45 --- Spanish

12:55 – 2:05 --- Music and P.E.

2:05 – 2:20 --- Recess

2:20 – 3:30 --- Social Studies and Music Integration

Social Studies Objective: Recognize that communities share common sounds.

Science Objective: Describe how sounds change when the media they travel through changes.

Music Objective: Recognize sound travels in different media. View photographs of Notre Dame, Big Ben, and other churches with bells and locate each on the world map used on day two. Discuss the various other sounds/things one hears in communities. Complete the “Big Ben” activity on page 121 of *Exploring Matter with TOYS*, renamed as The Bells of Notre Dame.

3:30 – 3:40 --- Cleanup and dismissal