Unit 4: Objects and How they Move

Lesson #1: Sorting Objects

**Book(s):** Unit 1 – Miss Bindergarten Takes a Field Trip (sorting shapes, last page)

**Time Frame:** 20-30 minutes

**Learning Standards:**

- **Science**
  - Physical Science: Observable Properties of Objects
    1) Sort objects by observable properties such as size, shape, color, weight, and texture.
  - Life Science: Living Things and Their Environment
    1) Recognize that people and other animals interact with the environment through their senses of sight, hearing, touch, smell and taste.

- **Skills of Inquiry**
  - Ask questions about objects, organisms, and events in the environment.
  - Tell about why and what would happen if?
  - Make predictions based on observed patterns.

**Student will be able to:**

1) Sort different objects according to size, shape, color, and texture.

**Anticipatory Set:** Ask all of the students to stand up and then move to opposite sides of the room as directed. This activity should model how different things can be sorted. For example, ask boys to go to one side and girls to the other side. Ask everyone with brown hair to go to one side. Ask everyone with a blue shirt on to go to one side. Ask anyone who has a brother to go to one side. Discuss this activity and how scientists can make observations to separate and group different objects.

**Activity:**

1) Place a collection of colored blocks (at least 3 colors and 3 different shapes) in front of the room. Ask the students how these blocks can be sorted and organized. Using student suggestions, separate the blocks by both shape and color. Emphasize that there is no right or wrong way to classify the blocks as long as they are all classified in the same way.

2) Give each student (or pair of students) a sorting challenge. Ask them to sort and organize a pile of small objects (just as the class did with the blocks). They may use size, shape, color, or texture to sort the objects.
3) Check the sorting methods and if students finish sorting their objects then ask them to sort them in a new way.
4) Ask different students to share how they sorted the objects and ask students which senses they used to sort the objects.

Closure: Place a series of leaves in front of the classroom. They should be different sizes, shapes, and types. Ask the students for ideas about how the leaves could be sorted and sort them as time permits.

Assessment: Participation in class discussions and activities

Resources and Materials: Geometric shapes (varying colors), sorting objects (small plastic objects of different colors and sizes) and plastic containers, different types of leaves
Unit 4 – Objects and How they Move

Lesson #2: How do objects move?

Book(s): Unit 1 – Fix-it Duck and Dig Dig Digging (movement and using tools)

Time Frame: 20-30 minutes

Learning Standards:

Science
Physical Science: Position and Motion of Objects
1) Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.
2) Demonstrate that the way to change the motion of an object is to apply a force (give it a push or a pull). The greater the force, the greater the change in the motion of the object.

Skills of Inquiry
• Tell about why and what would happen if?
• Make predictions based on observed patterns.
• Record observations and data with pictures, numbers, or written statements.
• Discuss observations with others.

Student will be able to:
1) Observe and discuss the motion of a ball, a cube, and a cone on different flat and inclined surfaces.

Anticipatory Set: Show the students a model of a small car. Ask the students the shape of the car wheels. Why aren’t the wheels a different shape? What makes the car go fast or slow? Tell the students that today they will investigate how different objects move.

Activity:
1) Start by doing a demonstration of how different objects move. Ask the students to sit on the floor so that there is an open runway down the middle. Roll various objects (such as a basketball, football, Frisbee, stick, rocks, etc.) down the runway and discuss with the students how the different objects move.
2) Working in pairs, explain that students will test out how three different objects move, a ball, a cube, and a cone. Pass out the movement student worksheet to each student and explain how to record their results (with arrows showing how each object moved on a flat surface and on the ramp).
a) First, students will roll the ball across the table and draw a picture of what happens. Students will repeat this with the cube and the cone. Students will record their results on the worksheet.
b) Then, ask students to predict what will happen if the objects are placed on an incline. Students will let go of the objects at the top of the incline and then draw a picture of what happens. Discuss the differences between how the objects moved across the table and how they moved down the ramp. Students will record their results on the worksheet.
c) Get ideas from the students about what else they would like to test. Students may try dropping the objects off of the table or trying to roll the objects on carpet instead of a smooth surface. Discuss the results of all the experiments with the class.

**Closure:** Discuss the motion of objects as a class. Which object rolled in a straight line? Why? What made the ball go faster or slower across the table? How did the cone move? Why? Why are tires circles instead of squares?

**Assessment:** Participation in class discussions and activities, drawings and observations of moving objects

**Resources and Materials:** Model car, balls and objects (such as balls of different shapes, Frisbee, rock, stick, etc. – bring from campus or get from the elementary school), Movement student worksheet, geometric shapes (ball, cube, cone), and ramps
Unit 4 – Objects and How they Move

Lesson #4: Making a Rolling Object

Book(s): Unit 1 – Fix-it Duck and Dig Dig Digging (movement and using tools)

Time Frame: 20-30 minutes (may take two lessons to perfect a good design)

Learning Standards:

Science
Physical Science: Position and Motion of Objects
   1) Describe the various ways that objects can move, such as in a straight line, zigzag, back-and-forth, round-and-round, fast, and slow.

Technology/Engineering

Materials and Tools
1.3 Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

Student will be able to:
   1) Design and make a simple structure that can roll using paper, glue, scissors, tape, and straws.

Anticipatory Set: Roll the ball, cone, and cube across the table and observe and review the different motions of each object. Tell the students that today they will design and create their own object that can roll in a straight line across the table.

Activity:
   1) Allow the students to work individually or in pairs to design and create an object that can roll in a straight line across the table. Give each student a piece of construction paper, scissors, straws, and access to tape and glue. Tell the students that the first design or idea may not work so keep experimenting and making changes until the object can roll.
   2) Working with students individually or in small groups to ask questions about their design and test and observe their products. Closely monitor the use of the glue, scissors, and tape.
   3) At the end, ask the students to present their objects to the class and give a demonstration of how they roll across the table. Multiple objects may even be rolled across the table at once. Discuss how different objects roll and why some are better at rolling than others.
Closure: Discuss the design process with the class. Ask the students the following questions. Did you have a picture in your head before you made your object? Did the first thing you make work? Why or why not? What did you learn by trying different things?

Assessment: Participation in class discussions and activities, creation of a rolling object

Resources and Materials: Construction paper, straws, scissors, glue, and tape