INVESTIGATING FAST AND SLOW MOTIONS

BIG IDEA 12: MOTION OF OBJECTS

BENCHMARKS AND TASK ANALYSES

SC.K.P.12.1 Investigate that things move in different ways, such as fast, slow, etc.
The student:

- explores the movement of various objects.
- discusses different types of movements that were observed during explorations (fast, slow, etc.).
- demonstrates fast and slow movements of various objects.

SC.K.N.1.3 Keep records as appropriate – such as pictorial records – of investigations conducted.
The student:

- records information about classroom investigations using pictures, science notebooks, or class data tables.

SC.K.N.1.1 Collaborate with a partner to collect information.
The student:

- works with a partner to gather information during classroom investigations.

KEY QUESTION

What are some ways that objects move?

TEACHER BACKGROUND INFORMATION

A force must act upon an object in order for motion to occur. When more force is applied, more movement will be observed. When less force is applied to the same object, less movement will be observed. Fast and slow are relative terms at this age level (what seems fast to one student may appear slow to another student).

MATERIALS

Teacher

toy car

Per group

various objects (blocks, toy cars, Unifix cubes, etc.)

SAFETY

- Always follow OCPS science safety guidelines.
- Remind students not to place objects in their mouths.
- Choose objects that do not have sharp edges.
- Remind students not to throw objects.

TEACHING TIPS

Allow students to generate their own classifications of fast and slow movements through discussion and repeated demonstrations (if needed). Students may explore other types of movement, but the focus for this grade level is fast and slow movement.

ENGAGE
Use a significant amount of force to push a toy car on a table (to make it move 'fast'). Use much less force to push the car again (to make it move 'slow'). Ask: *What was different each time I pushed the car?* If students do not generate the terms fast and slow right away, continue the process until students say the words 'fast' and 'slow'. Allow students to have their own opinion about fast and slow since the terms are relative at this age level.

EXPLORE
Direct students to run in place as 'fast' as they can. Direct students to move in place as 'slowly' as they can. Discuss the differences between the first time and the second time. Using various items from the classroom, such as blocks, Unifix cubes, toy cars, or balls, allow students to work together to demonstrate fast and slow movements. Circulate the classroom ensuring that each child using the words fast and slow to describe the movements of the objects.

EXPLAIN
Bring students together as a group and show them pictures of various things that may be considered to move fast or slow (airplane, turtle, fire truck, bugs, etc.). Allow discussion about whether the object normally moves fast or slow. Require students to tell 'why' they think the object moves fast or slow. Though fast and slow movements are the focus of this benchmark, please allow students to explore other types of movement to build background knowledge for 1st grade benchmarks.

EXTEND AND APPLY
Create a double bubble or Venn Diagram with students of objects that move fast or slow. Allow discussion for each object. Allow items to be placed in the overlapping section if students were able to justify why it belonged in that place.

ASSESSMENT
As you observe your students, look for the following behaviors:

- Are they engaged in the activities?
- Are they working with their group?
- Are they able to tell you that the object's movement is fast or slow?

FAST AND SLOW MOTIONS USING DIFFERENT SIZED OBJECTS

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MATERIALS

Per group
big playground ball
tennis ball

SAFETY

- Always follow OCPS science safety guidelines.
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- Remind students not to throw objects.

TEACHING TIPS

Allow students to generate their own classifications of fast and slow movements through discussion and repeated demonstrations (if needed). Students may explore other types of movement, but the focus for this grade level is fast and slow movement.

ENGAGE

Create a circle map with Fast Moving Things in the middle. Create a circle map with Slow Moving Things in the middle. Tell students to stand up and move slowly. Tell students to move quickly (fast). Ask: *What was different?*

EXPLORE
Allow students to work together to demonstrate fast and slow movements using the big playground ball and the tennis ball. Circulate the classroom ensuring that each child is using the words fast and slow to describe the movements of the objects.

EXPLAIN
What does it mean to move fast? What does it mean to move slowly? What are some things that move fast? What are some things that move slowly? Did the size of the ball change how fast or slow it was able to move? Allow students to share their thinking.

EXTEND AND APPLY
Allow students to repeat the explore and explain portions of this lab using student chosen items.

ASSESSMENT
As you observe your students, look for the following behaviors:

- Are they engaged in the activities?
- Are they working with their group?
- Are they able to tell you that the object's movement is fast or slow?

FAST AND SLOW MOTIONS USING RAMPS

BIG IDEA 12: MOTION OF OBJECTS

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MATERIALS

Per group
big toy car
small toy car
individual white board (or hardback book)

SAFETY

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- Remind students not to throw objects.

TEACHING TIPS

Allow students to generate their own classifications of fast and slow movements through discussion and repeated demonstrations (if needed). Students may explore other types of movement, but the focus for this grade level is fast and slow movement.

ENGAGE

Show students a large toy car, a small toy car, and an individual white board (or hardback book). Ask: *What could I do to learn more about fast and slow using these items?* Accept student responses.

EXPLORE
Allow students to work together to demonstrate fast and slow movements using the big toy car, the small toy car, and the individual white board. Circulate the classroom ensuring that each child is using the words fast and slow to describe the movements of the objects. Ask: *What happens to the car when you have the white board tilted a lot? What happens when it isn't tilted much at all?*

EXPLAIN
What can you tell me about fast? What can you tell me about slow? Did the size of the car change how fast or slow it moved? Did the tilt of your white board change how fast or slow your car moved? Why do you think that is?

EXTEND AND APPLY
Allow students to repeat the explore and explain portions of this lab using student chosen items.

ASSESSMENT
As you observe your students, look for the following behaviors:

- Are they engaged in the activities?
- Are they working with their group?
- Are they able to tell you that the object's movement is fast or slow?