Grade 2	Lesson: Falling Objects Part 1	Reference to English Interconnections Falling Objects pg. 62

Standard(s): 3.1 Physical Science

Content Objective(s):	Language Objective(s):
Students will experiment and conclude that similar objects of varying masses fall to the ground at the same rate. ***I can experiment to find out if objects of different weight fall at the same speed?***	Students will predict which object falls faster or if they fall the same to a partner. ***I can say my prediction about gravity to my partner.***
Essential Questions: What can we learn about non-living things?	**Academic Vocabulary for Word Wall:** **Listen:** gravity, fall, drop **Read:** **Write:** gravity, fall **Speak:** gravity, fall, **Sentence Frame:** I think the _____ will fall first. I think the___ and ____ will fall at the same time.
Materials: • objects ○ ball (big and small) ○ book (big and small) ○ pencil ○ books on gravity or falling ○ objects for the students to experiment with gravity such as big and little balls, books, blocks, pencils & markers, etc.	**Additional Lesson Vocabulary:** drop, flat, ball, book, pencil, , faster, slower, bigger, smaller

Lesson: Falling Objects	Instructional Time: 30 minutes

Opening: (3 minutes)

- Walk in front of the class and drop a heavy book. The loud thud will get the students attention.

T: "What just happened? I had the book up here in my hand and then it fell to the floor. Why did the book fall? Let's try it again."

- The teacher will drop the book again.

T: "Thumbs up or thumbs down…does everything fall to the ground?"
S: *will put their thumb up or down depending on their answer.*
T: "Let's try it again. "

- Drop other objects (pencil, ball, paper clip). Each time after the teacher drops an item continue to ask the students…

T: "Did the pencil fall, why?" "Let's try it again, did the ball fall, why?" (don't expect a response from the students at first).
T: "The items fell because of gravity. Watch, the paper clip falls because of gravity, the ball falls because of gravity." "Please tell your neighbor why the book falls."
S: *"The book falls because of gravity."*

Introduction to New Material (Direct Instruction): (10 minutes)
T: "This is GRAVITY. Objects fall. Gravity pulls objects toward the center of the Earth. Let's do some experiments with gravity."
T: "If I have a small book and a big book, which book will fall to the ground first? Put up 1 finger if you think this book will fall first. Put up 2 fingers if you think this book will fall first."
S: Students hold up one or two fingers for their prediction.

- The teacher will then drop a small book and a big book from the same height at the same time.

T: "Which book fell to the ground first?" "Think about it, then raise your hand if you know."

- The teacher will pick one student to answer.

T: "Are they correct? Let's try it again. Which book fell to the ground first? Think about it, everyone tell me at the same time. 1, 2, 3, tell me."
S: *will answer together.*
T: "Why did they fall at the same time? One book was bigger, the other was smaller. And yet they fell at the same time. Will that always happen? Let's do some more to see."
T: "Let's try it with a big ball and a small ball. Which one do you think will hit the ground first? Think about it and then whisper to the person sitting next to you as a secret." (Allow time to let the students tell each other).
T: "Let's try it again. Which ball fell to the ground first?"
S: *"The same."*

T: "Why?"
S: *"because of gravity."*
T: "You are right! All objects fall at the same rate no matter their size or weight because of gravity."

Guided Practice: (7 minutes)
- The teacher will give each partnership of students the Falling Objects Recording Sheet.

<u>Use the modeling cycle:</u>
<u>Teacher Does:</u>

T: "What if I drop the small ball and the heavy book at the same time, which one will fall to the ground first? Let's write this on our sheets. Draw or label the small ball on the left side and the heavy book on the right side."
S: *Students draw or label the objects.*
T: "Now put your finger on the one you think will land first or put a finger on each object if you think they will fall at the same time. Let me see your predictions."
S: Students place 1 or 2 fingers on the objects.
- Look at their predictions and comment on them with things like **"Mark thinks the ball will land first." "Sarah thinks the heavy book will land first." Or "Sam thinks they will land at the same time."**

T: "Let's try it.
- Drop the book and the ball

T: "They fell to the ground at the same time. Record that on your sheet. Write an equals sign in the middle like this."
- Teacher demonstrates writing an equal sign in the middle.

T: "Now why does that happen?"
S: *"Because of gravity pulls things at the same speed."*

<u>Teacher Does with Student:</u>
T: "I am going to separate you into groups of 2. You will experiment to see if objects fall at the same rate no matter their size. "
T: "Who wants show me what we are going to do?"
- The teacher picks a student to come up and help.

T: "I am going to give this student big ball and I am going to hold the small ball."
T: " Our first step is to draw or label the objects and make a prediction."
- The student and teacher draw the pictures and make a prediction.

T: "Then we will bring them up to the same height and drop them at the same time. However, we're not going to actually do that because I want you to do that on your own.
- The student and teacher bring the balls to the same height.
- They don't drop them (keeping the suspense).

<u>Two Students Do:</u>
T: "Now I need two students to come up and show me what we will do."
- The teacher will choose two students and give each of them a ball.

T: "First draw or label or your objects and make your predictions. Bring them up to the same height. Pretend to drop them, but don't really drop them yet."

Independent Practice: (7 minutes)
<u>All Students Practice:</u>
T: "Great, I think you are ready to experiment on your own."
- The teacher will put the students into partners and pass out two tissues to each partnership.

T: "Now it is your turn, which object will fall to the ground first? You will have 5 minutes to try do 4 experiments on your paper. Don't forget to draw and make a prediction.
S: Students experiment for 5 minutes.

Closing: (10 minutes)
- The teacher needs to get the students' attention and bring them back together.

T: "You have ten seconds to return to your spot on the carpet, 10,9,8,7,6,5,4,3,2,1. Good every one made it!
T: "What was the result of your experiments? If most of your objects fell at the same speed I want you to stand up. If most of your objects fell at different speeds I want you to kneel on your knees."
S: Students stand or kneel
T: "What do we notice?
S: "Most fell at the same speed."

T: "Does anyone remember why that happens?"
S: "Gravity pulls objects at the same time."
T: "Yes, gravity pulls objects at the same speed no matter what their weight. Next time, though, we are going to learn how we can prevent objects from falling so quickly."

Assessment:

- Observation of student conversations and their use of the sentence frame.

Extension:

- Watch videos of people walking on the moon. Show that the gravity isn't as strong on the moon.
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Falling Objects Recording Sheet

Draw a picture or write the word of the objects used in each experiment. Circle the object that landed first or write an = sign in the middle if they landed together.

Object #1	Object #2