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LESSON PLAN

GRAVITY PULLS THINGS DOWN GRADES K-2

SUMMARY

Students explore the effects of the pull of gravity on an object. Duration: 15-30 minutes.



K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

Science & Engineering Practices	Connections to Classroom Activity
<p>Planning and Carrying Out Investigations</p> <p>Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions.</p> <p>With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)</p>	<ul style="list-style-type: none"> Students plan and carry out an investigation on the pull of gravity affecting a falling object.
Disciplinary Core Ideas	Connections to Classroom Activity
<p>PS2.A: Forces and Motion</p> <p>Pushes and pulls can have different strengths and directions.</p> <p>Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it.</p>	<ul style="list-style-type: none"> Students learn about gravity with an emphasis of forces (pushes and pulls).

PS3.C: Relationship Between Energy and Forces

A bigger push or pull makes things speed up or slow down more quickly.

Crosscutting Concepts

Cause and Effect

Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Connections to Classroom Activity

- The students experiment with different falling objects to look for patterns and causes.



ENGAGE

Gather students in a circle in a central area. Throw a beach ball into the air and have students remain seated while they take turns tapping the beach ball around the circle. Ask students what makes the ball come back down? Have students discuss with a friend an experience they may have had with a falling object. What happens when an object falls from different heights – where do they go? Do objects ever fall up?



EXPLORE

Steps

1. Have students stand near a desk or table.
2. Give each student one of the set of classroom objects you prepared (such as a counting cube).
3. Ask students to start with the counting cube in the middle of the table or desk.
4. Ask students to push the cube to the edge of the desk without it falling.
5. Describe the push as a force acting upon the cube. Tell students, “Forces can push or pull an object.”
6. Have students brainstorm other pushes or pulls they have seen or done – such as pushing a chair under a table.
7. Have students push the cube off the edge of the desk, causing it to fall on the floor.
8. Ask students to brainstorm – what force pulled the cube to the floor?
9. Instruct students to sit on the floor at their seat and throw the cube up into the air a little bit. Where does the cube go? What pulls it back to the ground?



EXPLAIN

Gravity is the invisible force that draws objects towards Earth. As the cubes leave the surface of the desk, gravity pulls them towards the Earth. All objects on Earth are pulled towards the ground by gravity. When we throw an object into the air, such as the counting cube – gravity is still pulling the cube and eventually pulls it back to the ground. Gravity is a constant force that is acting on every object on Earth.

MATERIALS

- Any set of small classroom objects - 1 per student: such as counting cube, ball, tens block, counters, etc.
- A larger object for demonstration – such as a beach ball
- One apple

DIY Activity

- Large clear container
- Very long string of party beads
- Weight like a marker or pen



ELABORATE



WATCH THE GENERATION GENIUS GRAVITY PULLS THINGS DOWN VIDEO AS A GROUP

Facilitate a discussion using the discussion questions before and after the video.



EVALUATE

Students can play the online Kahoot! quiz game located below the video which provides downloadable scores at the end of the quiz game. Alternatively, you can use the paper quiz or the exit ticket questions. All these resources are located below the video in the Assessment section.



EXTENSION

For advanced students, have students research the pull of gravity on other planets – is it weaker or stronger? What is outer space's gravity like? What happens to astronauts in space or on the moon – can they float? Students can research information, videos, and demonstrations online to show how objects behave on different planets or in space.

Suggestions for additional books to read:

- *How Do We Stay on Earth?* by Amy S. Hansen and Korey Scott
- *Gravity* by Robin Nelson

