



artsNOW

Integrated learning solutions

GRAVITY AND PANTOMIME Grade Band: Kindergarten Content Focus: Theatre & Science



LEARNING DESCRIPTION

In this lesson, students will use pantomime to explore the concepts of gravity and weight by pretending to lift, hold and drop imaginary objects, and becoming objects that leave the ground, go into the air, and then go back down. Students will observe and reflect on the effects of gravity and use their bodies to show how that works.

LEARNING TARGETS

Essential Questions	“I Can” Statements
How can we demonstrate the effects of gravity using theatrical techniques?	I can use pantomime to show objects of different weight and the force of gravity on them.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
Kindergarten: SKP3 Students will observe and communicate the effects of gravity on objects.	Kindergarten: TAESK.3 Acting by developing, communicating, and sustaining roles within a variety of situations and environments.



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<p>a. Recognize that some things, such as airplanes and birds, are in the sky, but return to earth.</p> <p>b. Recognize that the sun, moon, and stars are in the sky, but don't come down.</p> <p>c. Explain why a book does not fall down if it is placed on a table but will fall down if it is dropped.</p>	<p>TAESK.7 Integrating various art forms, other content areas, and life experiences, to create theatre.</p>
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SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Kindergarten: K.P.4A. Conceptual Understanding: Objects can be described and classified by their observable properties, by their uses, and by whether they occur naturally or are manufactured (human-made). Different properties of objects are suited for different purposes.</p>	<p>Anchor Standard 3: I can act in improvised scenes and written scripts.</p>

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<p><u>Gravity</u> - An invisible force that pulls objects toward each other, and pulls people and things toward the earth.</p> <p><u>Weight</u> - The measurement of the force of gravity on an object.</p> <p><u>Heavy</u> - Having more weight; being pulled harder toward the earth.</p> <p><u>Light</u> - Having less weight; being pulled with less force toward the earth.</p>	<p><u>Pantomime</u> - Pretending to hold, touch or use something you are not really holding, touching or using; in the theatrical tradition, acting without words.</p>

MATERIALS

<ul style="list-style-type: none"> • Objects that can be dropped easily and safely to demonstrate gravity (marker, book, feather, tissue, ball, etc.) • Tambour, drum or percussion instrument (optional)



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INSTRUCTIONAL DESIGN

Opening/Activating Strategy

Warm-Up

- Have students stand up. Have them jump in the air. Ask them to observe what happens (they come back down); ask them why. Have students jump again and try to stay in the air (they can't). Ask why they can't stay in the air (encourage them to go beyond "We fall back down" to observations like "We are heavy" and "There's nothing to hold us up.")
- Now have students stand on one foot near a table or desk. Ask them to observe what happens (they have to hold onto a table to keep from falling, or work hard to maintain balance).
- Ask students what pulls them out of the air when jumping, or toward the ground when standing on one foot. Introduce the concept of gravity.
- Model for students pretending to blow air into a thumb, and inflating the body with air. Have students follow suit. As the body inflates, pretend to float (arms up to the sides, cheeks full, chest out, on tip toes). Then pretend to let the air out (arms down, cheeks empty, body sagging, knees bent, feet flat). Model and practice inflating and deflating.
- Ask how it feels to be full of air, and then to be empty of air. Ask why it feels this way. Elicit and/or lead a discussion of feeling light and heavy, and the differences in weight.
- Introduce "The Gravity Song" (to the tune of "London Bridge Is Falling Down")

Gravity is pulling down,
Pulling down, pulling down
Gravity is pulling down
All around you!

Take a ball and toss it high;
Will it stay in the sky?
Gravity will pull it down
All around you!

Jump up high and down you'll go
There's a force way down below
Gravity is pulling down
All around you!



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PROCESS

Objects and Gravity

- Explain that gravity is all around, but it pulls on different things in different ways, depending on their mass. It pulls denser things with more force. It pulls less dense things with less force.
- Show a variety of objects: a marker, a rubber ball, a tissue, a pencil, a feather, a block, a stuffed animal, a bag of marbles, a baseball (try to find some objects that are relatively more dense but still safe for the classroom). Ask students to predict what will happen when each is dropped. Which will go faster or slower, and why? Which will move in a straight line and which will move from side to side, and why?
- Model dropping objects safely to the floor. Elicit student observations about speed, direction, sound, etc.
- Have student volunteers drop some of the objects to the floor, and make observations.
- Possibly, give students time to find objects in the classroom for individual experiments in dropping and observing.

Pantomiming Objects

- Introduce or review the drama strategy of pantomime. Explain that the students will pantomime lifting objects of different weights, showing the effects of gravity with their bodies and faces.
- Model for students pantomiming different familiar objects: a feather, a baseball, a bowling ball, a carton full of blocks, etc. Take suggestions from students for objects to pantomime. Throughout, remind students to use their hands, arms, and whole bodies to show the effort necessary to lift an object. Explain that because gravity is pulling things down, we have to use energy to pull them up. Pantomime holding things up; also, as appropriate, pantomime dropping things to the ground.

Objects on Objects

- Place an object on another object, e.g., a book on a table. Ask students why the book doesn't fall to the ground, i.e., why gravity doesn't pull it down. Discuss how gravity holds the table on the ground, but the table is solid and holds the book up off the ground.
- Model pantomiming placing an object on another. This can be creative and playful, e.g., placing a crown on a queen's head, placing a block on a tower of blocks, placing a huge dinosaur egg on a giant rock, placing (balancing) a tricycle on your fingertip. Have students follow these actions.
- Have students make up their own pantomime actions placing one object on another. Remind them that the support object is pushing against the force of gravity that is pulling the supported object down.
- Possibly, explain that if the force pushing down is too great, the support object might give way, e.g., if an adult tries to sit on a child's chair, or if someone sits on a cardboard box.

Objects in the Sky

- Explain that now we will look at things that we see in the sky. Have students give some ideas e.g., the moon, clouds, airplanes, birds, the sun, drones, stars, helicopters, etc.
- Tell students, “When I say go, you move as the object I name. When I say stop, you stop.” Give the prompts for students to move like the various objects named. Let’s try! Go...Stop Bird, Go...Stop Moon, Go...Stop Sun, Go...Stop airplane, etc.” (Possibly: use a tambour, drum, percussion instrument, or clapping to signal starting and stopping.)
- Ask students whether all of those things stay in the sky all of the time. Divide the objects into those that do (sun, moon, stars, clouds) and those that don’t (birds, airplanes, helicopters, drones.) Explain/remind students that the first group are very far away. Ask students to guess how the second group stay up. Explain that, though we can’t see it, the air is not empty, and it helps to hold things up.
- Have students enact several objects (bird, airplane, helicopter) starting on the ground, going into the air, and coming back down. As they move, ask them to feel the air around them.

Extension: Explore clouds and rain. Have students move and float like clouds. Explain that clouds are made of droplets of water, which are very light and are held up by the air. But when the droplets crowd together, they form drops of water that are heavier, so they fall to the ground as rain. Have students enact becoming heavier and using fingers and arms to portray the rain.

Closing/Reflection

Review: What is gravity? Why are some things heavy and some things light? Why don’t things always fall to the ground? (Other things hold them up, or the air holds them up.) How did we use our bodies to show gravity?

ASSESSMENTS

Formative

- Students express the concepts surrounding gravity and weight clearly.
- Students effectively use pantomime to convey the weight of different objects.

Summative

Have students draw a picture that shows the effects of gravity in whatever way they want. They can use one of the examples that were explored in the lesson. Ask them to label (or dictate labels for) the things in their drawings. (Look for evidence of spatial relationships, of an awareness of weight, and of connections with the earth and sky.)

DIFFERENTIATION

Acceleration:

- Have students narrate their pantomime actions, e.g., “I am holding up the bowling ball so that the earth’s gravity doesn’t pull it down.” “I am a bird and the air and my wings are pressing down on the air and lifting me into the sky.”



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- Have students include arrows in their illustrations to show the direction of the force of gravity.

Remediation:

- Model more fully with a wider variety of objects, and give students the chance to experiment with placing objects on other objects.
- Focus on the pantomime of objects of different weight and placing objects on other objects; save the discussion of objects in the sky for a later lesson.

ADDITIONAL RESOURCES

The Day Gravity Goes Loco, by Patrick Maloney (rhyming picture book)
Baby Loves Gravity, by Ruth Spiro

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*

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