

Classroom Experiment: GRAVITY

Objective: Introduce students to gravity using **action-focused language** to increase their engagement and persistence, and confidence in doing science.

Materials needed to do science:

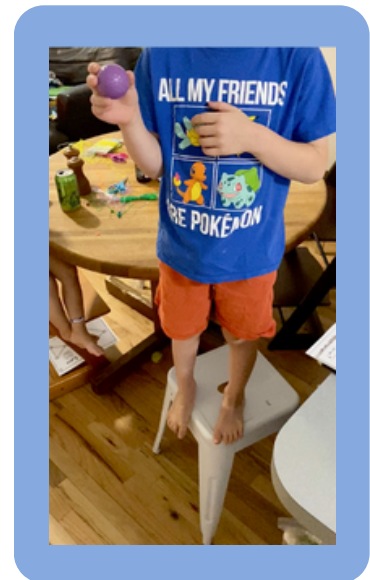
- Assorted objects to test (avoid objects that will bounce, roll away or break): marker, plastic cup, pinecone, stuffed animal, Lego, small block, paper, balloon filled with air, tissue, flower.
- Kitchen or dining table to drop the objects off of, or they can drop them from standing up.

IMPORTANT NOTE

Students will benefit most if action focused language is repeated throughout the science lesson. Introduce each step by saying "We're going to do science and..." and explain to students that "Doing science means learning about the world." You can incorporate action focused language into any science lesson, so feel free to change the experiment as you see fit. Have fun doing science!

Introduce new concept "Today we will be doing science!"

Begin by explaining to students that they will be "doing science to learn about gravity. Gravity is what pulls everything toward the ground, so they don't float away. But some things fall to the ground faster than others. This is because of air resistance. Air resistance pushes back against things as they fall. Light and thin objects, like feathers or paper, take a long time to fall to the ground because air resistance slows down the pull of gravity and makes the object fall slower. Heavy and thick objects like rocks or shoes fall faster because they are heavy, so the air resistance doesn't slow them down and the gravity can pull them down faster. Have your child jump up and down from the ground. What happens? Gravity pulls us back down to the ground and we don't fly away because our bodies are heavy and solid.



Have students do science by **observing**

Explain to students that "**part of doing science is observing!**" Have your students do science and use his/her eyes and hands to observe the first object they will drop. Is the object heavy or light? Is it thin or thick?

Have students do science by **predicting**

Explain to students that "**part of doing science is predicting!**" Each object has a different shape and weight, which means that gravity and air resistance will affect them differently, and they will fall at different speeds. Have your students do science and guess how long it will take for the first object to fall to the ground. Will it fall fast or slow? Will it take 1 second, 3 seconds or 5 seconds? You can practice counting with them to 5 and explain how a heavy object might take 1 second, but a light and thin object might take 5 seconds to fall.

Have students do science by **checking their guesses**

Explain to students that "part of doing science is checking your guesses!" Have your students do science and test their predictions by checking how long it will take for the first object to fall by counting together. Did it fall fast or slow? How many seconds did it take?

Our research has found that action focused language can increase science engagement, persistence, and confidence in kids from diverse backgrounds. It is our goal to increase the amount of action focused language children hear about science to reduce disparities in STEM. We know how hard teachers work, so we wanted to ensure that implementing action focused language in the classroom was as easy as possible. If you have any questions, comments, or concerns, please contact us at www.kidconcepts.org. Thank you for reading!

Best,
NYU Science Initiative

ACTION-FOCUSED LANGUAGE EXAMPLES

- "Today, we're going to do science"
- "Doing science is the process of discovering new things"
- "If we practice, we will get better at doing science."



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