

Photo Description



A skateboarder in a white helmet and turquoise shirt is jumping high into the air at a skate park. The skateboard is flying below them, separated from their body. You can see concrete ramps, curves, and flat areas in the background where skaters practice tricks.

Scientific Phenomena

Anchoring Phenomenon: An object (the skateboard) in motion continues to move even after separating from the person who was moving it.

Why This Happens: When the skateboarder pushes off the skateboard to jump, they give the board energy to move. The skateboard keeps rolling forward because of inertia—objects that are moving want to keep moving in the same direction until something stops them (like friction or hitting a wall). The skater's body goes up into the air because they pushed down and away from the board, but the board continues forward along the ground.

Core Science Concepts

- * Motion: Objects move in different ways. The skateboard rolls along the ground while the skater moves up and through the air.
- * Energy Transfer: When the skater pushes on the skateboard, they pass their energy to it, making it move faster.
- * Forces and Movement: The skater's legs push down (force) to make both themselves and the skateboard move.
- * Inertia: Once something is moving, it keeps moving unless a force stops it.

Pedagogical Tip:

For first graders, avoid using the word "inertia" directly in instruction. Instead, use language like "things that are moving keep moving" and "things at rest like to stay at rest." Use simple, repeated demonstrations with rolling balls and toy cars to build this intuitive understanding before introducing the concept name.

UDL Suggestions:

Provide multiple means of engagement by setting up a hands-on skateboard or rolling object station where students can physically push toys and observe what happens. Use a visual anchor chart with photos showing objects at rest and in motion. Allow students to respond to discussion questions through movement (jumping to show "yes," staying still to show "no") as well as through verbal responses, supporting kinesthetic and auditory learners.

Discussion Questions

1. What made the skateboard move so fast? (Bloom's: Remember | DOK: 1)
2. Why did the skateboard keep moving even after the skater jumped off it? (Bloom's: Analyze | DOK: 2)
3. If someone put a wall in front of the skateboard, what do you think would happen to it? (Bloom's: Predict | DOK: 2)
4. How is the skater's movement different from the skateboard's movement? (Bloom's: Compare | DOK: 2)

Extension Activities

1. Rolling Toys Exploration Station: Set up ramps and flat areas with toy cars, balls, and rolling objects. Have students roll toys and observe how far they travel. Ask: "What made it stop?" This builds understanding of motion and forces through hands-on play.
2. Push and Go Game: Mark a starting line and finish line on the gym floor or outdoor area. Give students toy cars or balls to push gently, then watch how far they travel before stopping. Compare which objects traveled farther and discuss why (surface type, size, weight).
3. Human Motion Freeze Dance: Play music and have students move and jump. When the music stops, they freeze in place. Discuss: "Your body was moving, but now it stopped because you used a force (your muscles) to stop. Things that are moving can be stopped by forces!"

NGSS Connections

Performance Expectation: K-PS2-1

Represent and explain the motion of objects using evidence, with teacher guidance, that things can move in different ways.

Disciplinary Core Ideas:

- K-PS2.A|PS2.A: Forces and Motion

Crosscutting Concepts:

- Patterns|Patterns

- Cause and Effect|Cause and Effect

Science Vocabulary

* Motion: When something moves from one place to another.

* Energy: The power to make things move or change.

* Force: A push or a pull that makes something move or stop.

* Skateboard: A board with wheels that rolls and can carry a person.

* Inertia: The way things that are moving keep moving, and things that are still like to stay still (use simpler language: "things like to keep doing what they're already doing").

External Resources

Children's Books:

- Things That Go by Rob Colson (explores movement and vehicles)

- The Little Blue Truck by Alice Schertle (motion and transportation)
- Motion by Lola M. Schaefer (simple introduction to movement)

YouTube Videos:

- "Forces and Motion for Kids," Crash Course Kids, <https://www.youtube.com/watch?v=1Xwj87k-4R4> (2:56 min, explains how forces make things move)
- "Newton's Laws of Motion," National Geographic Kids, <https://www.youtube.com/watch?v=kKKM8Y-IHDs> (3:15 min, kid-friendly explanation of why things move and stop)