Integrating Gizmos with Hands-on Activities and Investigations

Gizmos can be used to support learning along with a hands-on investigation. Using a Gizmo at different times in the lesson cycle allows students to interact with the content in a variety of ways and modalities. Each Gizmo is accompanied with customizable Lesson Materials and a Teacher Guide that includes strategies and ideas to integrate Gizmos into your lesson plans.

These Gizmos are a few examples of how simulations can support conceptual understanding pre-investigation, as the investigation (supplement or substitution) and post-investigation to enhance learning experiences for students. You can use all of these strategies or pick/choose which best aligns with your teaching style.

Physical Science - Physics	Feed the Monkey Crumple Zones Air Track

There are over 400+ Gizmos to choose from, all aligned to the latest standards help educators bring powerful new learning experiences to the classroom.

Integration Ideas

Pre-Investigation
Make predictions
Introduce concept/lab
Activate Prior Knowledge

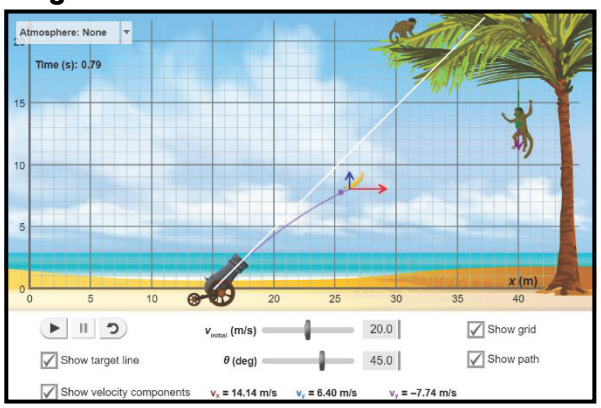
Investigation
Demonstration
Individual/Group Investigations
Task Cards

Post-Investigation
Guided/Open Inquiry C-E-R Prompts Extension Activities

Learn More
Educator Resource Hub

Gizmo: Feed the Monkey

How can Gizmos support my projectile launcher demonstration and investigation?



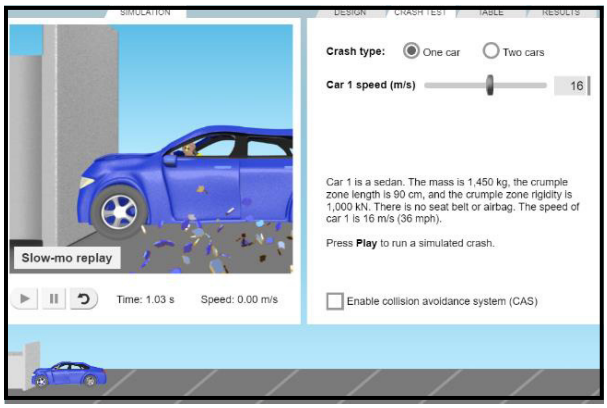
Pre-Investigation Option: Pose a challenge. Allow students to experiment with the Gizmo, trying several different cannon locations, banana velocities, and launch angles to hit the monkey with a banana. Ask students to share their results and identify any patterns from their observations.

Investigation Supplement or Substitution Option: Use the Gizmo to investigate projectile motion, velocity vectors and calculate velocity/acceleration changes. Ask students to create their own version of "Feed the Monkey" using recyclable materials.

Post-Investigation Option: Students complete a Claim-Evidence-Reasoning prompt answering "Where should you aim the cannon to hit the monkey?" Students should provide evidence from Gizmos (including screenshots, calculations, etc...), and any additional resources learned during the unit to support their claim.

Gizmo: Crumple Zones

How can Gizmos support the Egg Drop hands-on engineering investigation or other collision activities?



Pre-Investigation Option: Complete the pre-Gizmo activity from the Teacher Guide. Then, model the Gizmo warm-up whole group to show students how to use the Gizmo and analyze results. Ask students in pairs to design the safest car. Provide the blank data tables for their car experiments. Ask students to identify and explain which parameters are most important to consider when making a car.

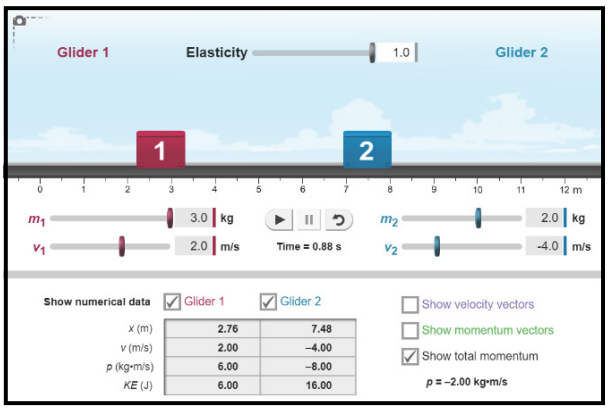
Investigation Supplement or Substitution Option: Use Activity D to investigate the work-energy theorem. Allow students to determine the minimum possible force that acts on a passenger by testing the crumple zones of three different vehicles. Use the "Think and Discuss" prompt as a class discussion, writing prompt or assessment question.

Post-Investigation Option: Students complete a Claim-Evidence-Reasoning prompt answering "How do people survive major collisions?" Students should provide evidence from Gizmos (including screenshots, calculations, etc...), and any additional resources learned during the unit to support their claim. This could then lead to students completing an "egg drop challenge" as a final performance assessment to explain the relationship between force, mass, acceleration, and velocity.

Gizmo: Air Track

How can Gizmos support how Newton's cradle apparatus or other physical models (like an air track, billiard balls/pool table, air hockey table) work?

Pre-Investigation Option: Give students a few minutes to explore the Gizmo and tell you how it works. Ask them to provide any observations about how the gliders move. Split students into groups of 3. Provide them with the scenarios from Activity A, Question 1. Each student selects a scenario to recreate and then share their findings with the group, then the whole class. Ask the students to then create 3 different collisions using any combination of masses and velocities as long as the gliders collide. Record mass, velocity, and momentum before and after the collision by clicking on show numerical data. Explain the principle of conservation of momentum. Ask students to use their data to support this law.



Investigation Supplement or Substitution Option: Create a task card for students to complete in small groups based on Activity C. Student A will use the Gizmo to explore the law of conservation of energy by looking at the velocity before and after the collision and Student B will explore the elasticity of a collision. Students will share their learning with each other. As a class, share findings with the group and close the lesson looking for patterns and establishing a rule to use to explain each concept when provided with data.

Post-Investigation Option: If you have access to an air track, Newton's cradle, or any other physical model to demonstrate a collision, show a collision and ask students to apply their knowledge from the Gizmo to explain how it works and how it supports the law of conservation of energy and momentum.