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.

Life Science	Natural Selection RNA and Protein Synthesis Osmosis

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

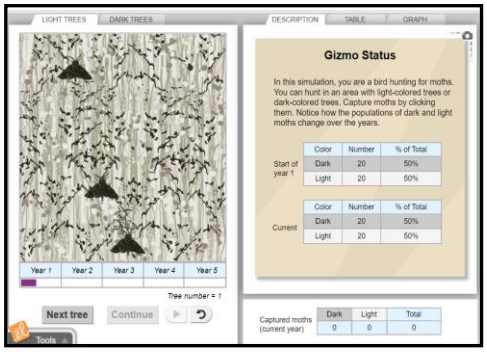
Investigation
Demonstration
Individual/Group Investigations Task Cards

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

Learn More
Educator Resource Hub

Gizmo: Natural Selection

How can Gizmos support my Natural Selection in Action investigation or other peppered moth hands-on activities?



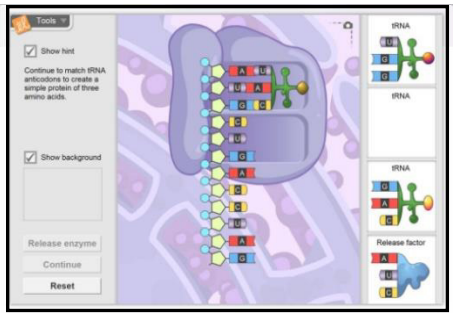
Pre-Investigation Option: Use the Gizmo to run a couple simulations asking students to predict what they think will happen. Switch between light trees and dark trees asking them to explain why they think certain moths are easier to see.

Investigation Supplement or Substitution Option: Assign activity A to half the class and Activity B to the other half and have them run the simulations. Gather data and then have them compare using a jigsaw. Based on what they learned, have them generate a new question and use the Gizmo to investigate.

Post-Investigation Option: Give students the Historical Connection from the Natural Selection Gizmo Teacher Guide. Have them read through the material and then use the Gizmo to provide support or opposition to Kettlewell's findings.

Gizmo: RNA and Protein Synthesis

How can Gizmos support my gene expression hands-on activity?



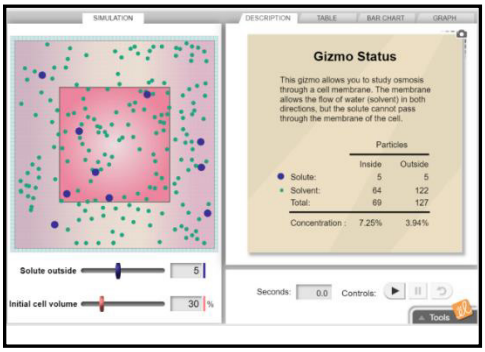
Pre-Investigation Option: Use the Gizmo task card to introduce RNA and protein synthesis.

Investigation Supplement or Substitution Option: Complete activity A as a whole class or skip it if you have already introduced RNA and protein synthesis. Have students work in small groups to complete Activity B and C in the student exploration sheet.

Post-Investigation Option: Use the discussion questions in the RNA and Protein Synthesis Gizmo Teacher Guide and ask the students to support their answers using screenshots from the Gizmo.

Gizmo: Osmosis

How can Gizmos support my hands-on Osmosis investigation using de-shelled raw eggs or other materials?



Pre-Investigation Option: Complete Activity A in the Student Exploration Sheet to help students understand what will be happening in the investigation.

Investigation Supplement or Substitution Option: Complete activity A as a whole class. Break your class into small groups and use the format of Activity B but assign different groups different solute and initial cell volume settings. Have students share their data on the board or a google doc and discuss what happened in each scenario. Assign the Extend your thinking question at the end of Activity B as an individual assessment. You can also use the Osmosis STEM case.

Post-Investigation Option: Take screenshots of the assessment questions at the end of the Gizmo and assign them to students based on their individual needs. Have them answer the questions providing evidence with Gizmo screenshots. You could use a jigsaw to share answers in small groups.