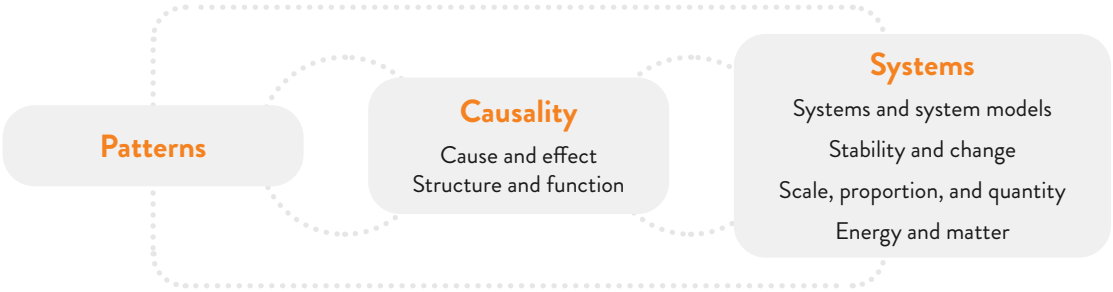
Gizmos and NGSS

ExploreLearning Gizmos interactive math and science simulations are the perfect addition for Next Generation Science Standards (NGSS) lesson plans. Check out this guide for examples of how Gizmos correlate with each of the NGSS dimensions: Disciplinary Core Ideas, Crosscutting Concepts, and Practices.

Disciplinary Core Ideas

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and Applications of Science
PS1: Matter and Its Interactions	LS1: From Molecules to Organism: Structures and Processes	ESS1: Earth's Place in the Universe	ETS1: Engineering Design
PS2: Motion and Stability: Forces and Interactions	LS2: Ecosystems: Interactive, Energy, and Dynamics	ESS2: Earth's System	ETS2: Links Among Engineering, Technology, Science, and Society
PS3: Energy	LS3: Heredity: Inheritance and Variation of Traits	ESS3: Earth and Human Activity	
PS4: Waves and Their Applications in Technologies for Information Transfer	LS4: Biological Evolution: Unity and Diversity		

Crosscutting Concepts



Science and Engineering Practices

Investigating Practices:
- Asking questions and defining problems
- Planning and carrying out investigations
- Using mathematics and computational thinking

Sense Making Practices:
- Developing and using models
- Analyzing and interpreting data
- Constructing explanations and designing solutions

Critiquing Practices:
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Gizmos Bring NGSS Science and Engineering Practices to Life

With over 500 online simulations, virtual labs, and interactive **STEM Cases**, the options are endless with Gizmos to bring powerful learning to the classroom.

Examples of how Gizmos align with specific NGSS Science and Engineering Practices:

Asking questions and defining problems

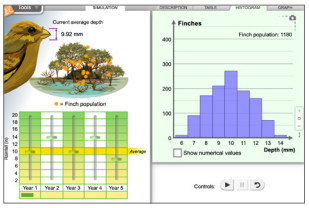
What happens if you drop a soccer ball off the Leaning Tower of Pisa? What about a watermelon? In the **Free Fall Tower Gizmo**, students put their questions to the test while monitoring the speed of objects.

Developing and using models

Students design models to simulate a dummy in a car collision using the **Crumple Zones Gizmo**. Students select different cars, crumple zone components, and speeds to measure the impact of each crash.

Planning and carrying out investigations

In the **Water Contamination STEM Case**, learners carry out tests to determine which of the four water treatment methods will correct a contamination issue.

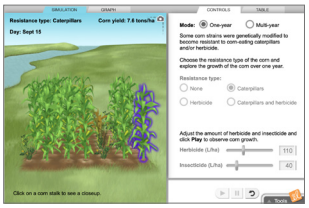


Analyzing and interpreting data

How are finches affected by a drought? Using the **Rainfall and Bird Beaks Gizmo**, students compare histograms before and after a long period of drought to describe key changes they observe.

Using mathematics and computational thinking

Bring on the snow! In the **Sled Wars Gizmo**, students must calculate the amount of potential energy needed to destroy two snowmen without damaging a third.

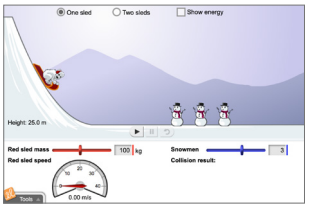


Constructing explanations and designing solutions

Students put their home design skills to the test as they use materials to withstand natural disasters in the **Earthquake-Proof** and **Flood and Storm-Proof Homes Gizmos**. Students must evaluate the effectiveness of their building designs after homes face the elements, and re-design to achieve the minimal amount of damage.

Engaging in argument from evidence

How can you tell if a chemical change has occurred? Students use the **Chemical Changes Gizmo** to determine if reactions are chemical or physical in nature while communicating results with evidence.



Obtaining, evaluating, and communicating information

In the **GMOs and the Environment Gizmo**, students practice observing and summarizing the long-term effects of pollutants on a nearby stream ecosystem.

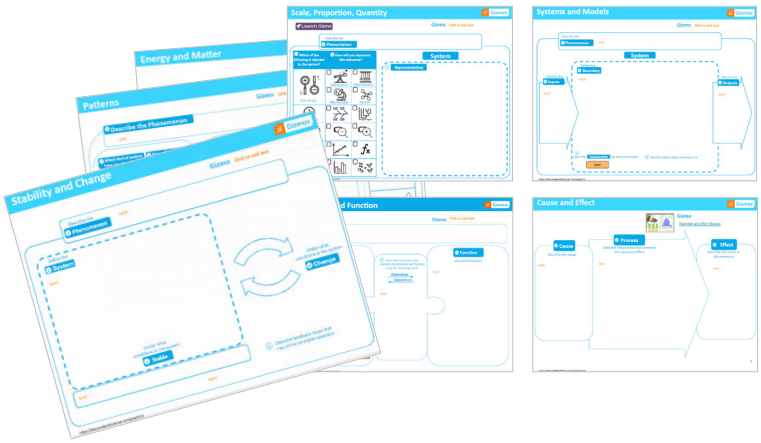
Take Learning to the Next Level

The ExploreLearning team is passionate about helping educators help students. With supplemental resources, professional development, and more, there is always a space to grow in your science instruction.

Collaborate: Virtual Learning Communities (VLC)

A place where Gizmos subscribers can share, learn, and grow with Gizmos. Daily posts, downloadable resources, and community await!

Examples of NGSS content shared in the VLC:



Support: Lesson Materials

Each Gizmo offers a complete set of instructional materials, which can be used as-is or customized to fit your lesson needs.

Materials include:

- Teacher Guide
- Student Exploration Sheet + Answer Key
- Vocabulary Sheet

Grow: Professional Development & Educator Resource Hub

We believe continuous improvement is an important goal for every educator. Our professional development sessions help teachers grow with Gizmos, from getting started to building strong ongoing implementation.

The Educator Resource Hub is packed with supplemental resources, videos, and downloads to assist your classroom instruction.

Get Inspired: See Why Other Teachers Trust Gizmos

Our team loves celebrating success stories of students and teachers who have seen real results with Gizmos. Hear from other educators for a boost of inspiration.

"The content aligns to NGSS, and Gizmos encourage inquiry instruction and actively engage students in learning." - Middle school teacher, Hawaii