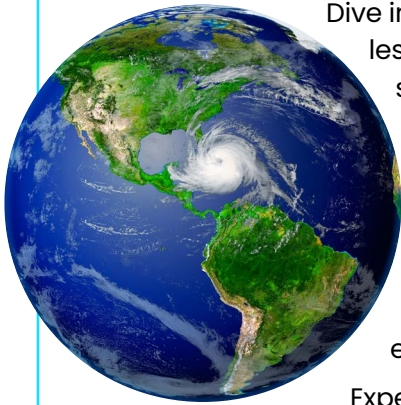


Content Spotlight:

Using Hands-On Activities to Promote Engagement



Britannica
Expedition: **Learn!**



Dive into the school year by planning science lessons that ignite students' curiosity, support diverse learners, and enhance literacy skills—oh, and don't forget to promote critical thinking, problem-solving skills, and collaboration while you're at it! That's a tall order, but using **Expedition: Learn!**'s content-rich lessons with embedded hands-on experiences can make planning easier.

Expedition: Learn!'s four types of hands-on activities (**Model, Research, Investigation, and Skill Practice**) enhance students' understanding of topics in all areas of science and allow exploration of current events that affect students' lives. Share with students a local example of interactions of Earth's subsystems, such as a recent weather event, local evidence of weathering and erosion, or nearby impacts of climate change. Digging deeper into these relatable, local examples is easier with Expedition: Learn!'s wide variety of lessons and hands-on activities.

Why It Matters

Hands-on activities have been shown to have many positive effects on science learning. Using activities from a trusted source with robust teacher support materials enhances the experience for students and teachers alike.

Check out how Britannica experts teach the featured lesson!

Expedition: Learn! is an instructional platform with standards-aligned, interdisciplinary lessons that build content knowledge, reading comprehension, and critical thinking skills. Explore how our experts use *The Earth System and Subsystems* lesson to engage in hands-on learning!

GRADES 6 - 8



The Earth System and Subsystems

In Practice Hands-On Science

Use the hands-on activities embedded in many **Expedition: Learn!** lessons to engage students, enhance understanding of key topics and current events, and promote three-dimensional learning.



Learn more:
britannicaeducation.com/expedition-learn



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Classroom Guide

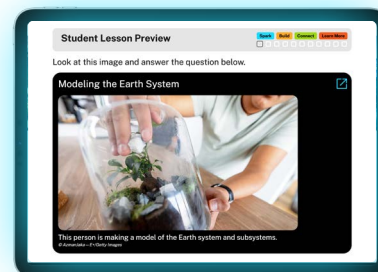
The Earth System and Subsystems



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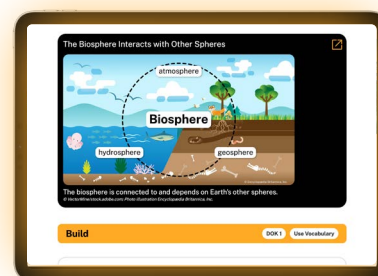
Spark

- Display the **Spark** image and give students time to respond to the question.
- Invite students to share their answers. Use their responses to prompt discussion and elicit questions to be explored during the lesson.
- Explain to students that they'll have a chance to collect evidence during the lesson and revisit the question prompt at the end of the lesson.
- Use the Teach Britannica **Mini Glossary instructional strategy** to develop students' understanding of this lesson's vocabulary words. Students can complete the first two columns of the graphic organizer at the beginning of the lesson and complete the rest as they learn about Earth's subsystems.



Build

- Ask students to navigate to **Build page 3** and review the diagram depicting the biosphere and how it interacts with other spheres. Then ask them to work with a partner to come up with three interactions between the biosphere and the other subsystems shown in the diagram.
- Ask student pairs to share their ideas with the class and encourage students to come up with additional examples that are not shown in the diagram.



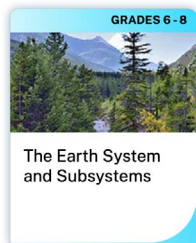
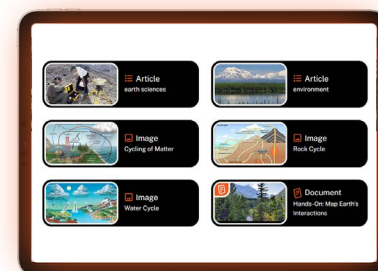
Connect

- **Model:** Display **Connect question 7** and model how to break the problem into smaller steps. Ask students to read each sentence in the passage, one at a time, and identify the subsystem being described. For example, in the first sentence, the geosphere is being described because a volcano is part of the geosphere.
- **Guided Practice:** Display **Connect question 8** and point out that there are arrows, which indicate an interaction, pointing to air, water, land, and living things. Then ask students to find photosynthesis in the diagram and identify which subsystems are connected to photosynthesis as indicated by arrows. Repeat this process for decomposition.
- **Independent Practice:** Allow students time to complete **Connect questions 9 and 10** independently. After responses are submitted, convene the class and discuss how students' responses to question 10 changed as compared to their original responses to the same prompt in question 1.



Learn More

- The article "Environment" reinforces and extends what students have learned in this lesson. After students read the article, ask them whether they think the abiotic environment and the biotic environment could be considered subsystems.
- In addition, the Expedition: Learn! hands-on activity "Map Earth's Interactions" can be used to explore the lesson topic. You can access the teacher materials for the activity using the Activity Guide PDF button at the beginning of the lesson.



Keep the exploration going! Discover these resources and more in Expedition: Learn! on Teach Britannica.





Create a Visual Display

- Invite students to work in groups of three or four to create a visual display of an interaction between two of Earth's subsystems. Provide poster board and art supplies, such as markers or colored pencils and any craft items students might want to use. Students should include labels that help explain the interaction. Hang students' displays and allow students to go on a gallery walk. Each student should choose a display other than their own and leave a sticky note with a comment about what they like about the display.

Start an Observation Journal

- Ask students to start a journal in which they write and draw to describe interactions among Earth's spheres that they see in their day-to-day lives. Encourage students to write in their journals at least once a day for a week and then share their entries with the class. During these discussions, ask questions, such as: Which spheres are involved in this interaction? How does this interaction affect your daily life? Journals do not need to be actual books. They can be made with sheets of paper stapled together.

Research and Report: Human Impact on Earth's Subsystems

- Invite students to work in groups of two or three. Working within your district's guidelines and firewalls, have each group research an environmental problem that impacts one of Earth's subsystems. Examples include air pollution, water pollution, deforestation, and poor land-use management. As students conduct their research, they should prepare a brief report to share with the class that answers the following questions: What is the environmental problem? What causes it? Which of Earth's subsystems are impacted, and how are they impacted? What are some interactions among these subsystems that are impacted?

Continue the *Expedition* with these related lessons!

GRADES 6 - 8



Weathering and Other Changes to Earth's Surface



GRADES 6 - 8



Introduction to Natural Hazards



GRADES 6 - 8



What Are Greenhouse Gases?



GRADES 6 - 8



Air Masses and Weather

