

Geology/Energy/Social Studies Classes:

DOWN TO EARTH

Themes: Energy; Connections, Cycles, and Systems; The Earth Provides; McDowell Stewards

Lesson Overview: Through observation and exploration of habitats at Camp McDowell, learners assess the impact of a reclaimed coal mine on the local ecosystem. Learners observe sedimentary rock types associated with coal formation, as well as the weathering and erosion processes that result in sedimentation. Learners close the class by discussing the need for the responsible use of natural resources.

Total Time: 3 hours

Hiking Distance: ~1.5 miles

Activity Level: Moderate hike; includes a ladder and stream crossings that are not universally accessible.

Learning Goals: By the end of this session, learners will be able to consider the geosphere in the following ways:

1. Identify that sandstone and coal are sedimentary rocks that tell the geologic history of our area, and observe the modern impact of weathering on those rocks.
2. Observe and describe the impact of coal mining on the geosphere and biosphere in the region.
3. Link commonly used materials to finite resources extracted from Earth and discuss the reasons for producing and conserving those resources

Scientific Practices Highlighted: Analyzing and Interpreting Data, Constructing Explanations

Crosscutting Concepts Addressed: Scale, Proportion, and Quantity, Cause and Effect

ROCK QUERY

Themes: Energy; Connections, Cycles, and Systems; The Earth Provides

Lesson Overview: Learners will hike into a sandstone canyon to better understand how rocks form and engage with rock samples to discern the relationship between sedimentary, igneous, and metamorphic rocks. Learners will observe and consider the impact of the geosphere on local ecosystems, and, in turn, the role the hydrosphere, atmosphere, and biosphere play in shaping the geosphere.

Total Time: 3 hours

Hiking Distance: ~ 1.5 miles

Activity Level: Moderate to strenuous hike; includes a ladder and stream crossings that are not universally accessible.

Learning Goals: At the end of this lesson, learners will be able to think critically about the geosphere in the following ways:

1. Rocks have unique properties based upon their origin. They can cycle between igneous, sedimentary, and metamorphic as a result of processes like weathering, transport, and mountain building.
2. The geosphere is one of Earth's major systems that shapes and is shaped by all of Earth's other systems (biosphere, hydrosphere, atmosphere), revealing changes over time.
3. Different rock types are found throughout Alabama and allow us to predict places to mine for resources.

Scientific Practices Highlighted: Developing and Using Models, Obtaining, Evaluating, and Communicating Information

Crosscutting Concepts Addressed: Stability and Change, Scale, Proportion, and Quantity

NATIVE AMERICANS & THE EARTH

Themes: Community; Connections, Cycles, and Systems; The Earth Provides; McDowell Stewards

Lesson Overview: Learners will engage with Native American artifacts, visit a reconstruction of a typical Mississippian Era village, and participate in activities and games to learn respect for natural resources and different cultures.

Total Time: 3 hours

Hiking Distance: .75 mile

Activity Level: Low to moderate; can be modified for alternate abilities, however some experiences require hiking a short but strenuous hill.

Learning Goals: By the end of this session, learners will be able to discuss the relationship between humans and the natural environment through the lens of Alabama's indigenous people in the following ways:

1. Describe the cultural differences between people of European descent and American Indians, and explain the reason for those differences in the past and today.
2. Explain how American Indian culture changed over time because of changing reliance on natural resources and environmental changes.
3. List and locate on a map the four major tribes of American Indians that lived in Alabama before European settlers, and describe how they were impacted by one another through trade.

Scientific Practices Highlighted: Constructing Explanations

Crosscutting Concepts Addressed: Stability and Change, Cause and Effect

AUTHORS & EXPLORERS

Themes: Community; Connections, Cycles, and Systems; McDowell Stewards

Lesson Overview: Learners will connect with and be inspired by natural features by exploring McDowell's woods and journaling their experiences. Learners will be prompted with sensory awareness and observation activities to record and share their experiences using sketches, poetry, and word art. Learners will gain knowledge about the scientific and artistic value of journaling and articulate written expression by relating their experiences to those of famous authors and naturalists.

Total Time: 3 hours

Hiking Distance: varied, .5 to .75 mile

Activity Level: Can be modified for universal accessibility with notification

Learning Goals: At the end of this session, learners will be able to use natural landscapes as inspiration for the following:

1. View and describe the world from different perspectives, including the perspective of a natural object, and consider how perspective impacts understanding of the world.
2. Details and analogies improve descriptive writing and help the author convey information to the reader.
3. Relating their experience to the ways authors, explorers, and scientists use sketching and writing in journals as tools to improve their trade.

Scientific Practices Highlighted: Developing and Using Models

Crosscutting Concepts Addressed: Patterns, Scale, Proportion, and Quantity