

Growing Students in Science: A Community Partnership to Build Interest and Ability in the Sciences



The **HOLDEN** Arboretum*

Making the Connection to Ohio Education Standards

Second Grade



Overview Holden Fall Visit: Tremendous Tree Detectives

Trees have various functions in their community. They interact with nonliving and living things. They absorb carbon dioxide and produce oxygen during photosynthesis. Trees change the temperature in the habitat they are growing. Trees also provide habitat for animals and plants in their branches and in hollows in their trunks.

As tree detectives students will discover clues about how trees are important in a habitat or community. They will start their journey by determining if trees are alive. They will then go on to explore using magnifying glasses, the living and nonliving things trees interact within their physical environment. Using thermometers they will discover how trees play a role in influencing temperature in a particular location. By observing the tiny holes – stomata – on the underside of leaves they will learn that trees are essential to animal survival and that air occupies space. Finally using anemometer students will gain an understanding how energy, in the form of wind, can impact trees and their environment.



Earth Sciences

Grade 2

The Atmosphere

This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.

The atmosphere is made up of air.

Air has properties that can be observed and measured. The transfer of energy in the atmosphere causes air movement, which is felt as wind. Wind speed and direction can be measured.



Life Sciences

Grade 2

Topic: Interactions within Habitats

This topic focuses on how ecosystems work by observations of simple interactions between the biotic/living and abiotic / nonliving parts of an ecosystem. Just as living things impact the environment in which they live, the environment also impacts living things.

Living things cause changes on Earth.

Living things function and interact within their physical environments. Living things cause changes in the environments where they live; these changes can be very noticeable or slightly noticeable, fast or slow.



General Science

Grade 2

Observe and ask questions about the natural environment.

Plan and conduct simple investigations.

Employ simple equipment and tools to gather data and extend the senses.

Use appropriate mathematics with data to construct reasonable explanations.

Communicate about observations, investigations and explanations.

Review and ask questions about the observations and explanations of others.



English Language Arts

Grade 2

Create and use graphic organizers, such as Venn diagrams and webs, to demonstrate comprehension.

Predict content, events and outcomes from illustrations and prior experience and support those predictions with examples from the text or background knowledge.

Compare and contrast information in texts with prior knowledge and experience.

Identify information in diagrams, charts, graphs and maps.
Follow two and three steps oral directions.

Produce informal writings (e.g., messages, journals, notes and poems) for various purposes.



Overview Classroom Winter Visit: Ice Age Detectives

Many plants and animals that lived in Ohio during the Ice Age were identical or similar to plants living here at the time of European settlement and those that live here today. However, there were many creatures, especially larger animals (megafauna) that became extinct at the end of the Ice Age about 10,000 years ago. The extinction was caused by the climate warming quickly and vegetation including trees change abruptly from spruce to familiar deciduous tree habitats.

In the classroom students will investigate how fossils can tell us about the climate of Ohio long ago. They will manipulate an interactive Ohio felt map to show a visualization of the Ice Age and how it changed over time. They will understand how the change in climate changed the trees and ultimately led to the extinction of the mastadon, giant beaver and stag moose. Finally the students will plant tree seeds from the Ice Age and present day to observe in the classroom over time.



Earth Sciences

Grade 2

The Atmosphere

This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.



Life Sciences

Grade 2

Living things cause changes on Earth.

Living things function and interact within their physical environments. Living things cause changes in the environments where they live; these changes can be very noticeable or slightly noticeable, fast or slow.

Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today.

Living things that once lived on Earth no longer exist; their basic needs were no longer met.



General Science

Grade 2

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Plan and conduct simple investigations.

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Use appropriate mathematics with data to construct reasonable explanations.

Communicate about observations, investigations and explanations.

Review and ask questions about the observations and explanations of others.



English Language Arts

Grade 2

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Overview Spring Holden Visit

Water Cycle Detectives

Water is continually moving around, through and above the Earth as water vapor, liquid water and ice. Trees play an important role in the water cycle. Trees absorb liquid water from the soil and release water vapor into the atmosphere.

Students will investigate in the classroom where water comes from and the different parts of the water cycle. They will continue their investigation at Holden where they will discover that water travels through trees, and that trees are a part of the water cycle. Students will discover the amount of water in the air (humidity), and how water molecules stick to each other and the natural object they land on. They will measure roots to learn the amount of water absorbed by a tree is determined by the length of the tree roots. Students will listen to the water traveling through the tree using a stethoscope. Finally, using cobalt chloride paper, they will understand that trees release water through tiny holes on the underside of the leaves.



Earth and Space Science

Grade 2

The Atmosphere

This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.

Water is present in the air.

Water is present in the air as clouds, steam, fog, rain, ice, snow, sleet or hail. When water in the air cools (change of energy), it forms small droplets of water that can be seen as clouds. Water can change from liquid to vapor in the air and from vapor to liquid. The water droplets can form into raindrops. Water droplets can change to solid by freezing into snow, sleet or hail. Clouds are moved by flowing air.



Life Science

Grade 2

Interactions within Habitats

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Living things cause changes on Earth.

Living things function and interact within their physical environments. Living things cause changes in the environments where they live; these changes can be very noticeable or slightly noticeable, fast or slow.



General Science

Grade 2

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