



Nature's Art Village

Educational Field Trip Programs

Guide To:

Content Standards and Expected Performances

Core Science for Grades 3 through 5

Rocks, Minerals, Recycling

This interactive class combines scientific fact with conservation to provide students with unique insight into how earth materials can be used and transformed while also recycled and reused in order to keep our planet healthy! Your students will learn about geology, rocks and minerals, their properties and uses, finite and renewable resources, and recycling. A mineral matching game enhances the class, and a take-home project is given to improve public speaking and further knowledge on the subject!

THE STANDARDS FOR SCIENTIFIC INQUIRY, LITERACY AND NUMERACY ARE INTEGRAL PARTS OF THE CONTENT STANDARDS FOR EACH GRADE LEVEL IN THIS CLUSTER.

Grades 3-5 Core Scientific Inquiry, Literacy and Numeracy

How is scientific knowledge created and communicated?

Content Standards	Expected Performances
<p>SCIENTIFIC INQUIRY</p> <ul style="list-style-type: none"> Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena. <p>SCIENTIFIC LITERACY</p> <ul style="list-style-type: none"> Scientific literacy includes speaking, listening, presenting, interpreting, reading and writing about science. <p>SCIENTIFIC NUMERACY</p> <ul style="list-style-type: none"> Mathematics provides useful tools for the description, analysis and presentation of scientific data and ideas. 	<p>B INQ.1 Make observations and ask questions about objects, organisms and the environment.</p> <p>B INQ.2 Seek relevant information in books, magazines and electronic media.</p> <p>B INQ.3 Design and conduct simple investigations.</p> <p>B INQ.4 Employ simple equipment and measuring tools to gather data and extend the senses.</p> <p>B INQ.5 Use data to construct reasonable explanations.</p> <p>B INQ.6 Analyze, critique and communicate investigations using words, graphs and drawings.</p> <p>B INQ.7 Read and write a variety of science-related fiction and nonfiction texts.</p> <p>B INQ.8 Search the Web and locate relevant science information.</p> <p>B INQ.9 Use measurement tools and standard units (e.g., centimeters, meters, grams, kilograms) to describe objects and materials.</p> <p>B INQ.10 Use mathematics to analyze, interpret and present data.</p>

Grade 3

Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Properties of Matter – How does the structure of matter affect the properties and uses of materials?</i></p> <p>3.1 - Materials have properties that can be identified and described through the use of simple tests.</p> <ul style="list-style-type: none"> ◆ Heating and cooling cause changes in some of the properties of materials. 	<p>B 1. Sort and classify materials based on properties such as dissolving in water, sinking and floating, conducting heat, and attracting to magnets.</p> <p>B 2. Describe the effect of heating on the melting, evaporation, condensation and freezing of water.</p>
<p><i>Heredity and Evolution – What processes are responsible for life’s unity and diversity?</i></p> <p>3.2 - Organisms can survive and reproduce only in environments that meet their basic needs.</p> <ul style="list-style-type: none"> ◆ Plants and animals have structures and behaviors that help them survive in different environments. 	<p>B 3. Describe how different plants and animals are adapted to obtain air, water, food and protection in specific land habitats.</p> <p>B 4. Describe how different plants and animals are adapted to obtain air, water, food and protection in water habitats.</p>
<p><i>The Changing Earth – How do materials cycle through the Earth’s systems?</i></p> <p>3.3 - Earth materials have different physical and chemical properties.</p> <ul style="list-style-type: none"> ◆ Rocks and minerals have properties that may be identified through observation and testing; these properties determine how earth materials are used. 	<p>B 5. Describe the physical properties of rocks and relate them to their potential uses.</p> <p>B 6. Relate the properties of rocks to the possible environmental conditions during their formation.</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>3.4 - Earth materials provide resources for all living things, but these resources are limited and should be conserved.</p> <ul style="list-style-type: none"> ◆ Decisions made by individuals can impact the global supply of many resources. 	<p>B 7. Describe how earth materials can be conserved by reducing the quantities used, and by reusing and recycling materials rather than discarding them.</p>

Grade 4
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Forces and Motion – What makes objects move the way they do?</i></p> <p>4.1 - The position and motion of objects can be changed by pushing or pulling.</p> <ul style="list-style-type: none"> ◆ The size of the change in an object’s motion is related to the strength of the push or pull. ◆ The more massive an object is, the less effect a given force will have on its motion. 	<p>B 8. Describe the effects of the strengths of pushes and pulls on the motion of objects.</p> <p>B 9. Describe the effect of the mass of an object on its motion.</p>
<p><i>Matter and Energy in Ecosystems – How do matter and energy flow through ecosystems?</i></p> <p>4.2 - All organisms depend on the living and non-living features of the environment for survival.</p> <ul style="list-style-type: none"> ◆ When the environment changes, some organisms survive and reproduce, and others die or move to new locations. 	<p>B 10. Describe how animals, directly or indirectly, depend on plants to provide the food and energy they need in order to grow and survive.</p> <p>B 11. Describe how natural phenomena and some human activities may cause changes to habitats and their inhabitants.</p>
<p><i>Energy in the Earth’s Systems – How do external and internal sources of energy affect the Earth’s systems?</i></p> <p>4.3 - Water has a major role in shaping the Earth’s surface.</p> <ul style="list-style-type: none"> ◆ Water circulates through the Earth’s crust, oceans and atmosphere. 	<p>B 12. Describe how the sun’s energy impacts the water cycle.</p> <p>B 13. Describe the role of water in erosion and river formation.</p>
<p><i>Energy Transfer and Transformations – What is the role of energy in our world?</i></p> <p>4.4 - Electrical and magnetic energy can be transferred and transformed.</p> <ul style="list-style-type: none"> ◆ Electricity in circuits can be transformed into light, heat, sound and magnetic effects. ◆ Magnets can make objects move without direct contact between the object and the magnet. 	<p>B 14. Describe how batteries and wires can transfer energy to light a light bulb.</p> <p>B 15. Explain how simple electrical circuits can be used to determine which materials conduct electricity.</p> <p>B 16. Describe the properties of magnets, and how they can be used to identify and separate mixtures of solid materials.</p>

Grade 5
Core Themes, Content Standards and Expected Performances

Content Standards	Expected Performances
<p><i>Energy Transfer and Transformations – What is the role of energy in our world?</i></p> <p>5.1 - Sound and light are forms of energy.</p> <ul style="list-style-type: none"> ◆ Sound is a form of energy that is produced by the vibration of objects and is transmitted by the vibration of air and objects. ◆ Light is a form of energy that travels in a straight line and can be reflected by a mirror, refracted by a lens, or absorbed by objects. 	<p>B 17. Describe the factors that affect the pitch and loudness of sound produced by vibrating objects.</p> <p>B 18. Describe how sound is transmitted, reflected and/or absorbed by different materials.</p> <p>B 19. Describe how light is absorbed and/or reflected by different surfaces.</p>
<p><i>Structure and Function – How are organisms structured to ensure efficiency and survival?</i></p> <p>5.2 - Perceiving and responding to information about the environment is critical to the survival of organisms.</p> <ul style="list-style-type: none"> ◆ The sense organs perceive stimuli from the environment and send signals to the brain through the nervous system. 	<p>B 20. Describe how light absorption and reflection allow one to see the shapes and colors of objects.</p> <p>B 21. Describe the structure and function of the human senses and the signals they perceive.</p>
<p><i>Earth in the Solar System – How does the position of Earth in the solar system affect conditions on our planet?</i></p> <p>5.3 - Most objects in the solar system are in a regular and predictable motion.</p> <ul style="list-style-type: none"> ◆ The positions of the Earth and moon relative to the sun explain the cycles of day and night, and the monthly moon phases. 	<p>B 22. Explain the cause of day and night based on the rotation of Earth on its axis.</p> <p>B 23. Describe the monthly changes in the appearance of the moon, based on the moon’s orbit around the Earth.</p>
<p><i>Science and Technology in Society – How do science and technology affect the quality of our lives?</i></p> <p>5.4 - Humans have the capacity to build and use tools to advance the quality of their lives.</p> <p>Â Advances in technology allow individuals to acquire new information about the world.</p>	<p>B 24. Compare and contrast the structures of the human eye with those of the camera.</p> <p>B 25. Describe the uses of different instruments, such as eye glasses, magnifiers, periscopes and telescopes, to enhance our vision.</p>