

2012

# Stone Oak Park Exploration: 3rd Grade

Canyon Ridge Elementary School (San Antonio, Tex.)

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# Stone Oak Park – 3<sup>rd</sup> Grade

<b>Title: Stone Oak Park Exploration</b>		<b>Subject/Course: Science</b>	
<b>Topic: Plant Adaptation and Soil</b>		<b>Grade: 3<sup>rd</sup> Grade</b>	
		<b>Designer(s): Canyon Ridge Teachers</b>	
<b>Stage 1- Desired Results</b>			
Established Goals:			
<b>Understandings:</b> <ul style="list-style-type: none"> <li>• Students will understand that plants have inherited traits that function to help them survive in their particular environment.</li> <li>• All living things have similar needs.</li> <li>• Organisms compete for the limited resources in a habitat.</li> <li>• Human activities impact the Earth's resources.</li> <li>• There are different types of soil that have different properties and water retention.</li> <li>• Different types of soil are best for growing different plants.</li> <li>• It is important to conserve soil.</li> </ul>		<b>Essential Questions:</b> <ul style="list-style-type: none"> <li>• How do the shape, texture, and structure of plants allow them to survive in their particular environment? (i.e. spines and thorns on a cactus, leaves on a tree or plant, growth pattern of vines)</li> <li>• What needs are met by an organisms' habitat?</li> <li>• What is the effect of competition of organisms in a habitat?</li> <li>• How do humans effect the Earth's resources?</li> <li>• In our park, how are plants, animals, people, and natural resources connected?</li> <li>• What properties are used to compare soils?</li> <li>• How do different plants adapt to the soil?</li> <li>• Why is it important to conserve the soil?</li> </ul>	
<b>Knowledge and Skills:</b> <i>(NEISD scope &amp; sequence; TEKS; Core; etc.)</i> <p><b>3.1 Scientific investigation and reasoning. The student conducts classroom and outdoor investigations following school and home safety procedures and environmentally appropriate practices. The student is expected to:</b>(A) demonstrate safe practices as described in the Texas Safety Standards during classroom and outdoor investigations, including observing a schoolyard habitat<b>3.2 Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and outdoor investigations. The student is expected to:</b></p> <p>D) <b>Analyze</b> and interpret patterns in data to construct reasonable explanations based on evidence from investigations.</p> <p>(F) communicate valid conclusions supported by data in writing, by drawing pictures, and through verbal discussion.</p> <p><b>3.4 Scientific investigation and reasoning. The student knows how to use a variety of tools and methods to conduct science inquiry. The student is expected to:</b>(A) collect, record, and analyze information using tools, including microscopes, cameras, computers, hand lenses, metric rulers, Celsius thermometers, wind vanes, rain gauges, pan balances,</p>		<b>Vocabulary:</b> Environment; structure; function; surface area; adaptation; drought; thrive; perish; circumference; scale(size); interaction; organisms habitat; parasitic; plot (land); observe; progression; competition; natural resources; disturbance; assistance; benefits; consequences; properties; conservation; clay; loam; sand	
		<b>Materials Needed:</b> Bag, collection of a variety (size, shape, color) leaves( enough for each student to have one), magnifying glasses (hand-held lenses), Plant Adaptation Chart	

<p>graduated cylinders, beakers, spring scales, hot plates, meter sticks, compasses, magnets, collecting nets, notebooks, sound recorders, and Sun, Earth, and Moon system models; timing devices, including clocks and stopwatches; and materials to support observation of habitats of organisms such as terrariums and aquariums; and</p> <p>(3.7) Earth and space. The student knows that Earth consists of natural resources and its surface is constantly changing.</p> <p>A. <b>Explore</b> and record how soils are formed by weathering of rock and the decomposition of plant and animal remains.</p> <p>(3.9) Organisms and environments. The student knows that organisms have characteristics that help them survive and can describe patterns, cycles, systems, and relationships within the environments.</p> <p>A. <b>Observe</b> and describe the physical characteristics of environments and how they support populations and communities within an ecosystem</p> <p>C. <b>Describe</b> environmental changes such as floods and droughts where some organisms thrive and others perish or move to new locations.</p> <p><b>3.10 Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:</b>(A) explore how structures and functions of plants and animals allow them to survive in a particular environment</p>	
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**Stage 2- Assessment Evidence**

<p>Performance Tasks:</p> <ul style="list-style-type: none"> <li>Students will draw a detailed illustration of one of the plants or leaves they observed while at the park. Using at least 5 of their vocabulary words, they will write an explanation of how the shape and/or texture of the leaf, or the body of the plant have helped it survive in its natural environment.</li> </ul>	<p>Other Evidence:</p> <ul style="list-style-type: none"> <li>Students will observe and record data of a specified tree in their science journals.</li> <li>Students will illustrate the soil and its properties by labeling the various components of the soil and its water retention.</li> </ul>
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**Stage 3- Learning Plan**

<p><u>Prior to the Park Trip:</u></p> <ul style="list-style-type: none"> <li>Students will be given a booklet with the vocabulary words and definitions needed for their understanding of the adaptation investigation. Given the definitions, students will work in partners to create a visual representation of the word and further demonstrate their understanding by using the word in a meaningful sentence. Upon completion, students will participate in a class discussion where individual students will use the document camera to share their recorded understanding of the vocabulary.</li> <li>Students will take notes while watching Power points showing various environments and the adaptations needed in order for plants to survive. <a href="http://www.mbgnet.net/bioplants/adapt.html">http://www.mbgnet.net/bioplants/adapt.html</a>, <a href="http://www.slideshare.net/ciellauren/plant-adaptation-elementary">http://www.slideshare.net/ciellauren/plant-adaptation-elementary</a>.</li> <li>Review rules of Stone Oak Park using the ppt.</li> <li>Obtain field trip permission slips from each student.</li> </ul>
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## **At the Park:**

### **Activity 1:**

- Walk around the circle with your collection of leaves in a paper or tote bag. Ask children to reach in the bag without looking and select one leaf.
- Allow children to study their leaf for one minute. If desired, use magnifying lenses or trace or make rubbing leaves. Encourage children to look for galls and other evidence of animals. Remind them that they need to use all of their senses (except taste) to make their observations.
- Return all leaves to the bag. Shake the bag and dump the leaves back out into the middle of the circle. One by one, have each child find his or her leaf.
- Discuss ways to really use their four senses (seeing, hearing, smelling, and touching) to make observations. Hand out the Plant Adaptations Chart and explain how to use it. In addition, they will use the flip camera to take pictures of their observations so they may later attach them to their adaptation chart and use them to create a cumulative project.
- After all observations are made and recorded; gather the students in the Stone Oak Park amphitheater for a class discussion and share session. Using a portable dry erase board, students will volunteer to share by drawing one of their leaf or plant observations.
- Have students discuss and brainstorm how the shape and texture of the leaf or plant can help it thrive. Students will record their findings on their adaptation chart next to each of their drawings.

### **Activity 2:**

- Explain to the students that trees not only have different types of leaves but also bark. Discuss why trees have different kinds of bark. (It protects the cambium layer from bumps and cuts; it retards the loss of water; it protects from temperature extremes; it protects from intense sunlight; bark is somewhat porous, so it helps the tree breathe; like a scab on a wound, it protects against disease organisms)
- Have the students explore the park and find 3 different types of trees with different bark. Have them draw the bark in detail in their science journals and predict the purpose of the tree's bark.
- Come back together and discuss.

### **Activity 3:**

- The students will have learned the different properties of the soil along with the abilities of the different types of soils to retain water. Ask this question: What type of soil do you think we have at Stone Oak Park? Students write their hypothesis in their science journals.
- Divide the students into 5 small groups.
- Have students collect at least 2 different soil samples and put on a paper plate, then identify properties by using smell, sight (using hand lens), and texture. Students then illustrate and label the soil's properties in their science journals. Based on these findings the students will predict the ability of Stone Oak Park's soil to retain water.
- Students will use Styrofoam cups and Popsicle sticks to conduct the retention experiment. Have students put holes in the bottom of one cup. Fill that cup with dirt. Place this cup onto the Popsicle sticks that are lying across the 2<sup>nd</sup> cup. Do this for both soil samples. Make sure to have the same amount of soil in both cups. Pour the same amount of water into each cup. Have the student observe which sample retains the most water.
- Students should draw and label both examples in their science journals. Have the student complete a written response to the lab.
- Based on the students' observations and data of the properties and water retention of the Stone Oak Park's soil, they will conclude what type of soil is in the park?

