

## PLT Correlations to Fourth Grade DCPS Science Standards

December 2008

Note: All PLT Activities are from the PLT *PreK-8 Environmental Education Activity Guide* except where noted. The numbers in the second and third columns refer to PLT activity numbers, found sequentially in the PreK-8 Guide. The Power Standards/Indicators found in the Pacing Guides are bolded.

<b>SCIENTIFIC THINKING AND INQUIRY Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<p><b>4.1. Broad Concept:</b> Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations.</p>		
<p><b>4.1.1. Recognize and describe how results of similar scientific investigations may turn out differently due to inconsistencies in methods, materials, or observations, or the limitations of the tools used.</b></p>	<p>31 Plant a Tree 48 Field, Forest, and Stream 70 Soil Stories (Part A) 77 Trees in Trouble 78 Signs of Fall (Part B)</p>	<p>(48) Provides chart for student teams to record data. After completing field work using various tools, ask students if the results would always be the same no matter who conducted the investigation. Why not? (inconsistencies in methods, etc.) (77) Provides sample student results for comparison.</p>
<p>4.1.2. Explain that clear communication is an essential part of the process of scientific inquiry because it enables scientists to inform others about their work, to expose their ideas to evaluation by other scientists, and to allow scientists to stay informed about scientific discoveries around the world.</p>	<p>N/A</p>	

<p>4.1.3. Use numerical data to describe and compare objects and events.</p>	<p>25 Birds and Worms 27 Every Tree for Itself 46 Schoolyard Safari</p>	<p>(25) Students record number of each colored “worm/bug” found and order in which they were found to understand concept of camouflage. (27) Students play tree competition game and record number of “needs” (tokens) they obtain during various rounds. Discussion questions provided in activity help students interpret their results and predict new results based on variations of the game. (46) Students can graph the numbers of animals they find in the schoolyard and make interpretations about food, habitat, etc. based on results. Student page for students to record data in field is provided.</p>
<p>4.1.4. Write descriptions of investigations by using observations as support for explanations.</p>	<p>21 Adopt a Tree 23 The Fallen Log 24 Nature’s Recyclers 48 Field, Forest, and Stream 70 Soil Stories (Part A) 77 Trees in Trouble</p>	<p>(24) Students will record observations of decomposers on data sheets. You may have them also use digital or video cameras to record observations.</p>
<p>4.1.5. Support statements with ideas and data found in print and electronic media, identify and evaluate the sources used, and expect others to do the same.</p>	<p>10 Charting Diversity 49 Tropical Treehouse</p>	<p>See Appendix 8 for information to share with students on evaluating web-based sources.</p>

	88 Life on the Edge 95 Did You Notice?	
4.1.6. Identify better reasons for believing something rather than citing comments such as, “Everybody knows that,” “I just know,” or “Because they say,” and discount such reasons when given by others.  4.1.7. Explain how scientific thinking can be distorted by strong feelings, and explain why and when it is appropriate or necessary to separate emotions from the reasoning process.	32 A Forest of Many Uses 69 Forest for the Trees 77 Trees in Trouble 88 Life on the Edge 89 Trees for Many Reasons	(32) Use Reading Connections provided such as <i>Los Alamos Wildfires</i> that discusses the debate about the policy of prescribed burning. (77) Use provided checklist for assessing experiment reports (demonstrates understanding of good reason for coming to particular conclusions).

<b>SCIENCE AND TECHNOLOGY Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>4.2. Broad Concept:</b> Although each of the human enterprises of science and technology has a character and history of its own, each is dependent on and reinforces the other.		
<b>4.2.1. Demonstrate how scientific tools, such as microscopes, telescopes, and cameras, can be used to gather accurate information for making scientific comparisons of objects and events.</b>	21 Adopt a Tree 22 Trees as Habitats (Part B) 23 The Fallen Log 24 Nature’s Recyclers	(22) Use technology connection listed under Enrichment when doing Part B.
4.2.2. Discuss and give examples of how technologies,	51 Make Your Own Paper	(51) Video at <a href="http://www.plt.org">www.plt.org</a> under

<p>such as computers and medical X-rays, have improved the lives of people.</p> <p><b>4.2.3. Describe how human beings have made tools and machines, such as X-ray cameras, microscopes, satellites, and computers, to observe and do things that they could not otherwise sense or do at all, or as quickly or efficiently.</b></p>	<p>55 Planning the Ideal Community</p>	<p>Curriculum and then PreK-8 helps teach students about industrial papermaking process.</p> <p>(55) As you go through discussion questions provided (e.g., How do people get the food, water, and energy they need?), integrate conversation about how technology makes it possible (irrigation machines, water treatment plants, power plants, etc.). Have students conduct research (interviews, internet) to deepen understanding.</p>
<p>4.2.4. Make simple and safe electrical circuits with a battery and various plugs, sockets, and terminals.</p>	<p>N/A</p>	

<p><b>EARTH SCIENCE</b>  <b>Broad Concepts/Standards and Standards/Indicators</b></p>	<p><b>PLT Activities</b></p>	<p><b>Instructional Strategies/Integration Opportunities</b></p>
<p><b>4.3. Broad Concept:</b> Waves, wind, water, and ice shape and reshape the Earth's land surface.</p>		
<p>4.3.1. Explain how waves, wind, water, and glacial ice shape and reshape Earth's land surface by eroding rock and soil in some areas and depositing them in other areas.</p> <p><b>4.3.2. Explain how the surface of the Earth changes over various time scales due to processes, such as erosion and weathering, landslides, volcanic</b></p>	<p>44 Water Wonders (Part B)</p>	

eruptions, earthquakes, and mountain building.		
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<b>EARTH SCIENCE Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>4.4. Broad Concept:</b> The properties of rocks and minerals reflect the processes that formed them.		
<b>4.4.1. Define a mineral as a naturally occurring, crystalline inorganic solid substance. Recognize that each mineral has its own characteristic properties (e.g., quartz, mica).</b>	70 Soil Stories (Part A)	
4.4.2. Describe the physical properties of minerals, including hardness, color, luster, cleavage, and streak, and recognize that one mineral can be distinguished from another by use of a simplified key.		
4.4.3. Recognize and describe that most rock is composed of different combinations of one or more minerals.	N/A	
4.4.4. Explain how weathering breaks rocks up into smaller pieces. Recognize that these pieces may be many sizes and shapes, from jagged boulders to smooth grains of sand and even smaller.	Can be integrated easily into: 44 Water Wonders 70 Soil Stories	
<b>4.4.5. Describe the different layers of the Earth, including the crust, mantle, and core.</b>	N/A	
<b>4.4.6. Define the three categories of rocks</b>	N/A	

<b>(metamorphic, igneous, and sedimentary) based on how they are formed from older rocks.</b>		
4.4.7. Explain how soil is made partly from rock weathered by water and wind, and partly from decomposition of plant and animal remains, and that it contains many living organisms.	48 Field, Forest, Stream 70 Soil Stories (Part A)	(48 & 70) Integrate activity #70's Background information while conducting activities.
4.4.8. Describe the different properties of soil, including its color, texture (size of particles), and ability to retain water and support the growth of plants.	41 How Plants Grow 44 Water Wonders (Part B) 48 Field, Forest, and Stream 70 Soil Stories (Part A)	(41) Teams investigate different factors affecting plant growth, including soil. Differentiated measuring techniques are provided for students at different levels.

<b>PHYSICAL SCIENCE Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>4.5. Broad Concept:</b> Energy and matter have multiple forms and can be changed from one form to another.		
4.5.1. Explain that energy comes from the sun in the form of visible light and other radiation we cannot see without special instruments, but some of what we cannot see we can feel as heating (infrared radiation), and some can cause sunburn (ultraviolet radiation).  <b>4.5.5. Recognize that heat energy can be absorbed or given off by both living and nonliving things.</b>	PLT's <i>Energy &amp; Society</i> Kit: 1 Energy Detectives 2 May the Source Be with You 3 Energy Chains 6 Energy Challenge	

4.5.2. Investigate and describe how light travels through empty space or a transparent medium in a straight line until it strikes an object, and, if the object is transparent, the light will bend (refract) at the interface.	N/A	
<b>4.5.3. Explain when light strikes a surface, it can be reflected, scattered, refracted, and/or absorbed.</b>		
4.5.4. Observe and explain that when one object rubs against another (such as one’s hands rubbing together) the kinetic energy (energy of motion) is transformed into heat energy.	PLT’s <i>Energy &amp; Society</i> Kit: 1 Energy Detectives 3 Energy Chains 6 Energy Challenge	
<b>4.5.6. Explain that energy in fossil fuels comes originally from the energy of sunlight used by plants that grew a long time ago.</b>	39 Energy Sleuths  PLT’s <i>Energy &amp; Society</i> Kit: Student Energy Primer 2 May the Source Be with You	(39) See “Nonrenewable Energy Sources” in Energy Primer student page for standard specific content.

<b>PHYSICAL SCIENCE Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>4.6. Broad Concept:</b> Electricity and magnetism are related phenomena that have many useful applications in everyday life.		
<b>4.6.1. – 4.6.9</b>	N/A	
4.6.10. Explain how electrical energy can be used to produce light, heat energy, motion (kinetic energy), or sound energy.	PLT’s <i>Energy &amp; Society</i> Kit: 1 Energy Detectives 2 May the Source Be with You	

	3 Energy Chains 4 What Powers the Move 5 In the Drivers Seat 6 Energy Challenge	
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<b>LIFE SCIENCE Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>4.7. Broad Concept:</b> All organisms need energy and matter to live and grow.		
<b>4.7.1. Explain that organisms interact with one another in various ways, such as providing food, pollination, and seed dispersal.</b>	22 Trees as Habitats (Part B) 23 The Fallen Log 26 Dynamic Duos 43 Have Seeds, Will Travel	(22) Assessment opportunities include students creating make-believe interviews with trees that demonstrate an understanding of the plant and animal interactions (differentiation provided with guiding questions); etc. (26) Activity specified for grades 5-8 but easily adapted for grade 4 and strong correlation to standard. (43) Enhance activity with reading connection provided: <i>Pollination</i> (describes how birds, insects, wind, and rain help spread pollen).
4.7.2. Observe and recognize that some source of energy is needed for all organisms to stay alive and grow.	23 The Fallen Log 45 Web of Life	

<p><b>4.7.3. Describe how energy derived from the sun is used by green plants to produce chemical energy in the form of sugars (photosynthesis), and this energy is transferred along a food chain from producers (plants) to consumers to decomposers.</b></p>	<p>45 Web of Life</p>	<p>(45) Deepen or assess student understanding with provided technology-based Enrichment opportunity where students use graphic organizer software to illustrate web of life using animals and plants studied in activity.</p>
<p>4.7.4. Observe and explain that most plants produce far more seeds than actually grow into new plants.</p>	<p>43 Have Seeds, Will Travel</p>	<p>(43) When discussing need for various dispersal techniques because of competition, integrate questions regarding how most plants produce many more seeds than actually grow into plants.</p>
<p>4.7.5. Describe the structures in plants (leaves, roots, flowers, stem, bark, wood) that are responsible for food production, support, water transport, growth, and protection.</p>	<p>62 To Be a Tree 64 Tree Factory</p>	<p>(62) Students create tree vests to learn function of different tree parts in hands-on way. Diagrams are provided. Use the provided Spanish version of tree parts, especially if ELL population present. (64) Use personal connections in provided questions to relate tree parts to human parts. Pictures of students acting out functions of tree parts are provided.</p>
<p><b>4.7.6. Describe the many beneficial attributes of plants, including trees, in improving and sustaining an urban environment.</b></p>	<p>28 Air Plants 30 Three Cheers for Trees 31 Plant a Tree 41 How Plants Grow 54 I'd Like To Visit a Place Where... (Parts B &amp; C)</p>	<p>(31) Benefits of trees thoroughly covered in small groups and as a whole class before identifying potential locations for planting. Enrichment focused on mapping tree locations is included. (41) Questions after experiments are done support discussion on the benefits of plants/trees (look nice, attract animals, provide food and shelter for animals, block wind, provide oxygen).</p>

	89 Trees for Many Reasons (Part A and Variation)	(54) Part C provides an opportunity for students to do a service learning project to improve a local park (e.g., planting trees).
<p><b>4.7.7. Explain how in all environments, organisms grow, die, and decay, as new organisms are produced by the older ones.</b></p> <p>4.7.9. Explain how dead plants and animals are the food source for many microorganisms.</p>	<p>8 The Forest of S.T. Shrew</p> <p>23 The Fallen Log</p> <p>24 Nature’s Recyclers</p> <p>79 Tree Lifecycle</p> <p>80 Nothing Succeeds Like Succession</p>	<p>(8) Read-aloud or have students practice reading fluency with story provided on student pages.</p> <p>(23) After students investigate logs in nearby outdoor setting, use provided discussion questions that focus on decomposition, nutrient cycling, and ecosystem benefits (habitat for animals, plants, fungi).</p>
<p><b>4.7.8. Recognize that there are many kinds, and vast numbers, of living things too small to see with the naked eye called <i>microorganisms</i>, but they can be easily seen with the aid of various kinds of microscopes.</b></p>	N/A	
<p><b>4.7.10. Investigate the Chesapeake Bay watershed and wetlands, and describe how they support a wide variety of plant and animal life that interact with other living and nonliving things.</b></p>	N/A	

<b>LIFE SCIENCE</b> <b>Broad Concepts/Standards and</b> <b>Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration</b> <b>Opportunities</b>
<b>4.8. Broad Concept:</b> Humans have a variety of mechanisms to combat disease.		
<b>4.8.1. – 4.8.9</b>	N/A	