

## PLT Correlations to Seventh 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 (4<sup>th</sup> Advisory Pacing Guide was not available on DCPS website; 2<sup>nd</sup> Advisory Guide was duplicated at 4<sup>th</sup> Advisory link).

SCIENTIFIC THINKING AND INQUIRY <b>Broad Concepts/Standards and Standards/Indicators</b>	PLT Activities	Instructional Strategies/Integration Opportunities
<b>7.1. 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.		
7.1.1. Explain that when similar investigations give different results, further studies may help to show whether the differences are significant.	N/A	
7.1.2. Explain why it is important in science to keep honest, clear, and accurate records.	N/A	
7.1.3. Explain why research involving human subjects requires that potential subjects be fully informed about the risks and benefits associated with the research and that they have the right to refuse to participate.	N/A	
<b>7.1.4. Recognize testable hypotheses in investigations that pertain to the content under study, and write instructions that others can follow</b>	29 Rain Reasons (Part A) 41 How Plants Grow	(29) When students predict the outcome of their experiments of climate on plants, introduce the concept of hypotheses.

<p><b>in carrying out the investigation.</b></p> <p>7.1.5. Communicate the steps and results from an investigation in written reports and verbal presentations.</p>	<p>70 Soil Stories (Part B) 71 Watch on Wetlands (Part A) 77 Trees in Trouble (Part B)</p>	<p>(41) Students develop research questions and write up each step of their experiments. May choose to have students do project in small groups. (70) In addition to Part B, use some of the Enrichment opportunities listed for more student-led experiments. Have students develop hypotheses and write up a report, including step-by-step methods. (71) Have student teams write a report detailing the steps they followed in collecting data. You may require them to include graphs, maps, and photos. (77) One Assessment Opportunity involves students writing detailed report on one of the experiments. Checklist for assessing reports is provided.</p>
<p><b>7.1.6. Incorporate circle charts, bar and line graphs, diagrams, scatter plots, and symbols into writing, such as lab or research reports, to serve as visual displays of evidence for claims and/or conclusions.</b></p>	<p>29 Rain Reasons (Part A) 41 How Plants Grow 70 Soil Stories (Part B) 71 Trees in Trouble 77 Trees in Trouble (Part B) 84 The Global Climate</p>	<p>(84) Students will work in teams to make portions of a line graph displaying CO<sub>2</sub> concentrations over a 46 year period. Use provided discussion questions to support students in interpreting the results and making predictions.</p>
<p>7.1.7. Recognize whether evidence is consistent with a proposed explanation. Know that different explanations can be given for the same evidence, and</p>	<p>84 The Global Climate</p>	

<p>that partial evidence may be exploited for reasons other than truth seeking.</p> <p>7.1.8. Question claims based on vague attributes or on authority, such as “leading doctors say,” or based on statements made by celebrities or others outside the area of their particular expertise.</p>		
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SCIENCE AND TECHNOLOGY <b>Broad Concepts/Standards and Standards/Indicators</b>	PLT Activities	Instructional Strategies/Integration Opportunities
<p><b>7.2. 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.</p>		
<p>7.2.1. Explain types of technology that are developed and in use, such as in agriculture, manufacturing, sanitation, medicine, warfare, transportation, information processing, and communication.</p>	<p>53 On the Move 59 The Power of Print 83 A Peek at Packaging 85 In the Driver’s Seat 93 Paper Civilizations</p>	<p>(93) As student teams create collages representing their time period’s paper making technology, have them include images that show how they believe it affected how people live. They will explain their images to the rest of the class.</p>
<p><b>7.2.2. Know how technologies having to do with food production, sanitation, and disease prevention have dramatically changed how people live and work, and have resulted in changes in factors that affect the growth of human population.</b></p>	<p>40 Then and Now 55 Planning the Ideal Community 83 A Peek at Packaging</p>	<p>(83) Portion of provided student page asks students to consider the purpose of the specific packaging they are investigating (health, safety, freshness, nutrition, etc.) (95) After students gather data on how their community has changed over time,</p>

	95 Did You Notice?	use provided discussion questions (e.g., What caused some of these changes?) to lead to discussion of impact of technology.
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<b>BIOLOGICAL CLASSIFICATION Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>7.3. Broad Concept:</b> Similarities are used to classify organisms because they may be used to infer the degree of relatedness among organisms.		
7.3.1. Recognize and describe that a key distinction among organisms is between autotrophs, such as green plants (which use energy from sunlight to make their own food), and heterotrophs, such as animals and fungi (which consume other organisms as food and harvest energy from them).	22 Trees as Habitats (Part B)  23 The Fallen Log  42 Sunlight and Shades of Green	(42) Students conduct a test to learn how plants make their own food through process of photosynthesis. Steps 8 & 9 are useful for helping younger students, or students with a strong auditory intelligence, understand photosynthesis through an imaginary story where the students become trees.
<b>7.3.2. Recognize and describe that biological classifications are based on how organisms are related: Organisms are classified into a hierarchy of groups and subgroups, with species as the most fundamental unit.</b>	N/A	
7.3.3. Recognize and describe the definition of a species as a group or population of organisms closely resembling one another that can mate and breed to produce fertile offspring.	N/A	

<p>7.3.4. Describe how similarities among organisms are found in external and internal anatomical features, including specific characteristics at the cellular level, such as the number of chromosomes.</p>	<p>10 Charting Diversity 68 Name That Tree</p>	<p>(10) After students conduct research, have them group species based on similar external features (fur, beaks, claws, feathers, tails, hooves, etc.) (68) Students learn about characteristics among trees (serrated, lobed, or smooth leaf margins; simple or compound leaf types; whorl, alternate, or opposite leaf arrangements; etc.). Have students group tree species with similar characteristics.</p>
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CELL BIOLOGY <b>Broad Concepts/Standards and Standards/Indicators</b>	PLT Activities	<b>Instructional Strategies/Integration Opportunities</b>
<p><b>7.4. Broad Concept:</b> All living things are composed of cells, from just one to many quadrillions, whose details usually are visible only through a microscope.</p>		
<p><b>7.4.1. – 7.4.11</b></p>	<p>N/A</p>	

GENETICS <b>Broad Concepts/Standards and Standards/Indicators</b>	PLT Activities	<b>Instructional Strategies/Integration Opportunities</b>
<p><b>7.5. Broad Concept:</b> Every organism requires information in the form of a set of instructions that specifies its traits. Those traits may be modified by environmental influences.</p>		
<p><b>7.5.1. – 7.5.5.</b></p>	<p>N/A</p>	

<b>BIOLOGICAL EVOLUTION</b> <b>Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>7.6. Broad Concept:</b> Biological evolution accounts for the diversity of species developed through gradual processes over many generations.		
<b>7.6.1. Describe that biological variation (phenotype variation) is the raw material on which natural selection operates.</b>	N/A	
<b>7.6.2. Explain how Darwin's research and that of his followers supported a concept of differential survival in terms of fitness (i.e., given the potential exponential increase of offspring and the only linear potential increase of resources, favorable variations that aid individual organisms in their survival in a given environment will confer on those organisms a greater reproductive success for that variety).</b>	11 Can It Be Real? 88 Life on the Edge	(11) Students investigate species that have unique and strange adaptations that allow them to better compete in their environment. "Who's Who?" and "Amazing Animal and Plants" student pages are provided that give descriptions and illustrations of species.
<b>7.6.3. Describe how biological evolution results primarily from the action of natural selection on the available variation in a population of organisms.</b>	N/A	
<b>7.6.4. Explain how independent lines of evidence drawn from geology, fossils, comparative anatomy, and molecular biology provide the firm basis of evolutionary theory.</b>	N/A	

<b>7.6.5. Using specific examples, explain that extinction of a species is a result of mismatch of adaptation and the environment.</b>	88 Life on the Edge	
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<b>THE HUMAN BODY Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>7.7. Broad Concept:</b> Human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions.		
7.7.1 – 7.7.2.	N/A	
7.7.3. Explain how the amount of food energy (usually measured in calories) that a person requires varies with body weight, age, sex, activity level, and metabolic rate.	16 Pass the Plants, Please	(16) Use Step 5 as a branching off point to discuss sound nutrition and different dietary needs for humans based on body weight, etc. Ask the school nurse or P.E. teacher to visit the class and present on this topic.
7.7.4. – 7.7.7.	N/A	
7.7.8. Recognize that the environment may contain dangerous levels of substances that are harmful to human beings. Therefore, the good health of individuals requires monitoring the soil, air, and water, as well as taking steps to keep them safe.	36 Pollution Search	(36) Students investigate pollution in their schoolyard or community. Discussion questions are provided that focus students' attention on pollutants that affect human health and technologies used to reduce threat.
7.7.9. – 7.7.10	N/A	

<b>ECOLOGY</b> <b>Broad Concepts/Standards and Standards/Indicators</b>	<b>PLT Activities</b>	<b>Instructional Strategies/Integration Opportunities</b>
<b>7.8. Broad Concept:</b> Organisms in ecosystems exchange energy and nutrients among themselves and with the physical environment.		
7.8.1. Recognize that in all environments, such as freshwater, marine, forest, desert, grassland, mountain, farms, cities, and others, organisms with similar needs and living strategies compete with one another for resources, including food, space, water, air, and shelter.	27 Every Tree for Itself 88 Life on the Edge	In both activities, students play an interactive game that simulates the needs that organisms compete for.
<b>7.8.2. Describe how two types of organisms may interact in a competitive or cooperative relationship, such as producer/consumer, predator/prey, parasitehosts, or as symbionts.</b>	22 Trees as Habitats 26 Dynamic Duos 45 Web of Life	(26) Student pages provided give students opportunity to match species in symbiotic relationships through “classified ads” activity; and give students descriptions of true symbiotic relationships (e.g., crocodiles and Egyptian plovers)
<b>7.8.3. Illustrate and explain how plants use the energy from light to make simple sugars, and more complex molecules, from carbon dioxide and water through a process called photosynthesis. Understand how this produces food that can be used immediately or stored for later use.</b>	28 Air Plants 42 Sunlight and Shades of Green	(28) Activity specified for grades 3-6; but Background section provides good info on photosynthesis, including chemical equation.
7.8.4. Create a food web to explain how energy and matter are transferred between producers, primary consumers, and secondary consumers.  7.8.9. Describe that all organisms, including the human species, are part of and depend on two main	45 Web of Life	

interconnected global food webs: the ocean food web and the land food web.		
7.8.5. Describe how organisms that eat plants break down the plant structures to produce the materials and energy that they need to survive, and in turn, other organisms consume them.  7.8.6. Explain how dead plants and animals, broken down by other living organisms (especially microorganisms and fungi), contribute to the cycling of matter through the system as a whole.	23 The Fallen Log  24 Nature's Recyclers  45 Web of Life	(23) Good Background info provided to support discussion with students during investigations. Provided questions lead to discussion that as animals and plants break down logs (and other materials), the nutrients become available to other plants and animals.
7.8.7. Describe how, as any population of organisms grows, it is held in check by one or more environmental constraints (e.g., depletion of food or nesting sites, increased numbers of predators or parasites).	N/A	
7.8.8. Explain why in urban environments a species (mostly human beings) settles in dense concentrations.	55 Planning the Ideal Community	(55) Activity gets students investigating the many services provided by a community. Incorporate related questions on why people settle together in a community—to benefit from services provided like hospitals, schools, electricity, etc. that can be expensive for scattered small communities to provide; to lessen environmental impact and conserve green space; etc.
7.8.10. Recognize that entire species may prosper in spite of the poor survivability or bad fortune of individuals.	N/A	

