PLT Correlations to Fifth 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.

SCIENTIFIC THINKING AND INQUIRY **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.1. Broad Concept: 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. **5.1.5. Read and follow step-by-step instructions when learning new investigations.**	41 How Plants Grow 48 Field, Forest, and Stream 70 Soil Stories (Part B) 77 Trees in Trouble	(48) Students conduct field study of three different plots. The follow instructions on provided Team Chart student page and record observations for soil, temperature, etc. (70) Soil Percolation student page is provided for teams to use. It instructs teams to identify roles for teams members (Equipment Monitor, etc.) and gives step-by-step instructions for them to follow.
5.1.1. Recognize and describe how results of similar scientific investigations may turn out differently because of inconsistencies in methods, materials, and observations, or because of limitations of the precision of the instruments used. **5.1.3. Keep a notebook to record observations and be able to distinguish inferences from actual observations.**	41 How Plants Grow 77 Trees in Trouble	(41) Student teams develop research questions and experiments. They make predictions about what might happen. When students make predictions, explain that they can be based on what is known about the past, assuming conditions are similar. As students record observations, have them reflect on what they are actually observing and measuring as compared to their predictions. Experiment

5.1.6. Identify the controlled variable and at least one independent variable in a scientific investigation, when appropriate. **5.1.7. Explain that predictions can be based on what is known about the past, assuming that conditions are similar.**		models that include a control group are provided. (77) Students develop hypotheses, conduct experiments, and keep a daily log of observations. An assessment opportunity with students writing a detailed report is provided, along with a checklist for assessing the reports.
5.1.2. Evaluate the validity of claims based on the amount and quality of the evidence cited.	N/A	
5.1.4. Write instructions that others can follow to carry out an investigation.	77 Trees in Trouble	(77) See the second Assessment Opportunity in the activity.
5.1.8. Realize and explain why predictions may be more accurate if they are based on large collections of similar events for statistical accuracy.	N/A	
5.1.9. Determine area and volume of rectangular shapes from linear dimensions, using the expressions *A = l* □□*w* and *V = l* □□*w* □□*h*. 5.1.10. Understand how plotting data on a number line helps in seeing where the data lie, including the outliers. **5.1.11. Explain the distortion inherent in using only a portion of the data collected to describe the whole. Understand that it is sometimes acceptable to discard data.**	N/A	

SCIENCE AND TECHNOLOGY **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.2. Broad Concept: 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.		
5.2.1. Give examples of technology, such as telescopes, microscopes, and cameras, that enable scientists and others to observe things that are too small or too far away to be seen without them and to study the motion of objects that are moving very rapidly or are hardly moving.	46 Schoolyard Safari 70 Soil Stories	(46 & 70) During or after conducting activities, ask students what one tool was that they used that enabled them to observe things too small to see with the naked eye (magnifying lens). Ask students what observations they were able to make using this tool. Ask if they know of another tool that would allow them to see even more detail in the materials (microscope).
5.2.2. Give examples of advances in technology that have positively and/or negatively affected society. 5.2.3. Give examples of materials not present in nature that have become available because of science and technology, such as cloth, metal alloys, plastic, ceramics, and concrete.	51 Make Your Own Paper 52 A Look at Aluminum 55 Planning the Ideal Community 82 Resource-Go-Round 92 A Look at Lifestyles 93 Paper Civilizations	(51) Video at www.plt.org under Curriculum and then PreK-8 helps teach students about industrial papermaking process. (52) Students investigate aluminum cans (and other products) that come from aluminum. Student page that gives descriptions and graphics for the steps that go into making aluminum cans is provided. (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. (82) Students learn about products created from natural resources and look at energy consumption of a product's life cycle. Student pages provide model of life cycle for a pencil and a template for students to create life cycle of their own product.

EARTH SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.3. Broad Concept: The solar system consists of planets and other bodies that orbit the sun in predictable paths.		
5.3.1. – 5.3.8.	N/A	

EARTH SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.4. Broad Concept: Water on Earth moves from the ocean to the land through the processes of evaporation and condensation.		
5.4.1. Investigate and describe that when liquid water evaporates, it turns into a gas (vapor) mixed into the air, and can condense and reappear as a liquid when cooled or as a solid (ice) if cooled below the freezing point of water.	44 Water Wonders	(44) Students learn about Earth's water distribution from data provided in chart within activity. Ask Student HOT questions and play water cycle game provided to help them understand water

5.4.2. Explain how water moves in air masses from one place to another in the form of clouds, fog, or as invisible water vapor, and falls to the Earth as rain, hail, sleet, or snow. 5.4.3. Describe that clouds are made of tiny droplets of water or ice crystals. **5.4.7. Explain that water on Earth cycles through different forms and in different locations (e.g., underground water and vapor in the atmosphere).** 5.4.8. Using maps and globes, recognize that the Earth's oceans are all connected as one body of water that covers about three-quarters of the Earth's surface.		cycle. Review of sequencing words (next, after, while, etc.) is provided to support needs for differentiation.
5.4.4. Explain that the air around us is matter and has weight (a force) and exerts pressure; explain that air pressure varies a little from place to place and from time to time. 5.4.5. Describe that winds blow from areas of higher pressure to areas of lower pressure. **5.4.6. Explain how global patterns, such as the jet stream and ocean currents, influence local weather and climate in ways that can be measured in terms of temperature, pressure, wind direction and speed, and amounts of precipitation.**	N/A	

PHYSICAL SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.5. Broad Concept: Energy and matter have multiple forms and can be changed from one form to another.	PLT's *Energy & Society* Kit: 1 Energy Detectives 3 Energy Chains 6 Energy Challenge	
5.5.1. Recognize that all matter is made of small particles called *atoms,* which are too small to see with our eyes; describe how atoms may combine to form molecules or crystalline solids (compounds). **5.5.2. Recognize that there are more than 100 different kinds of atoms (each called an *element*), which are displayed on the periodic table of elements.** **5.5.3. Explain that all matter is made up of an element, a compound, or mixtures of elements and compounds.**	N/A	
5.5.4. Investigate and describe that heating and cooling cause changes in the properties of substances. For example, liquid water can turn into steam by boiling, and liquid water can turn into ice by freezing.	44 Water Wonders	
5.5.5. Explain that many kinds of chemical changes occur faster at higher temperatures. 5.5.7. Investigate and describe how some materials conduct heat much better than others, and poor	N/A	

conductors (insulators) can be used to reduce heat loss or gain. **5.5.8 Distinguish between physical and chemical changes.**		
5.5.6. Explain that when a warm object and a cool one are placed in contact, heat flows from the warmer object to the cooler one until they are both at the same temperature. Know that heat transfer can also occur at a distance by radiation.	Radiation is covered in several places in the *Energy & Society* Kit.	

PHYSICAL SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.6. Broad Concept: Unbalanced forces cause changes in velocity.		
5.6.1. Explain that objects can move with a very wide range of speeds, with some moving very slowly and some moving too quickly for people to see them. **5.6.2. Demonstrate that if the forces acting on an object are balanced so that the net force is zero, the object will remain at rest if it is initially at rest or will maintain a constant speed and direction if it is initially moving.** **5.6.3. Investigate and describe that unbalanced forces cause changes in the speed and/or direction of motion of an object (acceleration).**	N/A	

5.6.4. Describe that, for an object moving in a straight line, acceleration, *a*, is the change in velocity, *v*, divided by the time, *t*, that change takes (*a* = *v* ÷ *t*). 5.6.5. Investigate and describe that the greater the net force, *F*, applied to a body, the greater its acceleration, *a*. Describe that the greater the mass, *m*, of an object, the smaller the acceleration produced by a given force. 5.6.6. Demonstrate and explain that things on or near Earth are pulled toward Earth's center by the gravitational force that Earth exerts on them.		

LIFE SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.7. Broad Concept: All living things are composed of cells, from just one to many quadrillions, whose details usually are visible only through a microscope.		
5.7.1. – 5.7.3	N/A	

LIFE SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.8. Broad Concept: Many characteristics of an organism are inherited from the parents, but others result from the influence of the environment.		

5.8.1. Explain why there must be a reliable way to transfer information from one generation to the next in order for offspring to resemble their parents.	N/A	
5.8.2. List some characteristics of plants and animals that are fully inherited (e.g., form of flower, shape of leaves) and others that are affected by the climate or environmental conditions (e.g., browning of leaves from too much sun, language spoken).	68 Name That Tree	(68) Ask students whether physical characteristics used to identify the trees in the activity are inherited or as a result of environmental factors. Ask how they know. Challenge them to consider expressed characteristics as a result of environment (e.g., leaf discoloration due to infestation by invasive species).

LIFE SCIENCE **Broad Concepts/Standards and Standards/Indicators**	**PLT Activities**	**Instructional Strategies/Integration Opportunities**
5.9. Broad Concept: Adaptations in physical structure or behavior may improve an organism's chance for survival.		
5.9.1. Explain that in any particular environment, some kinds of plants and animals survive well, some do not survive as well, and some cannot survive at all.	11 Can It be Real? 12 Invasive Species 25 Birds and Worms 88 Life on the Edge	(25) Play activity's game where students pretend to be birds and worms of different colors in different environments to see impact of camouflage on survival. (88) Students will investigate how for certain species specific components of the environment or changed environment make it difficult to for them to survive.
5.9.2. Identify organisms that are not native to the Washington, DC, area and how they undergo changes to increase their chance of survival in the area.	12 Invasive Species	(12) Provides useful background and activities on invasive species that can be applied to DC specific study.

5.9.3. Explain how organisms can cause changes in their environment to ensure survival, and how these changes may affect the ecosystem (the living and nonliving components of the environment).	31 Plant a Tree 88 Life on the Edge 96 Improve Your Place	(96) Students develop plan for and implement service learning projects to improve local area (e.g., invasive species removal; planting trees; stream bank restoration). Consider applying for a GreenWorks! grant to support project (www.plt.org).
5.9.4. Explain that organisms fit enough to survive in a particular environment will typically produce offspring fit enough to survive and reproduce in that particular environment. Over time, these inherited characteristics are carried as the predominant forms (e.g., adaptations such as shape of beak, length of neck, shape of teeth).	N/A (though could use 11 Can It Be Real? and 25 Birds and Worms as a foundation for this standard)	
5.9.5. Explain how changes in an organism's habitat are sometimes beneficial and sometimes harmful, and how changes in the environment (drought, cold) have caused some plants and animals to die, migrate, or become extinct.	36 Pollution Search (Part A) 69 Forest for the Trees 77 Trees in Trouble 86 Our Changing World 88 Life on the Edge 96 Improve Your Place	(88) Students investigate habitat components necessary for survival of different organisms. Use provided student page to support students in doing research and creating a mock media campaign for an endangered species.
5.9.6. Explain that many plants and animals can survive harsh environments because of seasonal behaviors (e.g., in winter, some trees shed leaves, some animals hibernate).	11 Can It Be Real? 25 Birds and Worms	(25) Activity focuses on camouflage as a survival strategy. Add questing about how some animals (certain rabbits and foxes) have different color fur to help survive in

	78 Signs of Fall	different seasons. (78) Activity includes questioning focused on why leaves change color in fall (background info is provided). Students also make observations of seasonal behaviors like birds migrating, squirrels storing nuts, etc.
5.9.7. Recognize that some behaviors are instinctive (e.g., turtles burying their eggs, human infants crying when hungry) and others learned (e.g., a wolf's hunting skills, humans' ability to build fires for warmth).	N/A	
5.9.8. Describe well-defined plant behaviors, such as the way seedlings' stems grow toward light and their roots grow downward in response to gravity.	41 How Plants Grow 42 Sunlight and Shades of Green 43 Have Seeds, Will Travel	(41) Students will measure plants and make observations among plants tested for different variables. Integrate use of listed Reading Connections, including *How Plants Survive* and *Seeds and Seedlings*. (42) Students will investigate plant behavior in response to block in sunlight to leaves. Use provided questions to discuss plant behaviors regarding photosynthesis. (43) Use Enrichment provided (where students design own seeds) to deepen awareness of seed dispersal techniques.
5.9.9. Examine the information that fossils provide us about living things that inhabited the Earth in the distant past, and describe how they can be compared both with one another and with living organisms	N/A	

according to their similarities and differences.		
5.9.10. Recognize and describe how artifacts and preserved remains provide some evidence of the physical characteristics and possible behaviors of human beings and their ancestors who lived long ago.	N/A	