Science Essential Standards

www.wakegov.com/recycling

Kindergarten:

K.P.1 Understand the positions and motions of objects and organisms observed in the environment.

K.P.1.2 Give examples of different ways objects and organisms move (to include falling to the ground when dropped):

- *Straight*
- *Zigzag*
- *Round and round*
- *Back and forth*
- *Fast and slow*

Hands-on Kits: Diary of a Worm interactive book reading (part of composting unit kit)

K.P.2 Understand how objects are described based on their physical properties and how they are used.

K.P.2.1 Classify objects by observable physical properties (including size, color, shape, texture, weight and flexibility).

K.P.2.2 Compare the observable physical properties of different kinds of materials (clay, wood, cloth, paper, etc) from which objects are made and how they are used.

Hands-on Kits: What am I Made of? Matching; Trash Sort

In-school Presentation: Feed the Bin Recycling

Grade 1:

1.E.2 Understand the physical properties of Earth materials that make them useful in different ways.

1.E.2.1 Summarize the physical properties of earth materials, including rocks, minerals, soils, and water that make them useful in different ways.

1.E.2.2 Compare the properties of soil samples from different places relating their capacity to retain water, nourish and support the growth of certain plants.

In-School Presentations: Feed the Bin Recycling; Compost & Soils classroom activity (specifically related to soil types & properties)

1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.

1.L.1.1 Recognize that plants and animals need air, water, light (plants only), space, food and shelter and that these may be found in their environment.

1.L.1.2 Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.

1.L.1.3 Summarize ways that humans protect their environment and/or improve conditions for the growth of the plants and animals that live there (e.g., reuse or recycle products to avoid littering).

Hands-on Kits: Trash Sort; Sequencing Recycling; "Wartville Wizard" interactive book reading (anti-litter focus)
In-School Presentations: Feed the Bin Recycling; Close the Loop

Grade 2:

2.L.1 Understand animal life cycles.

2.L.1.1 Summarize the life cycle of animals:
- *Birth*
- *Developing into an adult*
- *Reproducing*
- *Aging and death*

2.L.1.2 Compare life cycles of different animals such as, but not limited to, mealworms, ladybugs, crickets, guppies or frogs.

In-school Presentation: Closing the Loop Presentation

Grade 3:

3.P.3 Recognize how energy can be transferred from one object to another.

3.P.3.1 Recognize that energy can be transferred from one object to another by rubbing them against each other.

In-School Presentations: Compost & Soils (specifically heat energy from compost)

3.L.2 Understand how plants survive in their environments.

3.L.2.1 Remember the function of the following structures as it relates to the survival of plants in their environments:
- *Roots – absorb nutrients*
- *Stems – provide support*
- *Leaves – synthesize food*
- *Flowers – attract pollinators and produce seeds for reproduction*

3.L.2.2 Explain how environmental conditions determine how well plants survive and grow.
3.L.2.3 Summarize the distinct stages of the life cycle of seed plants.
3.L.2.4 Explain how the basic properties (texture and capacity to hold water) and components (sand, clay and humus) of soil determine the ability of soil to support the growth and survival of many plants.

Hands-on Kits: Composting Unit
In-School Presentations: Compost & Soils (45-minute)

Grade 4:

4.P.1 Explain how various forces affect the motion of an object.

4.P.1.1 Explain how magnets interact with all things made of iron and with other magnets to produce motion without touching them.

Hands-on Kits: Make-a-MRF
In-school Presentations: Feed the Bin Recycling; Close the Loop
Field Trips: Recycling Center (MRF) tour

4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.

4.L.1.1 Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.
4.L.1.2 Explain how animals meet their needs by using behaviors in response to information received from the environment.
4.L1.3 Explain how humans can adapt their behavior to live in changing habitats (e.g., recycling wastes, establishing rain gardens, planting trees and shrubs to prevent flooding and erosion).

Hands-on Kits: Wartville Wizard interactive book Reading, Build a Landfill Model, Landfill Reading & Problem Solving, All About Plastics Unit
In-school Presentations: Feed the Bin Recycling; Closing the Loop; Starve the Landfill, The 3 R's; All About Plastics
Field Trips: Recycling Center (MRF) tour; Wake County landfill tour
Other Resources: 86-it Anti-Litter Cleanup Kit

Grade 5:

5.P.3 Explain how the properties of some materials change as a result of heating and cooling.

5.P.3.1 Explain the effects of the transfer of heat (either by direct contact or at a distance) that occurs between objects at different temperatures. (conduction, convection or radiation)
5.P.3.2 Explain how heating and cooling affect some materials and how this relates to their purpose and practical applications.

Hands-on Kits: Soils and Composting Unit, Decompose This!, Properties of Plastics;
In-school Presentations: All About Plastics (specifically info related to melting and molding of plastics)

5.L.2 Understand the interdependence of plants and animals with their ecosystem.

5.L.2.2 Classify the organisms within an ecosystem according to the function they serve: producers, consumers, or decomposers (biotic factors).
5.L.2.3 Infer the effects that may result from the interconnected relationship of plants and animals to their ecosystem.

Hands-on Kits/activity: Compost Unit (focus on decomposers)
In-school Presentations: Composting in the Classroom (focus on decomposers)

Grade 8:

8.P.2 Explain the environmental implications associated with the various methods of obtaining, managing, and using energy resources.

8.P.2.1 Explain the environmental consequences of the various methods of obtaining, transforming and distributing energy.
8.P.2.2 Explain the implications of the depletion of renewable and nonrenewable energy resources and the importance of conservation.

In-school Presentation: Adventures in Solid Waste: Landfills;
Field Trips: South Wake Landfill Tour (methane gas-to-energy focus)

8.E.1 Understand the hydrosphere and the impact of humans on local systems and the effects of the hydrosphere on humans.

8.E.1.3 *Predict the safety and potability of water supplies in North Carolina based on physical and biological factors, including:*
- *Temperature*
- *Dissolved oxygen*
- *pH*
- *Nitrates and phosphates*
- *Turbidity*
- *Bio-indicators*

8.E.1.4 *Conclude that the good health of humans requires:*
- *Monitoring of the hydrosphere*
- *Water quality standards*
- *Methods of water treatment*
- *Maintaining safe water quality*
- *Stewardship*

Field Study Trip: Water Quality Stream Testing at the South Wake Landfill