Grade 3 Science Curriculum Guide: Life Science Cluster

Big Understandings

- Almost all animals' food can be traced back to plants.
- For any particular environment, some organisms survive well, some survive less well and some cannot survive at all.
- All living things are made up of cells.

Content Standards Students will understand: **A. Classifying Life Forms** Students will understand that there are similarities within the diversity of all living things.	**B. Ecology** Students will understand how living things depend on one another and on non-living aspects of the environment.	**C. Cells** Students will understand that cells are the basic units of life.
Performance Indicators Students will be able to: 1. Group the same organisms in different ways using different characteristics. 2. Design and describe a classification system for organisms. 3. Describe the different living things within a given habitat. 4. Compare and contrast the life cycles, behavior, and structure of different organisms.	**Note: Bold and highlighted indicators will be assessed at this grade level** **1. Describe a food web and the relationships within a given ecosystem (LAD: Food Web).** **2. Explain the difference between producers (i.e. green plants), consumers (i.e. those that eat green plants), and decomposers (i.e. bacteria that break down the 'consumers' when they die), and identify examples of each (LAD: Food Web).** 3. Compare and contrast physical and living components of different biomes – i.e. regions characterized by their climate and plant life (i.e. tundra, rain forest, ocean, desert). 4. Investigate the connection between major living and non-living components of a local ecosystem.	*Note: Indicators in italics are not specific for this grade level* *1. Demonstrate an understanding that a cell is the basic unit of living organisms.* *2. Describe how single-celled organisms exist.* *3. Explore how the use of a microscope allows one to see cells in a variety of organisms.* *4. Describe the functions of the major human body organ systems.*
Knowledge / Skills • For any particular environment, some organisms will survive well, some survive less well and some cannot survive at all.	• Almost all animals' food can be traced back to plants. • Describe a food web. • For any particular environment, some organisms survive well, some less well, and some cannot survive at all. • Investigate specific features and life cycles of plants and animals that allow them to live in a particular biome.	
Assessment	• **LAD: Food For All**	
Resources • Foss Kit: Structures of Life	• Foss Kit: Structures of Life (extend unit to include biomes) • Accents on Science	
Instructional Strategies		

Grade 3 Science Curriculum Guide: Physical Science Cluster

Big Understandings

- Objects and materials can be described by physical properties that are not necessarily visible (i.e. conduction of heat and electricity, buoyancy, solubility).
- Heating and cooling may cause changes in the properties of materials.
- Energy exists in many forms.
- Energy can be transformed.
- Living things need, use and store energy.
- Different types and different amounts of force affect motion.

Content Standards Students will understand: **E. Structure of Matter** Students will understand the structure of matter and the changes it can undergo.	**H. Energy** Student will understand concepts of energy.	**I. Motion** Students will understand the motion of objects and how forces can change that motion.
Performance Indicators Students will be able to: *1. Describe how the physical properties of objects sometimes change when one object chemically combines with another.* 2. Explain how matter changes in both chemical and physical ways.	**Note: Bold and highlighted indicators will be assessed at this grade level** 1. Identify different forms of energy (i.e. light, sound heat). **2. Explain ways different forms of energy can be produced (MAP: Energy of Sound).**	*Note: Indicators in italics are not specific for this grade level* 1. Describe the effects of different types of forces (i.e. sound, electrical, magnetic) on motion. *2. Draw conclusions about how the amount of force affects the motion of more massive and less massive objects.* *3. Generate examples illustrating that when something is pushed or pulled, it exerts a reaction force.*
Knowledge / Skills • Heating and cooling may cause changes in the properties of materials. • Experiment with heating and cooling materials.	• Energy exists in many forms.	
Assessment	• **LAD: Strike Up The Band**	
Resources • Foss Kit: Water	• Foss Kit: Physics of Sound	• Foss Kit: Physics of Sound
Instructional Strategies		

Grade 3 Science Curriculum Guide: Earth and Space Sciences Cluster

Big Understandings

- Some of earth's cycles are short and some are long.
- Fossils provide evidence that present life forms did not always look the way they do now.
- The sun is the closest stat to the earth; we depend upon radiation from the sun for heat and light.
- Planets are different form each other and from stars in appearance and composition.

Content Standards Students will understand: **D. Continuity and Change** Students will understand the basis for all life and that all living things change over time.	**F. The Earth** Students will gain knowledge about the earth and the processes that change it.	**G. The Universe** Students will gain knowledge about the universe and how humans have learned about it, and about the principles upon which it operates.
Performance Indicators Students will be able to: *1. Identify present day organisms that have not always existed, and past life forms that have become extinct.* *2. Describe how fossils form.* **3. Explain how adaptations, in response to change over time, may increase a species' chances of survival.** 4. Describe ways in which organisms may be similar to and different from their parent and explore the possible reasons for this.	**Note: Bold and highlighted indicators will be assessed at this grade level** *1. Describe the change in position of the continents over time.* 2. Demonstrate an understanding that man things about the earth (i.e. climate) occur in cycles that vary in length and frequency. *3. Describe differences among minerals, rocks and solids.* 4. Illustrate how water and other substances go through a cyclic process of change in the environment.	*Note: Indicators in italics are not specific for this grade level* 1. Illustrate the relative positions of the sun, moon, and planets. 2. Trace the sources of earth's heat and light energy to the sun. **3. Describe earth's rotation on its axis and its revolution around the sun (LAD: Earth and Its Moon).** 4. Explore the relationship between the earth and its moon.
Knowledge / Skills • For any particular environment some organisms survive well, some less well, and some cannot survive at all.	• Some of earth's cycles are short and some are long. • Describe the water cycle.	• The sun is the closest star to the earth; we depend upon radiation from the sun for heat and light. • Trace the sources of earth's heat and light energy to the sun. • Planets are different from each other and from stars in appearance and composition. • Explore the relationship between the earth and its moon. • Note: Teach seasons and day/night
Assessment **LAD: Food For All**		• **LAD: Earth and Its Moon**
Resources • Foss Kit: Structures of Life • Accents on Science	• Foss Kit: Water • Foss Kit: Structure of Life	• Delta Science Module: Solar System • Orbitor
Instructional Strategies		

Grade 3 Science Curriculum Guide: Nature and Implications of Science Cluster

Big Understandings			
Content Standards Students will understand: **J. Inquiry and Problem Solving** Students will apply inquiry and problem-solving approaches in science and technology.	**K. Scientific Reasoning** Students will learn to formulate and justify ideas and to make informed decisions.	**L. Communication** Students will communicate effectively in the application of science and technology.	**M. Implications of Science and Technology** Students will understand the historical, social, economic, environmental, and ethical implications of science and technology.
Performance Indicators Students will be able to: 1. Make accurate observations using appropriate tools and units of measure. 2. Conduct scientific investigations: make observations, collect and analyze data, and do experiments (LAD: Strike Up The Band). 3. Use results in a purposeful way: design fair tests, make predictions based on observed patters, and interpret data to make further predictions. *4. Design and build an invention.* 5. Explain how difference in time, place, or experimenter can lead to different data. 6. Explain how different conclusions can be derived from the same data.	**Note: Bold and highlighted indicators will be assessed at this grade level** 1. Give alternative explanations for observed phenomena. 2. Describe how feelings can distort reasoning. 3. Draw conclusions about observations. 4. Use various types of evidence (i.e. logical, quantitative) to support a claim. 5. Demonstrate an understanding that ideas are more believable when supported by good reasons (LAD: Strike Up The Band). 6. Practice and apply simple logic, intuitive thinking, and brainstorming.	*Note: Indicators in italics are not specific for this grade level* 1. Record results of experiments or activities (i.e. interviews, discussions, field work) and summarize and communicate what they have learned. 2. Ask clarifying and extending questions. 3. Reflect on work in science and technology using such activities as discussions, journals, and self-assessment. 4. Make and/or use sketches, tables, graphs, physical representations, and manipulatives to explain procedures and ideas. 5. Gather and effectively present information, using a variety of media including computers (i.e. spreadsheets, word processing, programming, graphics, modeling). 6. Cite examples of bias in information sources and question the validity of information form varied sources. 7. Function effectively in groups within various assigned roles (i.e. reader, recorder).	1. Explore how cultures have found different technological solutions to deal with similar needs or problems (i.e. construction, clothing, agricultural tools and methods). 2. Investigate and describe the role of scientists and inventors. 3. Explore how technology (i.e. transportation, irrigation) has altered human settlement. 4. Explain practices for conservation in daily life, based on a recognition that renewable and non-renewable resources have limits.
Knowledge / Skills • Experimental Inquiry *Collect Data *Explain *Observe *Predict *Verify • Invention	• Abstracting • Classifying • Deductive reasoning • Inductive reasoning • Investigation • Decision making	• Comparing • Constructing support • Analyzing errors • Analyzing perspectives	• Systems analysis • Analyzing perspectives • Decision making • Investigation
Assessment • **LAD: Strike Up The Band**	**LAD: Strike Up The Band**		
Resources • All Foss Kits	• All Foss Kits	• All Foss Kits	• All Foss Kits
Instructional Strategies			