LOUISIANA SCIENCE STANDARDS INTRODUCED OR REINFORCED DURING TREES AND TRAILS FIELD TRIP
SCIENCE
6th Grade

EARTH AND HUMAN ACTIVITY

- **6-MS-ESS3-4:** Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

  MS.ESS2E.a: Living organisms interact with Earth materials resulting in changes of the Earth.

  MS.ESS1B.a: Responsible management of Louisiana's natural resources promotes economic growth, a healthy environment, and vibrant productive ecosystems.

FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES

- **6-MS-LS1-1:** Conduct an investigation to provide evidence that living things are made of cells, either one or many different numbers and types.
  MS.LS1A.a: All living things are made up of cells, which are the smallest living unit. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular).
- **6-MS-LS1-2:** Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

  MS.LS1A.b: Within cells, special structures (organelles) are responsible for particular functions. The cell membrane forms the boundary that controls the material(s) that enter and leave the cells in order to maintain homeostasis.

ECOSYSTEMS: INTERACTIONS, ENERGY, AND DYNAMICS

- **6-MS-LS2-1:** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
  MS.LS2A.a: Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors.
  MS.LS2A.b: In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction.

  MS.LS2A.c: Growth of organisms and population increases are limited by access to resources.

- **6-MS-LS2-2:** Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
  MS.LS2A.d: Predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared.
- **6-MS-LS2-3:** Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
  MS.LS2B.a: Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem.

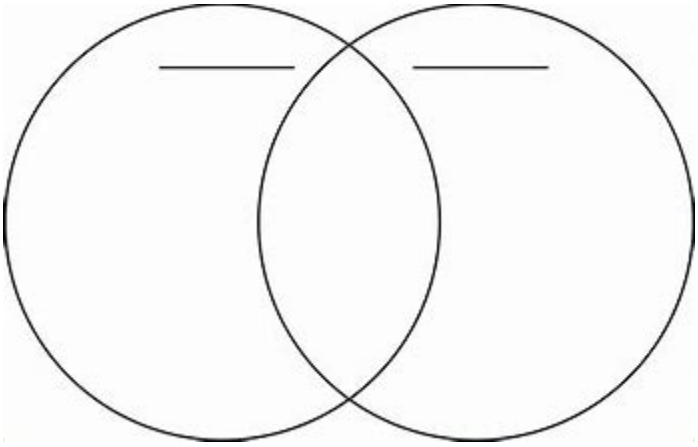
  MS.LS2B.b: Transfers of matter into and out of the physical environment occur at every level.

  MS.LS2B.c: Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments.

  MS.LS2B.d: The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. Geochemical cycles include carbon, nitrogen, and the water cycle.

ANCHOR PHENOMENA THAT CAN BE INTRODUCED IN THE CLASSROOM (PRE-TRIP OPTIONS)

1. Links to *Mr. Parr's Food Chain Song*: https://www.youtube.com/watch?v=iWfEn8J5xKM, and to *Mr. Parr's Decomposers Song*: https://www.youtube.com/watch?v=WLk-9ib0OVA. These are short videos with a great beat and relevant terminology.
2. All detritivores are decomposers but not all decomposers are detritivores.
3. Make a Venn Diagram of Food Chain and Food Web. Use sketch for students to copy.



4. Plants and animals are composed of cells and tissues.
5. Vascular plants have a circulatory system so do we.
6. Photosynthesis is a biochemical process. Link to a basic explanation of photosynthesis: http://www.biology4kids.com/files/plants_photosynthesis.html
7. Symbiotic relationships, good or bad?
8. Pack Waste-Free and Healthy Use the examples from Monday, Tuesday, and Wednesday to create your own waste-free and healthy lunch menus for Thursday and Friday. https://**www.epa.gov**/.../documents/**packwastefreeandhealthy_menu**_508.pdf

ACTIVITIES TO EXTEND CONCEPTUAL UNDERSTANDING OF PERFORMANCE EXPECTATIONS

1. This is an excellent link to activities about food webs and interrelationships. http://sciencespot.net/Media/pondfoodwebinfo.pdf .
2. The following link detail with a diagram the "Life Cycle of a Cell Phone." http://www.mass.gov/eea/docs/dep/recycle/reduce/06-thru-l/life-cell.pdf Have students work in groups and research and develop a diagram that shows the life cycle of different appliances in the home:(printer, TV, refrigerator, microwave, electric or gas stove, etc…).
3. Have students work in pairs and research different types of symbiotic relationships, (lichens on a tree, bacteria in the stomach of a termite, clownfish and the sea anemone, head lice living on a human scalp, bacteria living on a humans skin, ants and the acacia tree, the remora and the shark, a tapeworm living in a 6th grade students intestines, bees and a flower, etc…).
4. On poster paper write/draw the following and cut them out. You may want to laminate this so it can be used many times: Sunlight, water, carbon dioxide, oxygen, glucose (sugar), energy (from breakdown of glucose), 8 "+" signs, and 2 "→" signs. Have students show and explain the interrelationship that we have with plants. Cellular respiration is glucose (sugar) + oxygen →carbon dioxide + water + energy (as ATP). The word equation for Photosynthesis is: Carbon Dioxide + Water + Light --> Oxygen + Glucose.

5. Earthworm Inquiry: Students will learn about the life cycle of earthworms. This website has great Citizen Science activities for earthworms and other organisms. Journey North: http://www.learner.org/jnorth/tm/worm/Resources.html

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