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

SCIENCE

8th Grade

*Water Purification and Groundwater Recharge are presented as part of the Wetlands Station

MATTER AND ITS INTERACTIONS

- **8-MS-PS1-3**: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.

  MS.PS1B.a: Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of the reactants.

EARTH'S SYSTEMS

- **8-MS-ESS2-1:** Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

  MS.ESS2A.a: All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.

EARTH AND HUMAN ACTIVITY

- **8-MS-ESS3-1:** Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

  MS.EVS1A.b: Non-renewable resources such as our state's fossil fuels are vast but limited.

- **8-MS-ESS3-3:** Apply scientific principles to design a method for monitoring and minimizing human impact on the environment.

  MS.ESS3C.a: Human activities, globally and locally, have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.

FROM MOLECULES TO ORGANISMS: STRUCTURES AND PROCESSES

- **8-MS-LS1-4:** Construct and use arguments(s) based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of survival and successful reproduction of animals and plants respectively.

  MS.LS1B.c: Animals engage in characteristic behaviors that increase the odds of reproduction.

  MS.LS1B.d: Plants (flowering and non-flowering) reproduce in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction.

- **8-MS-LS1-5:** Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.

  MS.LS1B.e: Genetic factors as well as local conditions affect the growth of the adult plant.

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

1. Define and give examples of natural resources.
2. Describe some ways that people use energy in their daily lives.
3. Explain why fossil fuels, copper, and other metals are nonrenewable resources that exist in finite or limited amounts.
4. Solar energy and wind energy are renewable resources. Why are we not taking advantage of these resources more?
5. Why is recycling aluminum cans beneficial?
6. Explain the statement, “It is important to realize the renewable resources need to be managed in a sustainable way.” Cite examples to support this.
7. Decomposers are important in maintaining energy flow and matter recycling in the environment.
8. An insect, like a butterfly, can lay hundreds of eggs. Why is that behavior beneficial to the species?
9. This video describes how pollinator syndromes, the flower type, shape, color, odor, nectar, and structure are used to predict the type of pollinator that will aid the flower in successful reproduction? https://www.bing.com/videos/search?q=pollinator+syndromes&&view=detail&mid=47BCCA1E0AD7EE1C75CD47BCCA1E0AD7EE1C75CD&&FORM=VRDGAR
10. State and National Parks are wonderful to visit, but, air pollution, crime, traffic, decreased habitat for plants and animals that live in the parks are some big problems that must be addressed.

ACTIVITIES TO EXTEND CONCEPTUAL UNDERSTANDING OF PERFORMANCE EXPECTATIONS.

1. Investigate the interconnectedness of natural and human built parts of the Earth's system¸ (plants, animals, water, soil to that of oil and gas industry, agriculture, transportation, and recreation). What can we do the protect ecosystems from habitat destruction?
2. Research how El Ninos impact the carbon dioxide levels in the atmosphere?
3. In this activity, students will learn a lot about what they are throwing in the trash and ways they could either reduce, recycle, or reuse the items. Students will collect their trash while at school for one week. Trash containers should be made available in the classrooms for the following: Paper, plastic, wood, glass, food scraps, and other.
4. This website has excellent information and activities including: opinion surveys, challenge questions, determining amount of water used in a home, and quizzes about water properties and ground water. https://water.usgs.gov/edu/msac.html
5. Students will take a field trip to a local supermarket and investigate the different types of packaging products comes in and the pros and cons of each. They are find at least one item that fits into each of the categories of packaging (packaged well, packed poorly, packaged to attract the consumer, packaged in bulk, packaged with material that can be or has been recycled, packaged in something that can be reused by the consumer).
6. This is an excellent activity for modelling photosynthesis and cellular respiration to illustrate how energy flows in a system. The game meets national standards and has lesson plans attached.https://www.calacademy.org/educators/lesson-plans/modelling-photosynthesis-and-cellular-respiration.
7. Have students use the following vocabulary words to make a story describing how an individual water molecule moves through the cycle, (cloud, stream, evaporation, precipitation, downhill flows, ocean, glacier, and, animal, or use other paths that include, lakes, wells, puddles, plants, and snow).
8. Research the diversity of insects and other organisms that are predators of butterflies at all stages in their life cycle. http://www.learnaboutbutterflies.com/Enemies%20of%20Butterflies.htm