Grade 5

STEM Learning Garden Unit: Food Web

5-LS2 Ecosystems: Interactions, Energy, and Dynamics

Massachusetts State Standards:
5-LS2-1. Develop a model of a food web to describe the movement of matter among producers, primary and secondary consumers, decomposers, and the air and soil in the environment: a. show that plants produce sugars and plant materials; b. show that some animals eat plants for food and other animals eat the animals that eat plants; and c. show that some organisms, including fungi and bacteria, break down dead organisms and recycle some materials back to the air and soil. [Clarification Statement: Emphasis is on matter moving throughout the ecosystem. Waste includes matter in the form of gasses (such as air), liquids (such as water), or solids (such as minerals or nutrients).] [Assessment Boundary: Assessment does not include molecular explanations.]

Essential Questions: How are animals and plants dependent on one another?

Performance Expectation: *(What will the students know and be able to do after this unit? Matching the student task or question directly with the practices.)* Students will be able to make a model to illustrate a food web. Using the food web model, students will be able to evaluate the habitat where changes occur due to natural and man made effects.

Science and Engineering Practices

- **Developing and Using Models** Develop a model to describe phenomena.
- **Engaging in Argument from Evidence** Support an argument with evidence, data, or a model.
- **Analyzing and Interpreting Data** Analyze and interpret data to determine similarities and differences in findings

Standards for Mathematical Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- Look for and make use of structure.
- Look for an express regularity in repeated reasoning.

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems
Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.

Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil.

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems
Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.

Resources:

Resources:

Thinks Garden: What's a Food Chain (Video PBS)
http://www.pbslearningmedia.org/resource/thnkgard.sci.ess.chain/think-garden-whats-a-food-chain/

Activity:

Food Chain Game (PDF)

Community and Habitats (PDF)

Web Video

Food Chains: How the World Works (BrainPOP)
Kid-friendly animations and information about science, health, technology. http://www.brainpop.com/science/ecology/foodchains

Information Text Articles (leveled)

Marine Ecosystems (810 and 1010) PDF

Math Standards

5.OA Operations and Algebraic Thinking
Write and interpret numerical expressions.
Analyze patterns and relationships.
5.MD Measurement and Data
Convert like measurement units within a given measurement system.
Represent and interpret data.

ELA Standards

SL. 1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.
W.1. Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
W. 2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Discussion Questions:

- What is a food chain?
- What is a food web?
- How are food chains and food webs different?
- Describe a possible food chain in a backyard or school garden.
- Describe a possible food web in a backyard or school garden.
- Explain how a backyard or school garden is part of the ecosystem.

Assessment:

- **Scientific Notebook**
- **Scientific Notebook Rubric**
- Group Project Rubric where appropriate
- Data Collection Sheets for Food Chain Game
- Data Collection Sheets for Community and Habitats

Career Connections:

Middlesex Community College
Environmental Health
http://catalog.middlesex.mass.edu/preview_program.php?catoid=16&poid=1925&returnto=1372

http://www.environmentalscience.org/careers

http://www.environmentalcareer.com