Honors Science 8 Unit 8: Ecosystems Interactions, Energy and Dynamics 2019

Content Area: **Science**
Course(s): **Honors Life Science 8**
Time Period: **May**
Length: **1**
Status: **Published**

Enduring Understandings:

- Competition and cooperation are important aspects of biological systems.
- Describe how both biotic and abiotic factors regulate the size, distribution and complexity of populations and communities, within an ecosystem
- Explain and exemplify how the abundance and distribution of living organisms are limited by the available energy and certain forms of matter such as water, oxygen, and minerals.
- Organisms perform a variety of roles in an ecosystem. Populations of organisms can be categorized by how they acquire energy. Food webs can be used to identify the relationships among producers, consumers and decomposers in an ecosystem.

Essential Questions:

- Does species biodiversity impact the stability and sustainability of a community?
- How do species interact with one another?
- How does biological succession work to change living communities and habitats?
- What is an ecosystem?
- Why do some places contain more species than others?

Lesson Titles:

- Animal Cracker Lab
- Bean Lab
- Energy Transfer
- Gim Kit
- Goldfish Lab
- Intro to Ecology
- Levels of Organization Flip Chart
- Limiting Factors Intro
- M&M Lab
- Owl Pellet Lab
- Project
- Quiz

- Spider Lab
- Studying Populations
- Symbiosis Intro
- Task Card Activity
- Water Shed Presentation

21st Century Skills and Career Ready Practices:

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP3	Attend to personal health and financial well-being.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP10	Plan education and career paths aligned to personal goals.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.

Inter-Disciplinary Connections:

LA.RST.6-8	Reading Science and Technical Subjects
LA.RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
LA.RST.6-8.2	Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
LA.RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
LA.RST.6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.
LA.RST.6-8.5	Analyze the structure an author uses to organize a text, including how the major sections contribute to the whole and to an understanding of the topic.
LA.RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
LA.RST.6-8.8	Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
LA.RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
LA.RST.6-8.10	By the end of grade 8, read and comprehend science/technical texts in the grades 6-8 text

	complexity band independently and proficiently.
LA.WHST.6-8	Writing History, Science and Technical Subjects
LA.WHST.6-8.1	Write arguments focused on discipline-specific content.
LA.WHST.6-8.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK:

- Students will create diagrams and energy pyramids that emphasis how energy is transferred between organisms and ecosystems
- Emphasis on interactions between different ecosystems and relationships between components of ecosystem
- Students analyze and interpret data, develop models, construct arguments, and demonstrate a deeper understanding of the interactions, energy and dynamics in an ecosystem. They are able to study patterns of interactions among organisms within an ecosystem. They consider biotic and abiotic factors in an ecosystem and the effects these factors have on populations.
- Students will explain how biodiversity can affect the overall health of an ecosystem and how humans can impact biodiversity.
- Tutoring during Academic Enrichment

Modifications

Formative Assessment:

- Pass-out of Class
- 3-2-1 Review
- Anticipatory Set
- Closure
- Kahoot (online game)
- Pair / Share
- Review Ball
- Survey Students using Technology (Edmodo, Google Classroom, ect.
- Thumps up/down
- Type 1 Writing Prompt (Brainstorm)
- Warm-Up

Alternative Assessments

Performance tasks

Project-based assignments

Problem-based assignments

Presentations

Reflective pieces

Concept maps

Case-based scenarios

Benchmark Assessments

Skills-based assessment

Reading response

Writing prompt

Lab practical

Summative Assessment:

- Alternate Assessment
- Benchmark
- Create a food web lab
- Ecology Vocab Quiz
- Final Ecology Assessment
- Marking Period Assessment
- Symbiosis Project

Resources & Materials:

- http://ngss.nsta.org/Resource.aspx?ResourceID=247
- Plant Growth and Gas Exchange Unit: This model unit from Michigan State University includes 11

lessons that guide students through the process of collecting evidence and developing explanations of where the dry matter of plants comes from and of the roles of photosynthesis and respiration in the carbon cycle. Along with the focus on building explanations of these core ideas, the unit explicitly integrates the crosscutting concepts of matter and energy and scale, proportion, and quantity. This unit is built around the question of how small seeds grow into large plants, and the core activities of the unit guide students in tracing the mass changes that occur as seeds germinate and grow. These core activities are supported through a carefully planned sequence of learning and assessment activities that follow a research-based learning progression to support the development of student understanding.