

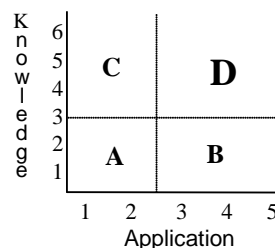
**GOLD
SEAL
LESSON**



ECOLOGICAL PYRAMIDS

Subject(s)
Anatomy & Physiology

**Rigor/Relevance
Framework**



Grade Level 10–12

**Instructional
Focus**

Writing: Students write for a variety of purposes and audiences with sophistication and complexity appropriate to the grade level.

Basic Concepts and Knowledge: Students develop an understanding of scientific concepts using facts, theories, principles, and models.

Science in Personal and Social Perspectives: Students apply scientific principles to personal and social issues.

Unifying Concepts and Processes: Students recognize patterns and processes, making connections in terms of systems and subsystems that explain the interrelationships of the natural and designed world.

Communication: Students communicate and apply scientific concepts

Science: Students demonstrate knowledge and skills necessary to perform science inquiry

Health Informatics: Students formulate and report information clearly and concisely

Inquiry and Investigation:

Formulate explanations by using logic and evidence.

Biology:

Students know at each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid.

Students know a vital part of an ecosystem is the stability of its producers and decomposers.

**Student
Learning**

- Students will determine the characteristics of someone who is malnourished
- Students will examine the energy flow in an ecosystem
- Students will examine the transfer of energy between trophic levels
- Students will judge the best source of food aid
- Students will develop a food aid plan

**Performance
Task**

Overview:

During a macromolecule/nutrition unit, incorporate the ecology standards by having students research malnutrition and the best ways to treat it.

Description:

Part I. Students will view a PowerPoint which consists of images of people with various nutritional disorders. They will then scrutinize the

	<p>characteristics of someone who is malnourished. (If desired, have students research each of the four identified issues as well.) In small groups, students will discuss possible solutions to the problem of malnourishment and write up a proposal.</p> <p>Part II. Students will receive a handout about energy flow in an ecosystem which they will complete during a Socratic lecture. Independently, students will then examine the transfer of energy between trophic levels.</p> <p>Part III. Students will judge the best source of food aid and revise their initial proposals.</p> <p>Part IV. Students will present their food aid plans to the class, who will judge the best proposal.</p>
Essential Skills	<p>E1 Apply in writing the rules and conventions of grammar, usage, punctuation, paragraphing, and spelling.</p> <p>E7 Research information from a variety of sources and draft a well-organized, accurate, and informative report or essay that engages an audience and addresses its needs.</p> <p>E9 Organize supporting detail in logical and convincing patterns that focus on audience and purpose.</p> <p>E14 Write clear and concise directions or procedures.</p> <p>E20 Understand the nature and purpose of a variety of technical formats (essays, business letters, memos, investigative reports, brochures, critiques, instructions, policy statements, technical proposals, lab reports, etc.) and write in these formats.</p> <p>E4 Use resources (dictionary, grammar books, thesaurus, online references, etc.) as needed to edit.</p> <p>S4 Make observations and accurate and precise measurements using senses, tools, and technology.</p> <p>S12 Explain, interpret, and classify observations and data in a logical way. Present information using scientific vocabulary, mathematical relationships, and technology.</p> <p>S7 Examine how humans, through technology, cause environmental change by disrupting the equilibrium or balance of nature. Critique ways to improve environmental protection through education, research, laws, and conservation and judge the effectiveness of conservation practices and preservation techniques on environmental quality.</p>
Assessment	<p>Summary of the Characteristics of Malnourished People – complete</p> <p>Initial/Final Malnourishment Proposal – complete and logical</p> <p>Judge Card – complete</p>
Attachments/ Resources	<p>PowerPoint of Malnourished People</p> <p>Energy Flow in an Ecosystem handout</p> <p>Judge Card</p>

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