

Seventh Grade Science Curriculum Bundle #4



Title	Suggested Dates
Natural Factors that Affect Life on Earth	Oct 25 – Nov 12, 2010 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
The relationships of different populations depend upon each other and factors in the environment.	<p>How does energy flow through ecosystems?</p> <p>How are food chains, food webs, and energy pyramids related and differentiated?</p> <p>How is matter cycled through ecosystems?</p>

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	Specificity & Examples	Suggested Resources (Read the note above)
<p>Reminder: The state <i>requires</i> 40% of instructional time be spent conducting lab and field investigations. (approximately 2 investigations per week)</p> <p>Safety equipment should be used throughout the entire school year.</p> <p>Process skills (TEKS 7.1, 7.2, 7.3, and 7.4) should be used throughout the school year.</p>		
<p>5 Matter and energy. The student knows that interactions occur between matter and energy. The student is expected to:</p> <p>5C diagram the flow of energy through living systems, including food chains, food webs, and energy pyramid</p>	<p><u>Teacher Note:</u> Students often have the misconception that the direction of the arrows indicates food relationships when the arrow actually indicates energy flow.</p> <p><u>Teacher Note:</u> Students also have the misconception that higher organisms in a food chain or web prey upon all organisms below it as opposed to just the one(s) that arrows connect.</p> <p><u>Teacher Note:</u> Teachers may want to show food webs, chains, and pyramids with various configurations where the decomposers or consumers are not necessarily at the “top” of the diagram. Students often make the mistake that the organism physically at the top of the diagram is the highest in the energy pyramid.</p> <p><u>Teacher Note:</u> Benchmarks (National Standards);</p> <ul style="list-style-type: none"> • All organisms, both land-based and aquatic, are interconnected by their need for food. This network of interconnections is referred to as a 	<p>Vocabulary: Radiant energy, photosynthesis, decay, biomass, compost bin, cycling of matter, food chain, food web, energy pyramid, producer, consumer</p> <p>Power Point:</p> <ul style="list-style-type: none"> • Energy Flow Through Living Systems.ppt <p>Activities:</p> <ul style="list-style-type: none"> • Antarctic Food Web.pdf • Food Chain (folder) • Food Web Game (folder) • Food Chains.pdf • <u>Terraqua Column</u> • Predator-Prey Lab (folder) • <u>Online lab:</u> Identifying animals in a biome, sorting them into a food chain <p>PreAP Activities:</p> <ul style="list-style-type: none"> • LTF #11 Toothpick Birds

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	<p>food web. The entire earth can be considered a single global food web, and food webs can also be described for a particular environment. At the base of any food web are organisms that make their own food, followed by the animals that eat them, then the animals that eat those animals, and so forth.</p> <ul style="list-style-type: none"> • Energy can change from one form to another in living things. <p><u>Teacher Note:</u> In 6th grade, students were introduced to basic ecological vocabulary.</p> <ul style="list-style-type: none"> • 6.12F Diagram the levels of organization within an ecosystem, including organism, population, community, and ecosystem. <p>In 8th grade, students will explore further these related topics (Bundle 7).</p> <ul style="list-style-type: none"> • 8.11A describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and terrestrial ecosystems 	<ul style="list-style-type: none"> • Nibbles and Bits (Activities 1, 2 and 3, Constructing Food Chains and Pyramids) • Life of a Litter Bug.pdf / Woodland Munchers pp. 10-16 • Web of Life (folder) <p>Teacher Resources:</p> <ul style="list-style-type: none"> • Marine Debris Timeline Poster.pdf <p>Supplemental Reading:</p> <ul style="list-style-type: none"> • Watching Out for Vultures.pdf • PreAP - Rethinking Trophic Levels.pdf <p>Multimedia:</p> <ul style="list-style-type: none"> • BrainPop: Food Chains (Science / Ecology and Behavior)
<p>5 Matter and energy. The student knows that interactions occur between matter and energy. The student is expected to:</p> <p>5B demonstrate and explain the cycling of matter within living systems such as in the decay of biomass in a compost bin</p>	<p>Cycling of matter:</p> <ul style="list-style-type: none"> • Water cycle • Carbon cycle • Nitrogen cycle <p><u>Teacher Note:</u> The teacher should emphasize the relationship between matter cycling and the law of conservation. Matter cycles within food webs and are part of the energy pyramids.</p> <p><u>Teacher Note:</u> Benchmarks (National Standards) ;</p> <ul style="list-style-type: none"> • One organism may scavenge or decompose another. • Organisms that eat plants break down the plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms. • Over a long time, matter is transferred from one 	<p>Power Point:</p> <ul style="list-style-type: none"> • Cycling Matter.ppt • Composting.ppt <p>Activities:</p> <ul style="list-style-type: none"> • What is Matter.doc • Producers Consumers Decomposers.doc • Got to Rot.pdf • Dirty Decomposers.pdf • Decomposing Microorganisms.pdf • Plant Power (Activity 2, p 6 – Cycles and Ecosystems) <p>PreAP Activities:</p> <ul style="list-style-type: none"> • <u>Decomposition Column</u> (Bottle Biology) • Tracking Down Carbon in a Living System (Activity 4, p, 8-9 – Cycles and Ecosystems) <p>Teacher Demo:</p> <ul style="list-style-type: none"> • Tracking Down Carbon in Nonliving Systems

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	<p>organism to another repeatedly and between organisms and their physical environment. As in all material systems, the total amount of matter remains constant, even though its form and location change.</p>	<p>(Activity 5, p. 10 – Cycles and Ecosystems)</p> <p>Teacher Resource:</p> <ul style="list-style-type: none"> • Compost-What is it. PDF <p>Reading Supplement</p> <ul style="list-style-type: none"> • Textbook: p 690 (Law of Energy Conservation), p 174 (decomposers)
<p>5 Matter and energy. The student knows that interactions occur between matter and energy. The student is expected to:</p> <p>5A recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis</p>	<p><u>Teacher Note:</u> Photosynthesis should be emphasized as the process which captures radiant energy and is the beginning of the food chain, web, and energy pyramid.</p> <p><u>Teacher Note:</u> Students often have the misconception that carnivores can survive in a plant-free world, not realizing that the sun is the ultimate source of energy for living systems. Without plants to capture the sunlight, food webs would collapse.</p> <p><u>Teacher Note:</u> Photosynthesis will again be covered in greater detail with chloroplast in a later bundle (8).</p> <p><u>Teacher Note:</u> Benchmarks (National Standards):</p> <ul style="list-style-type: none"> • Plants use the energy from light to make sugars from carbon dioxide and water. • Plants can use the food they make immediately or store it for later use. • Almost all food energy comes originally from sunlight. 	