



Eighth Grade Science Curriculum Bundle # 7

Title	 	Suggested Dates
The Environment: Oceans and Ecosystems		Jan 4 –Jan 28 (18 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>Heating of Earth’s surface and atmosphere by the sun drives convection within the atmosphere and ocean, producing wind and ocean currents. As energy flows through systems, at each step more of it becomes unusable.</p> <p>Human activities have modified the ocean system.</p>	<p>How do organisms depend on each other and on the cycling of matter and energy in an ecosystem?</p> <p>How do behavioral responses to stimuli ensure individual survival and reproductive success for the species?</p> <p>How do the sun and the ocean systems interact to create changes in the ocean system?</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)
Teacher Note: Remember that the first 3 days of this bundle have been allotted to finish up Bundle 6 on Tides (8.7C). In addition, there are several suggested resources that have been duplicated both in this bundle and the last bundle to assist you with pacing concerns.		
<p>8.7 Earth and space. The student knows the effects resulting from cyclical movements of the Sun, Earth, and Moon. The student is expected to:</p> <p>8.7C relate the position of the Moon and Sun to their effect on ocean tides.</p>	<p>Including:</p> <ul style="list-style-type: none"> --- Spring Tides --- Neap Tides --- Tidal Range <p>Teacher Note: Gravity is the force that keeps planets in orbit around the sun and governs the rest of the motion in the solar system. Gravity alone holds us to the earth’s surface and explains the phenomena of the tides. (Source: NSES)</p>	<p>Textbook: pp 551-553</p> <p>VOCABULARY: oceanography, oceanographer, hydrosphere, hydrology, hydrologist, aquifer, water table, salinity, distilled vs tap water, fresh vs salt water, hard water, brackish water, weathering, erosion, river systems, beach erosion, land subsidence, deflection, currents, El Nino, La Nina, continental drift, mountain building, continental vs oceanic crust, continental shelf, ocean basin, Mid-Ocean Ridge, rift valleys, mutualism, commensalism, parasitism, energy pyramids, symbiotic relationships, predator, prey, producer, consumer, decomposer, food webs, adaptations, food chain, energy flow, herbivore, carnivore, omnivore, convection, conduction, radiation, water cycle, sea level, topographic maps, contour lines, contour intervals, density, elevation, tsunamis, and point vs non-point source pollution.</p> <p>Assessment: Lunar Cycle and Tides Quiz</p>

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		<p>Activities: Types of Tides CORE Timing the Tides Seasons, Moon, and Tides Notes Power point</p>
<p>8.9 Earth and space. The student knows that natural events can impact Earth systems. The student is expected to:</p> <p>8.9C interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.</p>	<p>Discuss <u>topographic features</u> within the ocean such as:</p> <ul style="list-style-type: none"> • Continental shelf • Ocean basin • Mid-oceanic ridge • Rift valleys • Plate tectonics • Land subsidence • Beach erosional features <p>Use of Google Earth or Portable GPS Systems for satellite imagery to identify land and erosional features.</p> <p><u>Teacher Notes:</u> The earth's surface is shaped in part by the motion of water (including ice) and wind over very long times, which acts to level mountain ranges. Rivers and glacial ice carry off soil and break down rock, eventually depositing the material in sediments or carrying it in a solution to the sea. (Source: Benchmarks)</p> <p>There are a variety of different land forms on the earth's surface (such as coastlines, rivers, mountains, deltas, and canyons). (Source: Benchmarks)</p>	<p>Textbook: pp 420-424 (topographic mapping) in 6th Grade Book; pp 446-465 (oceans) in 7th Grade Book</p> <p>Assessments: Weather and Oceans Assessment Oceans Assessment</p> <p>Activities: Physical Characteristics of the Ocean CORE Ocean Bag Activity + Rubric Ocean Zones Seafloor and Continental Drift Booklet Use of Topographic/Contour Boxes/Stereoscopes Topographic Maps Power point (duplicated in Bundle #9) Topographic maps (student and teacher)</p> <p>PreAP: LTF # 38: Slope of the Beach Life/Earth p. 682 LTF # 37: Sonar Seas-Mapping the Ocean Floor Life/Earth p. 674 (modify as needed)</p> <p>Technology: <u>Vernier MS Science</u> # 12 Ocean Floor Mapping</p>
<p>8.10 Earth and space. The student knows that climatic interactions exist among Earth, ocean, and weather systems. The student is expected to:</p> <p>8.10A recognize that the Sun provides the energy that drives convection within the atmosphere and oceans, producing winds and ocean currents;</p>	<p>Including:</p> <p>--- Surface currents</p> <ul style="list-style-type: none"> • Global winds • Coriolis effect • Continental deflection <p>---Deep ocean currents such as density currents, turbidity currents.</p> <p><u>Teacher Notes:</u> Describe solar energy as the driving force behind weather and ocean systems. Examples: ---El Nino/La Nina</p> <p>Thermal energy carried by ocean currents has a strong</p>	<p>Textbook: pp 534-541 (ocean currents)</p> <p>Activities: LTF #24: Molecular Motion-Are you Current on Convection? Life/Earth p. 530 CORE Ocean Currents CORE Modeling El Nino Ocean Motion Graphic Organizer Observing Convection Currents <u>Aims Earth Book:</u> Vertical Ocean Currents pp. 62-68 <u>Aims Earth Book:</u> Horizontal Ocean Currents pp. 79-74 <u>Aims Earth Book:</u> Colorful Currents pp. 75-80</p> <p>Technology: <u>Vernier CBL Labs</u></p>

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	<p>influence on climates around the world. Areas near oceans tend to have more moderate temperatures than they would if they were farther inland but at the same latitude because water in the oceans can hold a large amount of thermal energy. (Source: Benchmarks)</p> <p>The temperature of a place on the earth's surface tends to rise and fall in a somewhat predictable pattern every day and over the course of a year. The pattern of temperature changes observed in a place tends to vary depending on how far north or south of the equator the place is, how near to oceans it is, and how high above sea level it is. (Source: Benchmarks)</p>	<p>#02 Heating of Land and Water</p> <p>Web link with activities: http://science-class.net/Oceanography/oceans.htm</p>
<p>8.11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to:</p> <p>8.11A describe producer/consumer, predator/prey, and parasite/host relationships as they occur in food webs within marine, freshwater, and <u>terrestrial</u> ecosystems;</p>	<p>Including:</p> <p>---Natural Selection</p> <p>---Predator-Prey</p> <p>---Food Chains, Webs and Pyramids including those in terrestrial settings</p> <p>---Symbiotic</p> <ul style="list-style-type: none"> • Mutualism • Commensalism • Parasitism <p>---Focus on energy flow (energy pyramids)</p> <p><u>Teacher Notes:</u> Interactions between organisms may be for nourishment, reproduction, or protection and may benefit one of the organisms or both of them. Some species have become so dependent on each other that neither one could survive without the other. (Source: Benchmarks)</p> <p>Plan to review 6.12F, diagram the levels of organization within an ecosystem including organism, population, community and ecosystem.</p> <p>Plan to review 7.5C, diagram the flow of energy through living systems including food chains, food webs and energy pyramids.</p> <p>Plan to review 7.10A, observe and describe how different environments, including microhabitats in schoolyards and</p>	<p>Textbook: pp 268-273; pp 427-433 (marine ecosystems) and pp 434-437 (fresh water ecosystems) both in 7th Grade Book</p> <p><u>Activities:</u></p> <p>The Good Buddies Lab (modified Project Wild) CORE</p> <p>The Lynx Eats the Hare</p> <p>Symbiosis Graphic Organizer 1</p> <p>Symbiosis Graphic Organizer 2</p> <p>Natural Selection Game</p> <p>Natural Selection Model Power point (duplicated in Bundle #12)</p> <p>Mendel Background Power point (duplicated in Bundle #12)</p> <p>Natural Selection (duplicated in Bundle #12)</p> <p>PreAP:</p> <p>LTF #03: Can Mosquitoes Transmit HIV? Earth/Life p. 262</p> <p>LTF #14: Bean Bunny Evolution Life/Earth p. 413 (also duplicated in Bundle #12)</p>

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	<p>biomes, support different varieties of organisms.</p> <p>Plan to review 7.10B, describe how biodiversity contributes to the sustainability of an ecosystem.</p> <p>Plan to review 7.11B, explain variation within a species or population by comparing external features, behaviors or physiology of organisms that enhance survival such as migration, hibernation or storage of food in a bulb.</p> <p>Plan to review 7.12A, investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds and xylem in plants.</p>	
<p>8.11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to:</p> <p>8.11B investigate how organisms and populations in an ecosystem depend on and may compete for biotic and abiotic factors such as quantity of light, water, range of temperatures, or soil composition</p>	<p><u>Teacher Notes:</u> Soil composition will be addressed during Bundle #10.</p> <p>In all environments, organisms with similar needs may compete with one another for limited resources, including food, space, water, air, and shelter. (Source: Benchmarks)</p>	<p>Activities: Physical Characteristics of the Ocean CORE <u>Aims Earth Book:</u> Sea Salt pp. 32-37 <u>Aims Earth Book:</u> The Water Scale pp 38-44</p> <p>Technology: Vernier CBL Labs #24 Yeast Beasts in Action</p>
<p>8.11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to:</p> <p>8.11C explore how short- and long-term environmental changes affect organisms and traits in subsequent populations</p>	<p>Including: ---Point vs Non-Point Source Pollution Environmental problems such as:</p> <ul style="list-style-type: none"> • Oil spills • Midnight dumping • Sludge dumping • Medical waste • Fertilizer Runoff <p>Environmental solutions: ---Laws ---Reduce/reuse/recycle ---Reclamation projects ---Water treatment & disease reduction</p> <p><u>Teacher Notes:</u> Changes in environmental conditions can affect the survival of individual organisms and entire species. (Source: Benchmarks) Most species that have lived on the earth are now extinct. Extinction of species occurs when the environment</p>	<p>Textbook: pp 259-263, 264-267</p> <p>Activities: Human Impact on the Environment Chart (duplicated in Bundle #12) Human Impact on the Earth Power point (duplicated in Bundle #12) Water Pollution: All Messed Up (duplicated in Bundle #12) Fisheries Activity (folder) UnPolluted Water-Holt Lab Book</p> <p>PreAP: Lesson has also been duplicated in Bundle #12 Inquiry Lesson on Exxon Valdez Spill (folder)</p>

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	<p>changes and the individual organisms of that species do not have the traits necessary to survive and reproduce in the changed environment. (Source: Benchmarks)</p> <p>Plan to review 7.8C, model the effects of human activity on groundwater and surface water in a watershed.</p>	
<p>8.11 Organisms and environments. The student knows that interdependence occurs among living systems and the environment and that human activities can affect these systems. The student is expected to:</p> <p>8.11D recognize human dependence on ocean systems and explain how human activities such as runoff, artificial reefs, or use of resources have modified these systems</p>	<p>Such as: ---Water Cycle (Run off)</p> <p><u>Teacher Notes:</u> The wasteful or unnecessary use of natural resources can limit their availability for other purposes. Restoring depleted soil, forests, or fishing grounds can be difficult or costly. (Source: Benchmarks)</p> <p>Human activities, such as reducing the amount of forest cover, increasing the amount and variety of chemicals released into the atmosphere and intensive farming, have changed the earth's land, oceans, and atmosphere. Some of these changes have decreased the capacity of the environment to support some life forms. (Source: Benchmarks)</p>	<p>Textbook: pp 292-293 (water cycle)</p>
<p>8.2 The student uses scientific inquiry methods during laboratory and field investigations.</p> <p>8.2D construct tables and graphs, using repeated trials and means, to organize data and identify patterns</p>	<p>Including: ---graph interpretation and extrapolation ---predicting outcomes based on data tables ---bar graphs, line graphs, pie charts, data tables, oceanic topographic maps and determine which is best for each set of data</p> <p>Such as:</p> <ul style="list-style-type: none"> • Earth/water percentages • Freshwater vs. saltwater graphs 	<p>Science Graphing Pack -Sea Turtles Graph -Temperature Range for Fish Graph -Conserving Water Graph</p> <p>PreAP: LTF #34: How Wet is Our Planet? Earth/Life p. 626</p>
<p>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>8.3B use models to represent aspects of the natural world such as an atom, a molecule, space, or a geologic feature</p>	<p>Including: ---Distinguish between limitations and advantages of models</p> <p>Such as: --- Ocean floor models</p>	

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<p>8.3 The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists.</p> <p>8.3D relate the impact of research on scientific thought and society, including the history of science and contributions of scientists as related to the content</p>	<p>Such as: ---Jacques Cousteau, Fabian Cousteau, Robert Ballard, Harry Hess</p>	
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