

**Joliet Public Schools District 86**  
**Grade 8 Science Curriculum**

Unit Title	NGSS Standards	Unit Overview
<p><u>Life Affects Life</u></p> <p>Trimester 1</p> <p>~ 5 weeks</p>	<ul style="list-style-type: none"> <li>● <b>MS-LS2-4.</b> Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.</li> <li>● <b>MS-LS4-5.</b> Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</li> <li>● <b>MS-LS4-6.</b> Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</li> <li>● <b>MS-ESS3-5.</b> Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</li> </ul>	<p>The unit addresses the question “How can people influence other organisms?” It organizes performance expectations with a focus on helping students build understanding of ways that humans have influenced organisms both directly (through artificial selection) and indirectly (by affecting their environments).</p> <p>Students will be able to demonstrate how organisms respond to environmental changes and what happens if they are unable to adapt. Students will identify how humans influence certain characteristics of organisms.</p>
<p><u>Life Affects Earth</u></p> <p>Trimester 2</p> <p>~ 6 weeks</p>	<ul style="list-style-type: none"> <li>● <b>MS-LS2-5.</b> Evaluate competing design solutions for maintaining biodiversity and ecosystem services.</li> <li>● <b>MS-ESS3-3.</b> Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</li> <li>● <b>MS-ESS3-4.</b> Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth’s systems.</li> <li>● <b>MS-ETS1-1.</b> Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</li> <li>● <b>MS-ETS1-2.</b> Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</li> </ul>	<p>The unit addresses the question “How can people influence Earth?” It organizes performance expectations with a focus on helping students build understanding of engineering solutions related to human effects on their environment.</p> <p>Students will demonstrate how changes to Earth’s environments can have negative and positive impacts for different living things.</p>
<p><u>The Earth Affects Life</u></p> <p>Trimester 3</p> <p>~ 6 weeks</p>	<ul style="list-style-type: none"> <li>● <b>MS-LS4-1.</b> Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past.</li> <li>● <b>MS-LS4-2.</b> Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships.</li> <li>● <b>MS-LS4-3.</b> Analyze displays of pictorial data to compare patterns of similarities in the embryological development across multiple species to identify relationships not evident in the fully formed anatomy.</li> <li>● <b>MS-LS4-4.</b> Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals’ probability of surviving and reproducing in a specific environment.</li> <li>● <b>MS-LS4-6.</b> Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time.</li> <li>● <b>MS-ESS1-4.</b> Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history.</li> <li>● <b>MS-ESS2-5.</b> Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.</li> </ul>	<p>The unit addresses the question “How have Earth processes changed populations of organisms?” It organizes performance expectations with a focus on helping students begin to understand how populations change in response to environmental factors.</p> <p>Students will be able to identify similarities and differences in organisms by observing fossils and embryological development. Students will be able to demonstrate how environmental conditions have changed over time and are affected by weather and climate, which are in turn influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things.</p>