

**4<sup>th</sup> Grade Mystery Science Strand 4.1**  
**Organisms Functioning in their Environment**  
**Lesson Alignment and Support Part 2**  
**Salt Lake City School District 2021-2022**

**Mystery Science Lesson Rationale:**

Mystery Science Lessons seek to promote engagement and inspire excellence in students' mastery of science and engineering. The lessons support our vision and mission of equity and access in elementary science. The sequence of Mystery Science lessons below support fourth grade students' sense-making with respect to Organisms Functioning in their Environment using three-dimensional instruction. The sequenced Mystery Science Lessons support fourth grade teachers in implementing the new Utah SEEd Standards about organisms identified specifically in the district Pacing Guide. Lessons include a video focused on an organism-based phenomenon, a hands-on activity, and an assessment. The lessons are designed to take students approximately 60 minutes to complete. Most lessons use minimal materials, such as paper printouts and pencils. Additionally, most paper printouts can be downloaded individually from the Mystery Science Lessons websites in the form of an editable document that can be assigned through Canvas. Some lessons suggest markers, group work, or demonstrations. Teachers can make easy modifications to these lessons based on students' and teachers' resources.

Print this [Mystery Science PDF Booklet](#) for students to use to complete the lesson series below! Or you can print individual lesson materials for students by following the links in the Materials per Student and Assessments.

**Strand 4.1: Organisms Functioning in their Environment** Through the study of organisms, inferences can be made about environments both past and present. Plants and animals have both internal and external structures that serve various functions for growth, survival, behavior, and reproduction. Animals use different sense receptors specialized for particular kinds of information to understand and respond to their environment. Some kinds of plants and animals that once lived on Earth can no longer be found. However, fossils from these organisms provide evidence about the types of organisms that lived long ago and the nature of their environments. Additionally, the presence and location of certain fossil types indicate changes that have occurred in environments over time.

**Standard 4.1.3: Analyze and interpret data** from fossils to provide evidence of the stability and change in organisms and environments from long ago. Emphasize using the structures of the fossils to make inferences about ancient organisms. Examples of fossils and environments could include comparing a trilobite with a horseshoe crab in an ocean environment or using a fossil footprint to determine the size of the dinosaur. (LS4.A)

**Standard 4.1.4: Engage in argument from evidence** based on patterns in rock layers and fossils found in those layers to support an explanation that environments have changed over time. Emphasize the relationship between fossils and past environments. Examples could include tropical plant fossils found in Arctic areas and rock layers with marine shell fossils found above rock layers with land plant fossils. (ESS1.C)

<b>Mystery Science Lesson</b>	<b>Suggested Date and SEEd Alignment</b>	<b>Materials and Assessments</b>	<b>Remote Learning Modifications</b>
<p><b>Anchor Phenomenon Lesson</b>  <a href="#">Watery Cave</a></p> <p>The anchor phenomenon for this unit is a water-filled cave that contains footprints, fossils, and</p>	<p><b>October 11</b></p> <p>SEEd Standard 4.1.3</p> <p><b>Teacher note:</b> Make sure to turn on the Mystery Science anchoring</p>	<p><b>Materials per student:</b>  <a href="#">See-Think-Wonder</a> worksheet  <a href="#">Watery Cave Worksheet</a></p> <p><b>Extension:</b> <a href="#">Connect content to the Fossils at Bears Ears in Southwest Utah</a></p>	<p><b>Ready to Teach In the classroom</b></p> <ul style="list-style-type: none"> <li>● Have students do the activity solo.</li> <li>● No supply adjustments.</li> </ul> <p><b>Online students</b></p> <ul style="list-style-type: none"> <li>● Send each student home with handouts</li> </ul>

<p>ancient fire pits. How can these things be found deep underwater?</p>	<p>phenomenon in the <a href="#">Animals through time unit</a></p> <p><a href="#">Teacher Guide</a></p> <p><a href="#">Mystery Science Handouts Pdf</a></p>	<p><b>Extension:</b> <a href="#">Why do we have eyebrows? Mini-Lesson</a></p>	<p>to complete the task.</p>
<p><b>Lesson 1:</b> <a href="#">Where can you find whales in a desert?</a></p> <p>In this Mystery, students explore the idea that the rock under our feet sometimes contains fossils and investigate how these fossils reveal changes in habitat through time. In the activity, Fossil Dig, students use paper to create a model fossil dig. They identify traits of fossils to determine what the habitat looked like when these organisms were alive. Then they use this information to figure out where some Mystery Fossils belong in their fossil dig.</p>	<p><b>October 18</b></p> <p>SEEd Standard 4.1.3</p> <p><b>Disciplinary Core Ideas:</b> LS4.A Biological Evolution</p> <p><b>Science and Engineering Practice:</b> analyze and interpret data</p> <p><b>Crosscutting Concept:</b> stability and change</p>	<p><b>Materials per Student:</b>  <a href="#">Fossil Dig</a> printout  <a href="#">Fossil Dig Answer Key</a> worksheet  <a href="#">Fossil Dig Questions</a> worksheet  <a href="#">Mystery Fossils</a> printout            Glue sticks            Scissors            Dot stickers</p> <p><b>Extension:</b> <a href="#">Why do zebras have stripes? Mini-Lesson</a></p> <p><b>Literature connection</b>  <a href="#">Newsela articles for Mystery 1</a></p> <p><b>Assessment:</b>  <a href="#">Mystery 1 assessment</a></p> <p><a href="#">Answer Key</a></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Anchor Phenomenon</b>  <a href="#">Lesson link</a></p> <p><b>Materials per student:</b>  <a href="#">See-Think-Wonder</a> worksheet  <a href="#">Watery Cave Worksheet</a></p> </div>	<p><b>Ready to Teach</b></p> <p><i>In the classroom</i></p> <ul style="list-style-type: none"> <li>● Have students do the activity solo.</li> <li>● No supply adjustments.</li> </ul> <p><i>Online students</i></p> <ul style="list-style-type: none"> <li>● Send each student home with 3 stickers, the Fossil Dig template, and the Mystery Fossils template (digital copies will not work).</li> <li>● Students will also need a printed or digital version of the Fossil Dig Questions.</li> </ul>
<p><b>Lesson 2:</b> <a href="#">How do we know what dinosaurs looked like?</a></p> <p>In this Mystery, students will learn how we can infer what the outside of an animal looked like by using clues about their</p>	<p><b>October 25</b></p> <p>SEEd Standard 4.1.3</p> <p><b>Disciplinary Core Ideas:</b> LS4.A Biological Evolution</p> <p><b>Science and Engineering Practice:</b> analyze and interpret data</p>	<p><b>Materials per Student:</b>  <a href="#">What Do These Animals Eat?</a> worksheet  <a href="#">What Do These Animals Eat? Answer Key</a> worksheet</p> <p><b>Extension:</b> <a href="#">Could a turtle live outside of its shell? Mini-Lesson</a></p> <p><b>Literature connection</b>  <a href="#">Newsela articles for Mystery 2</a></p>	<p><b>Ready to Teach</b></p> <p><i>In the classroom</i></p> <ul style="list-style-type: none"> <li>● Have students do the activity solo.</li> <li>● No supply adjustments.</li> </ul> <p><i>Online students</i></p> <ul style="list-style-type: none"> <li>● Have students do the activity at home.</li> <li>● Send each student home with a copy of the What Do These Animals Eat printout</li> </ul>

<p>skeleton. In the visual activity, Guess What These Animals Eat, students examine photos of skulls of both familiar animals and dinosaurs to figure out what each animal eats.</p>	<p><b>Crosscutting Concept:</b> structure and function</p>	<p><b>Assessment:</b>  <a href="#">Mystery 2 assessment</a>  <a href="#">Answer Key</a></p> <div style="border: 1px solid black; padding: 5px;"> <p><b>Anchor Phenomenon</b>  <a href="#">Lesson link</a></p> <p><b>Materials per student:</b>  <a href="#">See-Think-Wonder</a> worksheet  <a href="#">Watery Cave Worksheet</a></p> </div>	<p>(or assign the digital version).</p>
<p><b>Lesson 3:</b> <a href="#">Can you outrun a dinosaur?</a></p> <p>In this Mystery, students will learn about how fossil dinosaur tracks reveal how quickly a dinosaur was running. In the activity, Outrunning CeeLo, students figure out if they could have won a race with a dinosaur that was just their size. To determine the winner, students will compare the length of their running steps with the dinosaur’s steps.</p>	<p><b>November 1</b></p> <p>SEEd Standard 4.1.3</p> <p><b>Disciplinary Core Ideas:</b> LS4.A Biological Evolution</p> <p><b>Science and Engineering Practice:</b> Using mathematics and computational thinking</p> <p><b>Crosscutting Concept:</b> Patterns</p>	<p><b>Materials per Student:</b>  <a href="#">Dinosaur Footprints (inches)</a> printout  <a href="#">Here</a> is the printout in centimeters.  <a href="#">Run for your life!</a> worksheet  <a href="#">Here</a> is the printout in centimeters.  Pen or sharpie  Rulers  Yardstick or meterstick  Masking tape  Post its (3”)  String</p> <p><b>Literature connection</b>  <a href="#">Newsela articles for Mystery 3</a></p> <p><b>Assessment:</b>  <a href="#">Mystery 3 assessment</a>  <a href="#">Answer Key</a></p> <div style="border: 1px solid black; padding: 5px;"> <p><b>Anchor Phenomenon</b>  <a href="#">Lesson link</a></p> <p><b>Materials per student:</b>  <a href="#">See-Think-Wonder</a> worksheet  <a href="#">Watery Cave Worksheet</a></p> </div>	<p><b>Substitute Activity</b>  <i>In the classroom</i></p> <ul style="list-style-type: none"> <li>• Have students do the activity solo.</li> <li>• No supply adjustments.</li> </ul> <p><i>Online students</i></p> <ul style="list-style-type: none"> <li>• Try this activity from the American Museum of Natural History called <a href="#">Be a Sleuth: How Dinosaurs Behaved</a>.</li> <li>• Students work as “dinosaur detectives” to examine fossil footprints for clues about dinosaur behavior. (For a PDF version, click the How Dinosaurs Behaved link below the text)</li> </ul>

<p><b>Performance task:</b> <a href="#">How are you a part of the watery cave's story?</a></p> <p>In this performance task, students will apply what they have learned about the watery cave in a writing task. You have the choice of having students write a narrative text, an informational text, or an opinion text.</p>	<p><b>November 8</b></p> <p>SEEd Standard 4.1.4</p> <p><b>Disciplinary Core Ideas:</b> LS4.A Biological Evolution</p> <p><b>Science and Engineering Practice:</b> Obtaining, Evaluating, and communicating information</p> <p><b>Crosscutting Concept:</b> stability and change</p>	<p><b>Materials per Student:</b> <a href="#">My Watery Cave Story (Narrative text option)</a> worksheet <a href="#">Watery Cave Tours (Informational text option)</a> worksheet <a href="#">What do you think? (Opinion text option)</a> worksheet</p> <p><b>Assessment:</b> <a href="#">End of Unit Assessment</a></p> <p><a href="#">Answer Key</a></p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>RISE Benchmark 4.1.3</b> As SLCS D Interim November 8-12</p> </div>	<p><b>Ready to Teach</b></p> <p><i>In the classroom</i></p> <ul style="list-style-type: none"> <li>● Have students do the activity solo.</li> <li>● No supply adjustments.</li> </ul> <p><i>Online students</i></p> <ul style="list-style-type: none"> <li>● Send each student home with handouts to complete the task.</li> </ul>
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