# Grade 7 Environmental Science – Diversity Of Life

<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
<th>Tech Strategies/Materials/Resources</th>
<th>Modifications</th>
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<td>September</td>
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<td>1. What is Life?</td>
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<td>2. What is the definition of a living thing?</td>
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<td>1. What evidence can you look for to tell if something is living?</td>
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<td>2. What is the definition of a living thing?</td>
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<td>3. What makes something nonliving?</td>
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<td>4. What defines an organism?</td>
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<td>5. How does the environment affect organisms?</td>
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<td>6. What is the difference between dead and dormant?</td>
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**What is Life?**

1. Sort objects and organisms into living and non-living groups.
2. Define organism.
3. List the common characteristics exhibited by all living organisms.
4. Differentiate the concepts of living, non-living, dead, and dormant.

**What is Life?**

**Formative Assessments**
- TO (Teacher Observation):
  Informal notes should be taken on student progress throughout the investigation.
- QW (Quickwrite):
  What defines a Living Thing? (FOSS)
- TO: Investigation - "Is Anything Alive in Here?" - assess students' ability to set up their investigation (FOSS)
- RQ (Reading w/ questions): pg. 21 "Life on Earth" reading and questions (FOSS)

**Summative Assessments**
- Mid-summative Exam 1 (FOSS)
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
<th>Tech Strategies/Materials/Resources</th>
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| UNIT CONTENT | **Introduction to the Microscope**  
1. How do you use a microscope to make observations of microorganisms? | **Introduction to the Microscope**  
1. Identify and describe the function of the parts of a microscope.  
2. Define focal plane.  
3. Calculate optical power.  
4. Estimate the size of objects seen within the field of view.  
5. Demonstrate proper usage of the microscope when studying layers in a sample. | **Introduction to the Microscope**  
**Formative Assessments**  
- TO (Teacher Observation):  
  Informal notes should be taken on student progress throughout the investigation.  
- SS (Student Sheet):  
  Microscope Images (FOSS)  
- SS: Focal Plane (FOSS)  
- TO: Microscope Use  
- TO: Size Estimates | **Part 1**  
- Multimedia: Carrying Microscopes (FOSS)  
- Lab Notebook: "Microscope Care and Use" (FOSS)  
- Microscope Kits (FOSS)  
- Newspaper pictures (outside source)  
- Multimedia: Diversity of Life CD-ROM - "Virtual Microscope - Image Behavior" (FOSS)  
- Lab Notebook: "Microscope Images" (FOSS) | **Part 2**  
- Lab Notebook: "Field of View and Magnification" (FOSS)  
  - netting  
- Lab Notebook: "Focal..." (FOSS) |
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<td>2. Differentiate Paramecia</td>
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<td>microscope observation.</td>
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<td>3. Observe structures and</td>
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<td>behaviors of single-celled</td>
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<td>4. Describe the difference</td>
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**Microscopic Life**

**Part 1**

- Lab Notebook: "Looking at Elodea" (FOSS)
  - Elodea
- Multimedia: Diversity of Life CD-ROM - "Cytoplasmic Streaming" (FOSS)

**Part 2**

- Multimedia: "Lab Techniques - Paramecium Wet Mount" (FOSS)

**Microscopic Life**

**Formative Assessments**

- RS (Response Sheet): Microscopic Life (FOSS)
- RS: Self-Assess Response Sheet (FOSS)
- RQ (Reading w/questions): "The Lowly Paramecium" reading and questions (FOSS)

**Summative Assessments**

- Rubrics: Microscopic Life (FOSS)
- RS: Self-Assess Response Sheet (FOSS)
- RQ (Reading w/questions): "The Lowly Paramecium" reading and questions (FOSS)

- Multimedia: "Virtual Microscope - Focal Plane" (FOSS)
  - ribbons
- "Characteristics of Life" display (FOSS)
- Lab Notebook: "Brine Shrimp Alive" (FOSS)
  - brine shrimp
  - yeast
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
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<th>Modifications</th>
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<td>- Lab Notebook: &quot;Paramecia&quot; (FOSS)</td>
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<td>- Multimedia: Diversity of Life CD-ROM - &quot;Images of Paramecia&quot; (FOSS)</td>
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<td>- Lab Notebook: &quot;Feeding Time&quot; (FOSS)</td>
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<td>- Lab Notebook: &quot;Response Sheet - Microscopic Life&quot; (FOSS)</td>
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<td>- Resource Book: &quot;The Lowly Paramecium&quot; reading and questions (FOSS)</td>
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Part 3

- Multimedia: Diversity of Life CD-ROM - images of Amoeba, Euglena, & Flagellates (FOSS)
- Lab Notebook: "Amoeba" (FOSS)
- Lab Notebook: "Euglena" (FOSS)
- Lab Notebook: "Flagellates" (FOSS)
# Grade 7 Environmental Science
## Hershey Middle School

<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
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<td>The Cell</td>
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<td>1. What are the defining characteristics and structures that determine the different cell types?</td>
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<td>2. Is life aquatic at the cellular level?</td>
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<td>1. Prepare a wet mount slide to observe cheek scrapings.</td>
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<td>2. Compare and contrast prokaryotic and eukaryotic cells.</td>
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<td>3. List and define the defining characteristics of cells.</td>
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<td>4. Explain why all life is aquatic at the cellular level.</td>
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<td>• Multimedia: Diversity of Life CD-ROM - database images of cheek cells (FOSS)</td>
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<tr>
<th>Seeds of Life</th>
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<tbody>
<tr>
<td>1. What are the parts of a seed?</td>
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<td>2. How would you explain the sequence of development as a seed germinates into a plant?</td>
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<td>SS: Roots and Shoots (FOSS)</td>
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<td>Student Quickwrites &quot;What Defines a Living Thing?&quot; from the Unit: &quot;What is Life?&quot; (teacher)</td>
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<td>Living / Nonliving Display (teacher)</td>
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<td>Lima Beans, pot, and potting soil (outside source)</td>
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<td>parts of a plant root.</td>
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<td>6. Discuss the development and function of roots.</td>
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<td>1. Does water move through a plant?</td>
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<td><strong>Transpiration</strong></td>
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<td>1. Design an experiment to determine what happens to water in a celery stalk.</td>
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<td>2. Discuss the function of roots, xylem, and stomates in the movement of water through a plant.</td>
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<td>3. Explain how stomates</td>
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<td><strong>Transpiration</strong></td>
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<td><strong>Formative Assessments</strong></td>
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<td>- SS (Student Sheet): celery investigation plan (FOSS)</td>
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<td>- SS: celery investigation results (FOSS)</td>
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<td>- SS: leaf and stem</td>
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<td><strong>Part 1</strong></td>
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<td>- celery demo (teacher)</td>
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<td>- transparency: &quot;materials for the celery investigation&quot; (teacher)</td>
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<td>- lab notebook: &quot;celery-investigation plan&quot;</td>
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- Multimedia: Diversity of Life CD-ROM - images from the database "Collection - Roots" (FOSS)
- Student Response Sheets from Part 2 (teacher)
- Teacher Guide: Mid-Summative Exam 5 (FOSS)

- FOSS Diversity of Life Kit
- FOSS Diversity of Life Resource Book
- FOSS Diversity of Life Lab Notebook
- FOSS Diversity of Life Multimedia CD-ROM
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
<th>Tech Strategies/Materials/Resources</th>
<th>Modifications</th>
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</thead>
</table>
|       | open and close to regulate the rate of transpiration. | Observations (FOSS) | • SJ (Student Journal): Metaphor Story (FOSS)  
• RQ (Reading w/ questions) Resource Book: pg 35 "Stem and Leaves" reading and questions (FOSS) | • celery (outside source)  
• scale (teacher)  
• red dye (teacher) |   |
|       | 4. Cover the foliage of a plant with a plastic bag to observe condensation - evidence of transpiration. | Summative Assessments | • Mid-Summative Exam 6 |   |   |
|       | 5. Describe transpiration as a component of the water cycle. |   |   |   |   |
|       |   |   |   | • Lab Notebook: "Celery-Investigation Results" (FOSS)  
• Transparency: "Celery-Investigation Results" (teacher) |   |
|       |   |   |   | • Microscopes  
• Microscope Kits (FOSS)  
• Lab Notebook: "Leaf and Stem Observations" (FOSS)  
• Multimedia: Diversity of Life CD-ROM - images from the database "Collection - Stomates" (FOSS) |   |
|       |   |   |   |   | Part 3 |
|       |   |   |   |   | • prepare clear bags, string, and scale for Transpiration Activity (teacher)  
• choose plants |   |
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
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<td><strong>Plant Reproduction</strong></td>
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<td></td>
<td>1. What is the function of a flower in the process of pollination?</td>
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<td>2. What is the function of a flower in the process of reproduction?</td>
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<td><strong>Plant Reproduction</strong></td>
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<td>1. Dissect and mount the structures of a simple flower.</td>
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<td>2. Identify sepals, petals, stamens, and pistils as the major structures of typical flowers.</td>
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<td>3. Explain the function of</td>
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<td><strong>Plant Reproduction</strong></td>
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<td>Formative Assessments</td>
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<td>• RS (Response Sheet): Plant Reproduction (FOSS)</td>
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<td>• RS: Student Self-Assessment (FOSS)</td>
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<td>• prepare flowers for</td>
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<tr>
<td></td>
<td>Flower Dissection</td>
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<td></td>
<td>• Lab Notebook: &quot;Flower Dissection&quot; (FOSS)</td>
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*NOTE: weather dependent!*

- Resource Book: pg. 35 "Stem and Leaves" reading and questions (FOSS)
- Teacher Guide: Mid-Summative Exam 6
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<th>Content and Essential Questions</th>
<th>Skills</th>
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<td></td>
<td>flowers in the process of pollination.</td>
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<td>Mid-Summative Exam 7</td>
<td>• Resource Book: pg. 40 &quot;Flowers to Seeds&quot; reading and questions (FOSS)</td>
<td>Paet 2</td>
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<tr>
<td></td>
<td>4. Explain the function of flowers in the process of plant reproduction.</td>
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<td>• Multimedia: Diversity of Life CD-ROM - database collection of flowers and pollinators - the Pollinator Game (FOSS)</td>
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<td>5. Examine the variety of seeds to discover their dispersal methods.</td>
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<td>• Lab Notebook: &quot;Response Sheet - Plant Reproduction&quot; (FOSS)</td>
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<td>6. Describe the production of seeds in terms of sexual reproduction.</td>
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Part 2

- Multimedia: Diversity of Life CD-ROM" - Seed Dispersal - Collection - Seeds in the database (FOSS)
- Resource Book: pg. 46 "Seeds on the Move" reading and questions (FOSS)
- Student Response Sheets "Plant Reproduction" (teacher)
- Teacher Guide: Mid-Summative Exam 7
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
<th>Assessment</th>
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<tr>
<td>January</td>
<td><strong>UNIT ESSENTIAL QUESTION</strong></td>
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<td>1. What is Life?</td>
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<td><strong>UNIT CONTENT</strong></td>
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<td><strong>Roaches</strong></td>
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<tr>
<td></td>
<td>1. What factors are necessary to create a suitable habitat for an organism?</td>
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<td>2. What characteristics classify an organism as an insect?</td>
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<td>3. How do the structural and behavioral adaptations of Hissing Cockroaches help them to survive?</td>
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<td><strong>Roaches</strong></td>
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<td>1. Diagram and label the identifying characteristics of an insect.</td>
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<td></td>
<td>2. Define adaptation.</td>
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<td>3. Observe hissing cockroaches to identify several behavioral and structural adaptations.</td>
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<td>4. Make inferences about the habitat of hissing cockroaches and other insects based on observing their color, body shape, mouthparts, wings/lack of wings, response to stimuli, and speed of movement.</td>
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<td><strong>Roaches</strong></td>
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<td>Formative Assessments</td>
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<td>• TO (Teacher Observation): Detailed Observations</td>
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<td>• SS (Students Sheet): Roach Investigation Plan (FOSS)</td>
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<td>• SS: Roach Investigation Results (FOSS)</td>
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<td>• SS: Insect Mysteries (FOSS)</td>
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<td>Summative Assessments</td>
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<td>• Mid-Summative Exam 9 (FOSS)</td>
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<td>• prepare Cockroaches</td>
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<td>• Resource Book: pg. 55 &quot;The Insect Empire&quot; reading (FOSS)</td>
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<td>• Lab Notebook: &quot;Insect Adaptations&quot; (FOSS)</td>
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<td>• Transparencies: &quot;Dragonfly&quot;, &quot;Grasshopper and Mantis&quot;, and &quot;Insect Mouthparts&quot; (FOSS)</td>
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<td>• Multimedia: Diversity of Life CD-ROM - insect and insect adaptation images (FOSS)</td>
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<td>• Lab Notebook: &quot;Cockroaches&quot; (FOSS)</td>
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<td>• Cockroaches</td>
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<td>• Transparency:</td>
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</table>
### Kingdoms of Life

1. Where can bacteria and fungi be found?
2. How are microbes helpful and harmful?

### Kingdoms of Life

1. Define microbe.
2. Observe the growth of bacteria and fungi.
3. Calculate the reproductive potential of bacteria.
4. Describe the role of

### Formative Assessments

- TO: Inoculation Procedures
- SS: Observing Bacteria (FOSS)
- SS: Observing Fungi (FOSS)
- SS: Unknown World

---

### Part 3

Lab Notebook: "Insect Mysteries" (FOSS)
Teacher Guide: Mid-Summative Assessment 9 (FOSS)
<table>
<thead>
<tr>
<th>Month</th>
<th>Content and Essential Questions</th>
<th>Skills</th>
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<th>Tech Strategies/Materials/Resources</th>
<th>Modifications</th>
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<td></td>
<td>microorganisms in transforming foods and recycling nutrients through decomposition.</td>
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<td>Summative Assessments</td>
<td>• Transparency: &quot;What I think I know about fungi&quot; (teacher)</td>
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<td>• Mid-Summative Exam 10 (FOSS)</td>
<td>• Lab Notebook: &quot;Bacteria and Mold Testing&quot; (FOSS)</td>
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<td>• prepare food samples (outside source)</td>
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