

# **Animals and Habitats**

**3<sup>rd</sup> Grade Problem Solving/Data Gathering Unit**

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**TEED 521**

**March 12, 2003**

## Content and Context

### *Central Thematic Questions*

The central question that will guide this unit is the following:

- What do animals need in order to survive?

### *Rationale/EALRs*

The content of this unit is part of an overall theme, animals, that encompasses the reading, writing, and science curriculum that will be taught in my student-teaching classroom during a three week time period. This integration between the three subject areas will enhance the students' learning experiences in all three. This unit also includes a service-learning component that is directly tied to the animals theme. The final project of the unit synthesizes the reading, writing, science, and service-learning aspects of the theme.

The purpose of this unit also includes meeting district educational goals. According to the district's curriculum framework, the critical science content in third grade should include the following: distinguishing living organisms from non-living objects; the structure and function of animals; the adaptation and survival of animals; the interdependence of plants and animals; and ecosystems and habitats. This unit provides opportunities for the students to examine each of these topics. The district guidelines also outline the processes and skills that third grade students should be developing. Many of the processes and skills used in this unit are in line with these guidelines, such as: analyze and interpret data from investigations; use oral, written, and mathematical expression in communicating results and conclusions; and work with others in scientific investigations.

Washington State's Essential Academic Learning Requirements (EALRs) are another component of the purpose and rationale for this unit. This unit includes several aspects of the science EALRs. The students will be working with scientific concepts and principles, such as the difference

between living and non-living things, how the parts of a system work together and depend on one another; and the components of living things (Science EALR 1). In addition, the students will be developing skills related to performing scientific inquiry in this unit (Science EALR 2). This unit will also give the students the opportunity to develop their ability to communicate ideas clearly and effectively (Communications EALR 2). Finally, the service-learning component of this unit will demonstrate the importance of working to make a difference in the community (Civics EALR 4).

### ***Moral and Ethical Considerations***

The content of this unit is an essential piece of a child's education. The information covered will act as a foundation for more in-depth scientific studies in the future. In addition, important social lessons are indirectly intertwined in this unit. For example, students will learn that all animals have a role to play in the environment. There is a clear connection between this insight and the importance of every component of the environment, including all people. This line of reasoning leads to the idea of treating each of those components with respect. While these ideas are not the central concept of this unit they will come through in the lessons.

Several of the attributes of a reflective teacher are also called into play in this unit. The students have the opportunity to experience one aspect of being socially responsible members of society through the service-learning component of the unit. Class discussions regarding the environment (for example, during the habitat and web of life activities) will also bring in concepts of social responsibility. An attribute related to reflective teaching that will be critical in teaching this unit is flexibility. Because I have never taught this unit, I will need to be flexible and adapt the lessons to follow the students' lead as we progress through the unit.

### ***The Learners***

The class this unit is designed for is made up of 26 students, 17 boys and 9 girls. There is one student of color in the class. The school is in a community comprised primarily of upper-middle and upper class professionals. In general the students' parents have very high expectations of their children and the school. Several of the parents volunteer their time to help in the classroom. This high degree of parent involvement provides a resource that could be very useful in carrying out many of the activities in this unit (for example, collecting materials for activities, setting up experiment stations, and chaperoning the field trip).

Of the 26 students in the class, none of the students are ELL. There are three students on IEPs for writing, occupational therapy, speech/language, and/or math. Another student receives special reading support. A fifth student is currently undergoing evaluation to receive special services related to difficulties with focusing and the process of writing. I have reviewed the three IEPs and discussed all five of these students with my cooperating teacher in order to gain a better understanding of how to accommodate these students throughout this unit. The necessary accommodations include providing extra help in reading, writing framework support, dictation services, large paper for writing activities, and assistance with problem solving. In addition, there is one student in the class who is in the highly capable program and several others who require additional challenges in their school work.

Although the class that this unit will initially be taught in is not very culturally diverse, the unit was created with cultural differences and gender equity in mind. In order to meet the needs of students of both genders and with various cultural backgrounds, ability levels, and learning styles, this unit includes a wide array of instructional techniques which address several different intelligences (for example, group and individual activities, art, writing, presentations, and class discussions). This variety will give all students the opportunity to succeed at the activities that involve their strengths, as well as challenge all students to improve their abilities through activities that do not include their

preferred learning style. There will also be optional extension projects available (such as, further experiments related to the slugs) that will provide valuable learning experiences for those students who call for additional challenges.

This unit is closely connected to the reading and writing units that will be taught during the same time period. The reading unit is a novel study focusing on *The Year of the Panda* by Miriam Schlein, a story about protecting the endangered panda. In the writing unit, each student will be writing a research report on the endangered animal of his or her choice. In addition, the class will be performing a service-learning project in which they will adopt an animal at the Cougar Mountain Zoo. Connections will be made to both the reading and writing units, as well as the service-learning project, throughout this unit. In addition, the students will be encouraged to share their own experiences and insights related to the unit content areas in order to create a link between the students' lives and the curriculum. This integration among subject areas and with the students' lives will create a more holistic and meaningful learning experience for the students.

### Learning Targets and Assessment

Learning Target	Related EALRs	Evidence of Achievement
1. The students will be able to differentiate between living and non-living things. ( <i>Skill</i> )	<ul style="list-style-type: none"> <li>• Science 1.1: use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things</li> </ul>	<ul style="list-style-type: none"> <li>• The students will draw examples of living things on one half of a piece of paper and non-living things on the other half. The students will also write the generalizations for distinguishing living things from non-living things on the corresponding side of the paper.</li> </ul>
2. The students will be able to identify the components of a habitat. ( <i>Skill</i> )	<ul style="list-style-type: none"> <li>• Science 1.2: recognize the components, structure, and organization of systems and the interconnections within and among them</li> </ul>	<ul style="list-style-type: none"> <li>• The students will actively participate in the Habitat Lap Sit, Web of Life, and Hooks and Ladders activities, as well as the related class discussions.</li> </ul>

		<ul style="list-style-type: none"> <li>• Each student will draw a web of life for their choice of habitat and label each component of the web.</li> <li>• Each student will write a journal entry from the perspective of a salmon that includes a description of the salmon life cycle and the limiting factors salmon face.</li> <li>• Each student will create a bookmark featuring the animal he or she wrote a report about. The bookmark will include information about the animal's habitat.</li> </ul>
<p>3. The students will understand the interdependence of animals and plants. <i>(Concept)</i></p>	<ul style="list-style-type: none"> <li>• Science 1.3: understand how interactions within and among systems cause changes in matter and energy</li> </ul>	<ul style="list-style-type: none"> <li>• The students will actively participate in the Habitat Lap Sit, Web of Life, and Hooks and Ladders activities, as well as the related class discussions.</li> <li>• Each student will draw a web of life for their choice of habitat and label each component of the web.</li> <li>• Each student will write a journal entry from the perspective of a salmon that includes a description of the salmon life cycle and the limiting factors salmon face.</li> <li>• The students will complete page 15 of the slug manual (see page 51) regarding food chains.</li> <li>• Each student will create a bookmark featuring the animal he or she wrote a report about. The bookmark will include examples of other organisms that affect or are affected by the featured animal.</li> </ul>

<p>4. The students will understand that animals adapt to their environment. (<i>Concept</i>)</p>	<ul style="list-style-type: none"> <li>• Science 1.2: recognize the components, structure, and organization of systems and the interconnections within and among them</li> </ul>	<ul style="list-style-type: none"> <li>• The students will complete the “Bird Bills” worksheet (see page 37).</li> <li>• Each student will draw pictures and write descriptions of three different creatures of their own creation that can survive in three different environments.</li> <li>• Each student will make a moth that has adapted to blend into a surface in the classroom in order to survive. (Hide-a-Moth activity)</li> <li>• Each student will create a bookmark featuring the animal he or she wrote a report about. The bookmark will include information about the animal’s adaptations.</li> </ul>
<p>5. The students will be able to identify adaptations and defense mechanisms of various animals. (<i>Skill</i>)</p>	<ul style="list-style-type: none"> <li>• Science 1.2: recognize the components, structure, and organization of systems and the interconnections within and among them</li> </ul>	<ul style="list-style-type: none"> <li>• The students will complete the “Animal Defense” word search (see page 34).</li> <li>• The students will act out the animal defense mechanism of their choice.</li> <li>• Each student will write a description of three possible animal defense mechanisms.</li> <li>• Each student will make a moth that has adapted to blend into a surface in the classroom in order to survive. (Hide-a-Moth activity)</li> <li>• The students will complete page 11 of the slug manual (see page 47) regarding the slugs’ defense mechanisms.</li> <li>• Each student will create a bookmark featuring the animal he or she wrote a report about. The bookmark will include</li> </ul>

		information about the animal's defense mechanisms.
6.The students will begin to understand the process of scientific inquiry. <i>(Concept)</i>	<ul style="list-style-type: none"> <li>• Science 2.1: develop the abilities necessary to do scientific inquiry</li> </ul>	<ul style="list-style-type: none"> <li>• The students will ask questions, make observations, record results, and draw conclusions while performing experiments using slugs.</li> </ul>
7.The students will have a greater understanding of the banana slug's place in nature and its physical characteristics. <i>(Concept)</i>	<ul style="list-style-type: none"> <li>• Science 1.1: use properties to identify, describe, and categorize substances, materials, and objects, and use characteristics to categorize living things</li> <li>• Science 1.2: recognize the components, structure, and organization of systems and the interconnections within and among them</li> </ul>	<ul style="list-style-type: none"> <li>• The students will complete the activities in the slug manual (see pages 38-53).</li> <li>• The students will accurately perform experiments regarding the following questions: Do slugs prefer a dry or wet environment? What does it sound like when slugs eat? Does a slug's mucus change when it crosses different surfaces? Can a slug cling to an extremely narrow object?</li> </ul>
8.The students will be able to effectively communicate information to the teacher, peers, and parents. <i>(Skill)</i>	<ul style="list-style-type: none"> <li>• Communications 2.1: communicate clearly to a range of audiences for different purposes</li> <li>• Communications 2.3: use effective delivery</li> </ul>	<ul style="list-style-type: none"> <li>• Each student will make a presentation about an endangered animal at the Animal Information Fair.</li> </ul>
9.The students will value providing a service for the good of the community. <i>(Disposition)</i>	<ul style="list-style-type: none"> <li>• Civics 4.3.1a: describe how one person can make a difference in school or the local community</li> </ul>	<ul style="list-style-type: none"> <li>• Each student will reflect upon their experience in the animal adoption service-learning project by creating a little book. In their little books students will answer the following questions: How do you feel about what we did? Why did we perform this service? What difference did it make in our community?</li> </ul>

***Assessment Instruments/Communication***

- **Pre-assessment Instrument:** The students will complete a short survey to indicate their existing knowledge of animals and what they need in order to survive. (See survey on page 23.)
- **Self-assessment:** After the two days of slug experiment stations each student will assess his or her understanding and use of scientific inquiry skills. (See self-assessment on page 24.)
- **Post-assessment Rubric:** I will assess the animal bookmarks to evaluate each student's understanding of habitats, interdependence, adaptations, and animal defenses. (See rubric on page 25.)

Assessment information will be communicated to the students before beginning the activity to be assessed. In some cases we will have a class discussion to determine the characteristics of a quality product. For other projects, such as the story quilt, I will give the students a rubric that I have created which lays out the performance expectations.

The pre-assessment instrument will give me an indication of the students' level of background knowledge related to the unit content. This information will help determine how much background knowledge I will need to provide the students with or review before beginning the planned lessons of the unit. In the post-assessment activity the students will be demonstrating their understanding of the unit content as it relates to a specific animal through their own words and illustrations. Comparing students' performance on the pre-assessment with their performance on the post-assessment will provide physical evidence of student learning. This will also provide an indication of the overall effectiveness of my instructional strategies and reveal ways of improving the unit for future use.

## **Instruction**

### ***Lesson Outline***

Notes:

- The topics covered in this unit were determined based on the school district’s curriculum guidelines for science. While there is flexibility in how to teach the various topics, the district determines the critical content to be covered in each subject area and at each grade level.
- The students will each be writing a report about an endangered animal of their choice at the same time this unit is being taught. Throughout this unit I will ask the students to share information about the animals they are writing their reports about as it pertains to the lessons.
- The class will be performing a service-learning project in conjunction with this unit and the animal reports. As we progress through this unit I will use examples related to the animal the class is adopting. This will strengthen the connection between what the students are learning and the service they are going to perform.

Day 1	Living versus Non-living	Learning Target 1
<ul style="list-style-type: none"> <li>• Pre-assessment: Have the students complete the Student Survey (see page 23).</li> <li>• As a class, brainstorm examples of things that are living and things that are non-living. Use the lists to come up with characteristics of living things and characteristics of non-living things. The students will then formulate a “rule” or generalization about what it means to be living and what it means to be non-living.</li> <li>• Each student will divide a piece of paper in half and label one side “Living” and the other “Non-living.” The students will then draw examples of living and non-living things on the corresponding half of the paper. The students will also write the “rule” for each category on the appropriate half of the paper.</li> <li>• Ask student volunteers to share their examples of living and non-living things.</li> <li>• <i>For most of the students this lesson will serve as a review of information taught in previous grades. Students who have not been taught the characteristics of living and non-living things will have the opportunity to learn about them during this lesson. At the end of the lesson all of the students should have relatively equal knowledge about living and non-living things, which serves as the basis for what the class will be studying throughout the unit.</i></li> </ul>		

Day 2	Adopt-an-Animal (Service-Learning)	Learning Target 9
<ul style="list-style-type: none"> <li>• Ask the students what the terms “service” and “learning” mean. Write student responses on the board. Follow this with an explanation of what “service-learning” is and explain to the students that they will be doing a service-learning project related to their science and writing units about animals.</li> <li>• Ask the students to share what they know about the Cougar Mountain Zoo.</li> <li>• Give a PowerPoint presentation about the Cougar Mountain Zoo and the adopt-an-animal program. The presentation will include pictures and information about the specific animals at the zoo that are available for adoption.</li> </ul>		

- Explain to the students that they will be voting to decide which animal the class will adopt. Also give a preview of the bookmark project that they will be doing at the end of the unit to raise money to adopt the animal they choose. Ask the students to begin thinking about ideas for their bookmarks as they work on their animal reports and learn more about animals in this unit.
- Have books and pictures around the room featuring the animals available for adoption. Give the students time to go through these materials now and as they have time throughout the day so that they can make an informed decision about which animal they would like the class to adopt.
- *This lesson serves as a general introduction to the concept of service-learning, as well as to the specific service-learning project the students will be doing. Having the students look through information about the various animals at the zoo gives them the opportunity to learn about a variety of animals including the one the class chooses to adopt.*

Day 3	Habitats and Interdependence	Learning Targets 2 & 3
<ul style="list-style-type: none"> <li>• Pass out Animal Adoption ballots. Have the students vote for the animal they would like to adopt. Collect the ballots and inform the students that they will find out the results of the vote the next morning.</li> <li>• Have a class discussion regarding habitats. Guide the discussion to address the following questions: What is a habitat? What are the components of a habitat? During this discussion, introduce the terms habitat, ecosystem, and interdependence. Have the students write each of these vocabulary words in their science notebooks along with a brief definition and a picture or symbol that they associate with the word.</li> <li>• <i>Habitat Lap Sit:</i> In this activity the students form a circle in such a way as to demonstrate the interdependence of the components of a habitat. Each student will take on the role of water, food, shelter, or space. In the circle the students will have to physically support one another or the circle will fall apart. This demonstrates the interdependence of the various components of a habitat. During a second round of the lap sit remove one of the habitat components (for example, water) after the students are seated on each others' laps. The circle will fall apart.</li> <li>• Have a class discussion about how the habitat is impacted when something happens to one or more of its components. (For activity details see pages 26-27) (Western Regional Environmental Education Council, 1985))</li> <li>• Read aloud <i>The Salamander Room</i> by Anne Mazer.</li> <li>• <i>Through this lesson the students will gain a better understanding of what the components of a habitat are and how those components are interconnected. The students will apply this knowledge throughout the rest of this unit and in their studies of life science in the future.</i></li> </ul>		

Day 4	Habitats and Interdependence	Learning Targets 2 & 3
<ul style="list-style-type: none"> <li>• Announce the results of the class vote regarding which animal to adopt for the service-learning project.</li> <li>• Introduce the terms predator, prey, producer, consumer, endangered, and extinct. Have the students write each of these vocabulary words in their science notebooks along with a brief definition and a picture or symbol that they associate with the word.</li> <li>• <i>Web of Life:</i> Assign roles to the students by giving each student a card with the name of a plant or animal that is found in the forest written on it. Once every student has a role, have</li> </ul>		

the class form a circle. Give a ball of yarn to one of the students who is playing the role of a plant. Instruct the student to hold onto the end of the yarn, throw the ball of yarn to another student whose role is somehow connected to theirs, and say the connection between the two out loud (for example, an animal that would eat or find shelter in their plant). Instruct the students to throw the string to someone who is not yet connected to the web whenever possible. Continue making connections using the yarn until everyone is included in the web. Once everyone is connected, ask the students to choose one plant or animal that they think seems the least important. Have the person in that role and those who directly depend on that plant or animal drop the string. Once again, ask the students to decide which remaining plant or animal seems to be the least important and have the related students drop the string. Continue this a couple more rounds and then have a class discussion about what happens when we remove a link from the ecosystem, including the possibility of endangerment or extinction of a species. (This activity was adapted from the American Forest Foundation's *Project Learning Tree Environmental Education Activity Guide: Pre K-8*, 2002)

- The students will draw a web of life for their choice of habitat and label each component of the web. This will demonstrate their understanding of the interconnectedness of all components of a habitat.
- *This lesson will allow the students to physically create a representation of an ecosystem and determine the connections between the many components of that ecosystem. The students will also see that the components of an ecosystem depend on one another and that when something happens to one component the others are affected, which will encourage them to be more environmentally aware.*

Day 5	Habitats and Interdependence	Learning Targets 2 & 3
<ul style="list-style-type: none"> <li>• Ask the students what they know about salmon and their life cycle? Through this discussion introduce the terms life cycle, limiting factors, and migration. Have the students write each of these vocabulary words in their science notebooks along with a brief definition and a picture or symbol that they associate with the word. As the discussion progresses draw the salmon life cycle on the board.</li> <li>• <i>Hooks and Ladders:</i> In this simulation most of the students will take on the role of salmon and experience the stages of the salmon life cycle, including the limiting factors salmon face throughout their lives. The salmon life cycle is represented by an obstacle course in the simulation. On their journey downstream from the spawning ground the students must first get through a turning jump rope, which represents the turbines in a hydroelectric dam, and then avoid the students who are playing the role of predators, such as bears and eagles. If they make it downstream the students will then spend four years in the ocean, simulated by collecting a token each time they traverse the ocean area of the course. While in the ocean they must also avoid being caught by fishermen (played by two students). On the upstream journey the students climb a fish ladder, made up of the students who did not survive the downstream and ocean stages of the life cycle, and then do the broad jump to represent jumping up a waterfall. Finally, if students can avoid the students playing the role of predators above the waterfall they will have returned to their spawning ground successfully. Go through the simulation twice using different students for the non-salmon roles each time so that all students will get to experience the salmon life cycle. The students will also learn from the first round and make changes to their strategies in the second round. (For activity details see pages 28-33.) (Council for Environmental Education, 2002)</li> </ul>		

- Have a class discussion about the simulation. Ask the students what they learned and how they felt during the simulation. Review the salmon life cycle and the limiting factors salmon face.
- Have the students write a journal entry from the perspective of a salmon in their science notebooks. The journal entry should include a description of the salmon life cycle, some of the limiting factors salmon must overcome in order to survive, and the students' feelings about their experience as a salmon in the simulation. Ask for student volunteers to share their journal entry.
- *This lesson applies what the students have learned about habitats and interdependence in general to the examination of a specific animal, the salmon. The use of a simulation instructional strategy in this lesson will appeal to students who prefer to learn through kinesthetic activities. Physically going through this representation of the salmon life cycle, rather than simply talking about it, will increase student learning in many cases.*

Day 6	Adaptation and Survival	Learning Target 5
<ul style="list-style-type: none"> <li>• As a class, brainstorm a list of ways that animals defend themselves.</li> <li>• Students complete the “Animal Defense” word search in pairs (see page 34).</li> <li>• Individual or pairs of students choose an animal defense and act it out in front of the class (like charades). The rest of the class guesses what animal defense is being acted out.</li> <li>• Each student will write a brief description of three examples of ways that animals defend themselves. Ask for student volunteers to share one of their descriptions.</li> <li>• <i>This lesson serves as an introduction to the adaptation and survival element of the unit. The fun activities included in this lesson will spark the students' interest in animal adaptation and survival.</i></li> </ul>		

Day 7	Adaptation and Survival	Learning Target 4
<ul style="list-style-type: none"> <li>• Have a class discussion surrounding the following questions: What is adaptation? How do animals adapt? Have the students write “adaptation” (vocabulary word) in their science notebooks along with a brief definition and a picture or symbol that they associate with the word. Use an overhead of the “Animal Adaptations” worksheet (see page 35) to bring specific examples of adaptations into the discussion.</li> <li>• Complete the “Feathered Friends Feet” (see page 36) worksheet as a class.</li> <li>• Have students complete the “Bird Bills” (see page 37) worksheet in groups of two or three.</li> <li>• Each student will create three creatures that can survive in three different environments. The students will draw a picture of each of their creatures. On the bottom of the picture they will write the name of the environment that the creature lives in and describe the physical characteristics of the creature that are adapted to that environment. Student volunteers will share one of their creatures with the class.</li> <li>• <i>The previous lesson focused on one specific aspect of adaptations, animal defenses. This lesson provides the students with the bigger picture regarding animal adaptations. Creating their own creatures gives the students the opportunity to actually apply what they have learned about animal adaptations.</i></li> </ul>		

Day 8	Adaptation and Survival	Learning Targets 4 & 5
<ul style="list-style-type: none"> <li>• Briefly review what was learned about adaptation in the previous lesson.</li> <li>• Tell the students about the color adaptation of moths in England during the industrial</li> </ul>		

revolution (soot from factories made the countryside darker in color and the moths gradually became darker in order to blend in with their changing surroundings).

- *Hide-a-Moth:* Each student colors a paper moth cut-out to look like a surface in the classroom. The students “hide” their moths by taping them to the classroom surfaces they blend in with. “Hungry Bird” (the principal or another adult) comes into the classroom and finds as many moths as he or she can in one minute. End the activity with a class discussion about why certain moths were found and others were not. Discuss the characteristics of the moths that survived. (Marson, 1998)
- Have the students debrief by writing answers to the following questions: What about your moth worked well for this activity? What would you do differently if we did the activity again? Next have the students share their answers with a partner. Finally, ask for volunteers to share their responses with the whole class.
- *The Hide-a-moth activity allows the students to test their understanding of animal adaptation in a concrete context. This lesson acts as a synthesis tool for the adaptation and survival element of the unit.*

Day 9	In-Depth Study: Banana Slugs	Learning Target 7
<ul style="list-style-type: none"> <li>• Ask the students what they know about slugs and write their responses on the board. Ask the students what they would like to know about slugs and write those responses on the board as well. (Later transfer these lists onto a poster so the students can refer back to them as we progress through the slug study.)</li> <li>• Give each student a slug manual (see pages 38-53) (Benaltabe, 1999). Have each student put his or her name on the cover page. Read and complete pages 3 and 4 of the slug manual (see pages 39-40) together as a class. Bring clam, mussel, oyster, and snail shells (or at least pictures of them) for the students to refer to as they do these activities.</li> <li>• Have the students draw a family tree of their immediate family (first explain that family can include anyone and that family has a different meaning for different people). Ask for student volunteers to share their family tree.</li> <li>• Go over the mollusk family tree on page 5 of the manual (see page 41), emphasizing the terms mollusk and mollusca. Relate the mollusk family tree to the family trees the students drew.</li> <li>• Discuss the procedures on page 16 of the slug manual (see page 52) for collecting banana slugs and creating a habitat for them. Tell the students that we will be using real slugs throughout the unit and the more slugs we have to observe the better the lessons will be. Encourage students to find and bring in a banana slug.</li> <li>• <i>These activities give students a broad picture of how slugs are connected to creatures they may be more familiar with, such as clams or snails. Having students create their own family trees makes it easier for them to grasp the concept of animal families.</i></li> </ul>		

Day 10	In-Depth Study: Banana Slugs	Learning Target 7
<ul style="list-style-type: none"> <li>• Demonstrate how to hold a slug using a baggie as a glove. Review how to remove slime from skin as indicated on page 16 of the manual (see page 52).</li> <li>• Put students in groups of 4-5 and have them work together to complete pages 6, 7, and 13 of the manual (see pages 42, 43, and 49). Allow plenty of time for the students to observe real slugs to see the parts they are learning about in the manual.</li> <li>• Go over pages 6, 7, and 13 of the manual as a class. Discuss the students’ observations of</li> </ul>		

the real slugs.

- Read aloud *Slugs* by David Greenberg.
- *This lesson allows the students to become more familiar with the slugs in a guided hands-on way. This will serve as the basis for the other activities in the study of banana slugs.*

Day 11	In-Depth Study: Banana Slugs	Learning Targets 5 & 7
<ul style="list-style-type: none"> <li>• As a class, brainstorm a list of ways that different animals move (locomotion). Discuss how a slug moves using its foot and slime (mucus). Use page 8 in the slug manual (see page 44) to guide the discussion.</li> <li>• Working in pairs, have students look at a slug's foot and observe how it moves. The students will then perform the experiment described on pages 9 and 10 in the manual (see pages 45-46) to increase their understanding of why the slug uses slime to help it move. The students will first make a loop with masking tape with the sticky side out and stick it on their desk. Each student will slowly run their finger along the tape and describe how it feels. Each student will then dip their finger in Vaseline and run it along the tape again. Have the students write a description of how it felt with the Vaseline and relate that to slug's slime.</li> <li>• Have a class discussion about the defenses slugs use. Use page 11 of the manual (see page 47) to guide the discussion.</li> <li>• <i>The activities in this lesson will allow students to apply what they learned about animal adaptations and survival on days 6, 7, and 8 of this unit to a specific animal, slugs.</i></li> </ul>		

Day 12	In-Depth Study: Banana Slugs	Learning Targets 3 & 7
<ul style="list-style-type: none"> <li>• Working in pairs, have the students complete the word search on page 12 of the manual (see page 48) in order to review the parts of a slug.</li> <li>• Using a map of the Pacific Northwest, discuss where banana slugs might live and why they would be more likely to live in some places than others.</li> <li>• Use page 14 of the manual (see page 50) to guide a discussion of the banana slug's role in the environment.</li> <li>• Have students complete page 15 in the manual (see page 51) in pairs or individually.</li> <li>• Go over page 15 as a class. Ask for student volunteers to share an example of another food chain.</li> <li>• <i>In this lesson the students will learn about habitats and interdependence as they relate to slugs. This will reinforce what the students learned about habitats and interdependence on days 3, 4, and 5 of this unit.</i></li> </ul>		

Days 13 & 14	In-Depth Study: Banana Slugs	Learning Targets 6 & 7
<ul style="list-style-type: none"> <li>• Introduce the students to the concepts of asking questions, making observations, recording results, and drawing conclusions in relation to scientific inquiry activities through a class discussion and by modeling these skills.</li> <li>• Explain the procedures for each of the following experiment stations to the students. (These should be set up ahead of time): <ol style="list-style-type: none"> <li>1. <i>Do slugs prefer a dry or wet environment?</i> Divide a large container in half using a piece of cardboard. Fill the container with gravel up to the level of the cardboard. Mist one side of the gravel with water. Place a slug in the center of the container and see which side it goes to. Repeat the experiment four times. Record the results and your conclusion in your science notebook.</li> </ol> </li> </ul>		

2. *What does it sound like when slugs eat?* Put a slug in a small container with a piece of dry toast. When the slug starts to eat, put a microphone next to the slug and put a cardboard box over the container. Listen through a portable speaker to the sounds the slug makes while eating. Record the results and your conclusion in your science notebook.

3. *Does a slug's mucus change when it crosses different surfaces?* Lay strips of sandpaper end to end. Put a piece of wax paper at one end of the sand paper and a piece of lettuce at the other end. Place a slug on the wax paper and watch it move toward the lettuce. Compare the mucus trail on the wax paper to the trail on the sandpaper. Record the results and your conclusion in your science notebook.

4. *Can a slug cling to an extremely narrow object?* Attach two dowels vertically to the ends of a table using c-clamps. Tie a string to each of the dowels. Place a bath towel under the string. Carefully put a slug on the string, supporting it until it is secure. Put another slug on the string and observe. Record the results and your conclusion in your science notebook.

- Assign the students to groups of 6-7, and assign each group to an experiment station. The groups will spend 10-15 minutes at each station and then rotate to the next station. Each group should go to two different stations each day.
- At the end of the second day ask students to share their experiences from each of the experiment stations with the class. As a class, make a graph showing the results of at least one of the experiments.
- Self-assessment: At the end of the second day have each student complete the Slug Experiment Stations questionnaire (see page 24) regarding their use of scientific inquiry skills.
- *The experiment stations will give students the opportunity to investigate and observe what they have learned about slugs' habitat and adaptations. The students will also be introduced to and begin to use the skills of scientific inquiry while performing the experiments. These activities will allow the students to put their scientific inquiry skills to real use.*

Days 15 & 16	Final Project (& Service-Learning)	Learning Targets 2, 3, 4, & 5
<ul style="list-style-type: none"> <li>• Post-assessment: The students will create a bookmark about the animal that they wrote a report about in Writing. The students will write the name of the animal and draw a picture of the animal in its natural habitat on the front of the bookmark. On the back of the bookmark they will briefly describe the habitat the animal lives in, examples of other organisms that affect or are affected by the animal, adaptations and defense mechanisms the animal has, and 2-3 other interesting facts about the animal. (See rubric on page 25.)</li> <li>• The bookmarks will be copied and laminated to be “sold” to raise money to adopt the animal at the Cougar Mountain Zoo chosen by the class.</li> <li>• <i>The bookmark activity serves as the final project for the unit. In creating the bookmarks, the students are applying what they have learned throughout this unit to the animals they wrote their reports about. This activity ties the animal reports, the service-learning project, and this unit together.</i></li> </ul>		
Day 17	Animal Information Fair	Learning Target 8

- Parents will be invited ahead of time to come to the Animal Information Fair.
- Each student will give a short presentation about the animal he or she wrote a report about. The students' animal bookmarks will also be on display during the information fair.
- *The information fair is the culminating event of the Animals and Habitats unit. Having an audience other than the teacher watch the students' presentations makes the experience more meaningful for the students.*

Day 18	Zoo Field Trip (Service-Learning)	Learning Target 9
<ul style="list-style-type: none"> <li>• The class will take a 1_ hour guided tour of the Cougar Mountain Zoo. During the tour they will meet the animal they adopted and be presented with an adoption certificate, a picture of the animal, and a facts sheet about the animal.</li> <li>• When we are back in the classroom we will have a class discussion to reflect on our experience at the zoo.</li> <li>• <i>The field trip is the culminating event and celebration for the service-learning project.</i></li> </ul>		

Day 19	Service-Learning	Learning Target 9
<ul style="list-style-type: none"> <li>• The students will reflect on the service-learning project as a whole. Their reflection will be in the form of a little book. The pages of the book will include a picture and one or two sentences that address the following questions: 1) What did we do? 2) How do you feel about what we did? 3) Why did we perform this service? What difference did it make in our community? 4) What did you learn while doing this project? 5) What did you like most about this project?</li> <li>• We will evaluate the service-learning project as a class. The students will be asked to give input as to what they felt went well during the project and what they would change if they were to do the project again.</li> <li>• <i>Reflecting on and evaluating the service-learning project will reinforce the purpose of service-learning and allow the students to assess the overall effectiveness of the project.</i></li> </ul>		

### **Technology**

Technology plays several roles in this unit. First, the students will use a word processing program to create their animal bookmarks at the end of the unit. The second role of technology in this unit is that of a resource for me as the teacher and for the students. The National Geographic Kids website (<http://www.nationalgeographic.com/kids>) was used as a resource for pictures, videos, and facts about some of the animals available for adoption at the Cougar Mountain Zoo. The students will also be able to use this kid-friendly website to research the animal featured on their bookmark. I also used the Stanley Woods' Critters website ([http://www.walnet.org/stanley\\_woods/slugz/bananaslug.html](http://www.walnet.org/stanley_woods/slugz/bananaslug.html)) to increase my own knowledge of

banana slugs before leading the class through an in-depth study of this animal. The final use of technology in this unit is a PowerPoint presentation that introduces the service-learning component of the unit. The presentation includes sound clips, videos, and pictures along with information about the Cougar Mountain Zoo, the adopt-an-animal program, and facts about the zoo's animals.

### ***Classroom Management***

The activities in this unit provide opportunities for students to work both independently and in small groups. In addition, several of the activities in this unit revolve around whole-class discussions. In some cases students will be randomly assigned to small groups. For other activities, such as the slug experiment stations, a conscious effort will be made to put the students in heterogeneous groups. In all cases, the students will be expected to support one another and work together cooperatively.

The classroom that I will teach this unit in has an inclusive and supportive learning environment which I will continue to foster while I am student teaching. A supportive learning environment is one in which the students are not afraid to take risks, such as asking questions or sharing their ideas. This is especially important in class discussions and small group work, which are important aspects of this unit. In order to promote an environment in which students can speak their mind, all students will be expected to show respect one another and encourage each other to share their thoughts and feelings.

In order to manage the classroom in accordance with democratic principals I will directly involve the students in management tasks. For some projects, the students will contribute ideas for the assessment criteria to be applied in evaluating assignments. We will also have class meetings on a regular basis to debrief about what is going well in our classroom and possible changes that could be made to improve the classroom. In addition, the students currently take responsibility for managing and maintaining the classroom through their class jobs. The students submit letters of application for

jobs each grading period and are then “hired” for a certain position (for example, homework checker or library organizer). Taking on these roles in the classroom gives the students a sense of connection and responsibility to the classroom community.

Ideally, the students will be fully engaged and actively participating in all aspects of the curriculum. Intrinsic motivation among the students will be fostered by the wide variety of activities included in the unit, especially the many hands-on activities. These activities allow students to experience what they are learning in a concrete way rather than by simply reading or talking about concepts. The integration of service-learning into the unit will also increase the students’ intrinsic motivation to learn about animals. The students will be especially drawn in by the “student voice” aspect of the service-learning project in which they have a real say in certain aspects of how the project is conducted. The service-learning project also gives the students a connection to a real animal that they can apply what they are learning to. This and other real world connections will increase the students’ level of engagement in the unit lessons.

### ***Unit Overview/Critique***

I feel that this unit will be a valuable learning experience for the students. One of the unit’s strengths is its integration with the reading and writing units, as well as the service-learning project. This unit will serve as a supplement to these other areas of study and vice versa. Meeting a real community need through the service-learning project and asking parents to attend the Animal Information Fair give the students a real purpose for learning about animals and sharing that information effectively. Through the inclusion of an in-depth study of a specific animal (banana slugs in this case) the students have the opportunity to apply what they learned in the earlier lessons of the unit in a more tangible context. In addition, a variety of instructional strategies are used in this unit, including several hands-on, interactive activities, which is necessary for meeting the needs of all

students in the class. Overall, I believe that the lessons of this unit will provide students with a good understanding of the unit topics.

There are also ways that this unit could be improved. I realize that time constraints are a reality in most, if not all classrooms; however, ideally I would have liked to examine each of the subtopics of the unit in more depth than time will allow in the class I will be teaching this unit in. Because of my lack of teaching experience I am not sure that I will be able to accomplish everything that I have laid out in this unit plan in the given time frame. This will also depend on the students' performance. I will need to be flexible as we progress through the unit in order to ensure that the students' needs are being met.

### **Community Collaboration**

The class in which I will be teaching this unit has a high level of parent involvement. The parents can provide support for the students at home and assist with activities in the classroom. The education coordinators at the Cougar Mountain Zoo are also valuable resources for this unit. The education coordinators will guide the class on a tour of the zoo and reinforce the importance of the service provided by the students in adopting an animal at the zoo.

### ***Letter to Parents/Guardians***

Dear Family Members,

Our class will soon be starting a science unit about animals and habitats. In this unit we will be learning about animal habitats, the interdependence of animals and the surrounding environment, as well as animal adaptations and defense mechanisms. After a general study of these topics we will conduct an in-depth study of a local animal, the banana slug. The students will be encouraged to bring in a banana slug to observe as part of this study. Procedures for collecting banana slugs will be sent to you when we get closer to that section of the unit.

The class will also be performing a service-learning project in conjunction with this unit.

Service-learning is a combination of community service and academic studies. Our class project is to adopt an animal at the Cougar Mountain Zoo. The zoo is a non-profit organization that depends on private contributions in order to operate. The students will be making and selling animal bookmarks to raise money for this community resource. Through this project, the students will be learning about the importance of providing services for the good of the community while applying their knowledge of animals and habitats to the specific animal the class chooses to adopt. We will be visiting the zoo to meet our adopted animal at the end of May.

Our class will also be hosting an Animal Information Fair at the end of this unit. The students will make short presentations about the animals they are writing their research reports about. I will be sending you more information about the fair soon. We hope that you will be able to attend.

As always, please feel free to contact me if you have any questions or concerns.

Sincerely,

Emily Winterlich

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**Pre-Assessment Instrument**

**Student Survey**

Answer each of the following questions. Be as specific as you can for each answer.

1. Give two examples of things that are living and two examples of things that are non-living.

Living

Non-living

1. \_\_\_\_\_

1. \_\_\_\_\_

2. \_\_\_\_\_

2. \_\_\_\_\_

2. What do animals need in order to survive?

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3. What do you know about slugs?

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## Self-Assessment Instrument

### Slug Experiment Stations

Circle the number that best describes how you would answer numbers 1-4. Write complete sentences to answer numbers 5 and 6. Think about all four of the experiments as you answer each one.

1 = Yes

2 = Sort of / Sometimes

3 = Not Yet

1. I thought of questions about the experiment before, during, and after performing the experiment. 1    2    3
  
2. I carefully observed what was happening during the entire experiment. 1    2    3
  
3. I accurately recorded the results of the experiment. 1    2    3
  
4. I at least attempted to draw conclusions based on what I observed and the results I recorded. 1    2    3

5. Something I did really well during the experiment stations is:

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6. Something I can improve on for working with experiments in the future is:

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**Rubric-Based Post-Assessment Instrument**

**Animal Bookmark**

Task	Try again	Almost there	You've got it!
<i>Front of Bookmark</i>			
Animal Illustration	Animal is not included in the illustration	Incomplete or inaccurate illustration of the animal	Complete and accurate illustration of the animal
Habitat Illustration	Habitat is not included in the illustration	Incomplete or inaccurate illustration of the animal's habitat	Complete and accurate illustration of the animal's habitat
<i>Back of Bookmark</i>			
Written descriptions of the animal's habitat, interdependence, adaptations/defense mechanisms, and 2-3 other interesting facts	Several of the descriptions are inaccurate or are not included	Most of the descriptions are included and are accurate	All descriptions are included and are accurate
Grammar, Spelling, and Punctuation	Many grammar, spelling, and punctuation errors	A few grammar, spelling, and punctuation errors	No grammar, spelling, or punctuation errors
Word Processing	Descriptions are hand written		Descriptions are typed using a word processing program