

## **Peeing on My Leg: The Things Animals Do to Adapt to Their Environments**

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### **Introduction**

What makes something unique? This is a question that students investigate in one of our third grade reading units. During this unit, students encounter informational text that introduces them to places on Earth with extreme conditions, the highest point, the deepest valley, the hottest desert, the coldest place. My students enjoy learning about these “est” places and always want to dive deeper into the topic. I am building on their interest to create this unit that will enable my students to engage in informational text and investigate a wide variety of extreme environments. This cross-curricular unit will focus on Common Core State Standards for Reading/ELA as well as Next Generation Science Standards. Students will research a place on Earth that is considered extreme. They will learn about the climate and the organisms that inhabit these places. We will then form groups where students will teach their classmates about their research. The groups will then compare and contrast the organisms that live in these extreme “est” environments.

How do animals survive on their own? Animals in the wild are not dependent on humans to provide them with the things that are necessary for survival. Humans do not supply animals with food, they do not provide animals with warmth or cooling, they do not provide animals with shelter. So how does an animal survive?

Animals and plants develop behaviors and features that will help them to survive in a particular habitat through natural selection. These adaptations may involve morphological changes, behavioral changes, or physiological changes. Students in elementary classrooms understand basic predator/ prey relationships. They understand that animals can be plant eaters or meat eaters. They are beginning to understand that animals have different features that help them to withstand the elements of their habitats. As students investigate the climate and habitat of the extreme locales detailed in the story, they will build knowledge of how certain adaptations enable the organisms to survive and thrive in these harsh environments.

### **Demographics**

The Red Clay Consolidated School District is located in Northern New Castle County, Delaware with a combination of urban and suburban settings. Some of its elementary schools are located in the heart of the largest city in the state. The district is comprised of 28 schools with approximately 1000 teachers. It services over 16,000 students. Of those students, 27% are African American, 4% are Asian, 20% are Hispanic, and 49% are White. Students' needs vary, with almost 15% receiving Special Education Services and 10% receiving English Language support. In addition, 41% of the students come from families with low incomes.

Highlands Elementary is an urban school in the city of Wilmington, Delaware. We are a small K-5 school with an enrollment average of 340 students. Our minority population represents 86% of our student body with 87% of the students falling into the low socio-economic status. I am a third grade teacher with a class size varying between 24-28 students which is representative of the make-up of our school.

### **Global Warming**

We will look at the impact of global warming on these extreme environments. How will it affect these places? Will the adaptations the organisms have prepared them for changes? If not, what will happen to them? Will they be able to adapt quickly enough, can they migrate as conditions change, or will they be trapped in the "est" environments?

The gradual warming of the Earth's temperature, the oceans, atmosphere, and surface will affect the global weather patterns. The rise in ocean temperatures could affect the yearly freezing that happens in the oceans surrounding Antarctica. This cycle of freezing and thawing of the oceans generates the ocean currents throughout the world. Global weather patterns are caused by differences in the ocean temperature and some scientists believe that as the temperature increases, the formation of the Antarctic ice will be affected, and therefore change the world climate as we know it. Other climate changes could include fluctuations in annual precipitation, shifts in wind patterns, and variations in temperatures. Stronger storms, more droughts, longer and hotter heat waves, forest fires, and other natural disasters may occur with greater frequencies. Glaciers around the world will melt causing sea levels to rise, flooding many islands and having a drastic impact on major population areas on the coast. Millions of animals and other organisms risk extinction due to the deterioration and changing of habitats. As temperatures increase a positive feedback effect is possible; as the temperatures rise, more greenhouse gases are released by unlocking methane trapped in arctic ice, releasing higher levels of carbon dioxide, and causing more evaporation.

Are humans responsible for global warming? Well, quite frankly, yes. The higher concentrations of methane and carbon dioxide in the atmosphere are a result of industrialization, deforestation, and pollution. These greenhouse gases are accumulating at a faster rate than trees, plants, and oceans can absorb them, covering the atmosphere like a blanket. We can begin to lessen our greenhouse emissions by working toward burning cleaner fuels and reducing our electricity needs by using more efficient appliances and other energy-using household items.

### **Animal Adaptations**

An adaptation is a genetic change an organism acquires that enables it to survive in a changing environment. It can be the result of a mutations or the gradual effects of natural selection on the variation in organisms in the gene pool. If beneficial, this mutation or genetic change is passed down generation to generation, and over time becomes an intrinsic part of the organism. The mutation or change in genetic structure has now become an adaptation. Adaptations can be physiological, morphological, or behavioral. Physiological adaptations result in changes to an organism's metabolism or chemistry. Morphological adaptations affect body form and structure, while behavioral adaptations affect the actions of organisms. Adaptations can occur due to changes within the environments of organisms and are the result of the processes of natural selection that act on organisms that are no longer "fit" for the new conditions.

Many animals live in organized social structures, such as herds, packs, prides, schools, or flocks. This social or behavioral adaptation can allow animals to help each other find food, provide defense against predators, and care for the young. Some animals have developed ways to conserve their resources, especially animals that live in areas where water or food are scarce for extended periods. For example, storing food and water as brown fat and lowering their metabolic rate below normal enable many animals to hibernate throughout the winter months. Many animals have the ability to change their appearance, either through camouflage or mimicry, or to change size to be less appealing to predators. Other adaptations in animals, such as hair, feathers, or blubber, are protections against extreme cold. When animals are in extremely cold climates these adaptations serve as insulation to conserve body heat, giving them protection from the frigid temperatures.

### **Extreme Environments**

Highest

The highest point on Earth is Mt. Everest. It was formed 60-70 million years ago and rises 8,848 meters above sea level. It can be found on the continent of Asia and can even be seen from space. Conditions on Mt. Everest are harsh with temperatures averaging - 35°C at the summit and it is permanently covered with snow and ice. As you ascend Mt. Everest, the oxygen levels drop and there is about 60% less oxygen at the summit than at sea level.

### *Mountain Tahr*

The mountain tahr is a goat-like animal that lives on the wooded slopes of Everest. It has a small head with large eyes and small pointed ears and red circles on its cheeks. It has small horns on its heads. Its hooves are flexible and rubbery to grip smooth rocks, but have a hard, sharp rim around them so they can lodge into small footholds to stay stable on the steep rocks. The tahr is an herbivore; it survives on the grass, trees and shrubs found on the lower slopes of Everest. It doesn't eat meat but is hunted by other predators so must be very quick. Did you know that tahrs can live up to 15 years?

### *Snow Leopards*

Snow Leopards live in steep and rocky places. Even though they are carnivores and consume any meat they can find, snow leopards can consume grasses and twigs to supplement their diets. They have tails that are considerably longer and heavier when compared to other big cats. This tail can be used as a blanket or to protect its face from the cold temperatures, and to assist the leopard in balancing while traversing the rocky regions in which it lives. They have thick fur and broad paws that help them walk on fresh snow. They also have larger nostrils to help them breathe the thin cold air found at the heights.

### *The Himalayan Yak*

The Yak is similar to wild cattle found living on highlands. They eat lichen, grasses, mosses, and shrubs that grow in the mountainous regions. Himalayan Yaks have large lungs that enable them to breathe at high altitudes. They also have three times as many red blood cells (larger than normal) than cows. They have very thick fur, hanging almost to the ground that helps keep them warm. They also have a thick layer of fat that insulates them. Also, the yaks live in herds that help them to use each other to shield against the wind and cold.

Deepest

The Mariana Trench is the deepest part of the ocean and is called the abyssal zone for its unfathomable depth. The water is very cold and is highly pressurized. There is little to no light in the deepest parts of the ocean and some of the species found inhabiting these deep waters have the capacity to generate their own light. Researchers say the trench bottoms out at 36,037 ft (10,984 m). A comparison highlights how deep this is; Mt. Everest is measured 29,026ft (8,848m) above sea level. It is difficult for researchers to collect and study organisms found at these extreme depths and only recently have researchers made a manned voyage to the bottom of the trench to gather some organism.

### *Hatchetfish*

Hatchetfish are deep-sea fish that are not exclusive to the Mariana Trench, and are very odd-looking. The hatchetfish are special creatures because they are capable of producing their own light, which helps them escape from predators. At those depths, a built-in flashlight is handy to have! They have large eyes that help them to see in the faint light and helps them focus on objects both near and far.

### *Fangtooth*

Fangtooth fish have been found at depths between 6,500 ft to 16,500ft. These fish are about 6 inches long and have long teeth which are the largest proportionally to its body size as compared to any other fish. Food is scarce at these depths, and when they encounter something to eat, these teeth ensure that the food does not get away from them.

### *Vampire Squid*

Vampire squid can be found around 10,000ft. These squid have eyes that are proportionally the largest of any animal on earth. They have adapted to survive on the lower oxygen levels found at these depths; their gills have a large surface area and their metabolic rate is very low. It only grows to about 1 ft in length. This squid does not have ink sacs but shoots out bioluminescent mucus that ejects blue orbs of light disorienting predators as they get away.

### *Pacific Viperfish*

Pacific viperfish are small growing to only about 12 inches. They are considered one of the fiercest fish in the deep oceans. During the day they can be found at depths of 5000ft but come up to more shallow depths of 2000ft at night to feed. The viperfish have a low metabolic rate and can go days without eating. They have very large teeth which they use to impale its prey but swimming very quickly at them. The viperfish uses a photophore, a

light producing organ on its dorsal fin, to attract its prey. They have other photophores along the side of the fish which are believed to provide camouflage and attract prey.

### Hottest

Death Valley is located in the Mojave Desert and is known as the hottest place in the United States. Even with a name like Death Valley, there is life there!

### *Kit Foxes*

Kit foxes are about the size of a regular house cat. They have large ears filled with lots of capillaries that radiate body heat to help them keep their temperature in a normal range and allows them to have exceptional hearing. Kit foxes are mostly nocturnal and hunt for their food around sunset when temperatures are getting cooler and their prey are becoming active.

### *Antelope Ground Squirrel*

These squirrels live in desert areas. They have the ability to withstand temperatures over 104°F as their bodies can resist hyperthermia. Ground squirrels live in burrows and are active during the day. They can take their water from the foods they eat and can go long periods of time without drinking water.

### *Fringe-toed Lizards*

Fringe-toed lizards have specially shaped scales on their toes that give them the ability to move with agility on the sandy dunes found in the desert. Their speed is useful when outrunning predators. In addition to the scales found on their toes, scales are found over their eyes, ears, and nose. These scales protect the lizard as it dives headfirst into the surface of the sand as it flees from predators.

### *Kangaroo Rat*

Kangaroo Rat spends most of the day sleeping and is mainly active at night when the temperatures are significantly cooler. One of the most amazing adaptations the Kangaroo Rat has developed against the scarcity of water located in the desert is that it does not drink water. The kangaroo rat has special organs in its nose that allow the animal to directly absorb moisture from the air. Additionally the kidneys of the kangaroo rat are extremely efficient and keep the body hydrated by not using water to get rid of metabolic waste.

### *Pupfish*

Pupfish are a small sardine-like fish that live in waterholes found in the desert. These fish were present during the ice age, 10,000 years ago. As the large glacial lakes began to dry up, the pupfish became stranded in the smaller waterholes. The temperature in the small waterholes can be very warm, up to 90°F and the salt concentration can exceed more than two times the levels found in seawater. The pupfish can survive these conditions due to the ability to excrete the salt through their digestive system.

### *Turkey Vulture*

Turkey vulture meals consist of eating dead and decaying animals. In order to stay cool in the heat of its environment, the turkey vulture pees on its own legs. As the urine evaporates, it cools the blood circulating in the legs and thus cools the temperature of the turkey vulture. The urine also helps to sanitize the turkey vultures talons and legs as it kills any bacteria it may have picked up from its food.

### *Black-tailed Jackrabbit*

The black-tailed jackrabbit has oversized ears that enable it to beat the heat in the desert. The ears can measure 7 inches in length and have a large amount of blood vessels that help the animal regulate its body temperature by diffusing the heat, much in the same way as the kit fox. Similar adaptations on different kinds of animals to deal with environmental conditions are examples of a process called convergent evolution. The jackrabbit hydrates itself through eating large amounts of cacti and grasses and extracts the water found in these plants.

### Coldest

Antarctica's temperatures have been recorded as low as -89°C/-129°F; this could be explained as five times colder than freezing. Antarctica holds the record for the coldest place on the planet. The marine life found around Antarctica has adapted to survive the near freezing waters. They have very low levels of hemoglobin and have a natural type of antifreeze to protect them from freezing to death. This antifreeze protein prevents ice crystals from forming in the blood. The movement of the water molecules in the blood are slowed down by this protein.

### *Emperor Penguins*

Emperor Penguins are twice as large as the next largest penguin and their size enables to survive the lack of food during the long winters and the extreme cold temperatures. These penguins live in large groups and huddle together for warmth. They take turns being on

the outside of the huddle where it is coldest and then work toward the inner circle for warmth. Emperor Penguins can sleep up to 20-24 hours to conserve food and energy. They lay their eggs in May and June. The eggs are incubated on the feet of the adult male penguins and kept warm with the brood patch. Penguins have amazing diving adaptations that allow them to dive to depths of 1,800ft. Penguins have the ability to store oxygen in their body and to tolerate low levels of oxygen in their bodies. They also have the ability to withstand the effects of pressure as they dive deep. Their heartbeat increases as they prepare to dive and loads their bloodstream with oxygen.

### *Elephant Seals*

The male Elephant Seal has a large proboscis and this is where it gets its name. The males or bulls are significantly larger than the females, cows. Male seals can dive for about 60 minutes as they search for their food, eels, octopuses, sharks, rays, and skates. They are protected from the frigid waters by their blubber. Elephant seals have a large volume of blood which allows them to hold large amounts of oxygen while diving.

### *Gentoo Penguins*

Gentoo Penguins are adapted to live in very harsh climates. They live on the Antarctic peninsula and islands surrounding it. However with rising temperatures, the penguins are staying more on the Antarctic Peninsula.

### Informational Text

The ability to read information text is fundamental to the success of a reader and the Common Core State Standards/ELA place a large focus on informational text. Informational text is a specific form of nonfiction text. Not all nonfiction would be included in the classification of informational text. Informational text is written to convey information about the natural world and the social world.

### Strategies

My third grade classroom has students with a variety of reading levels ranging from first grade levels to fourth grade levels and perhaps beyond. Many of my students come from households in which poverty is a reality and therefore require extra consideration. In a study by Hart and Risley, it was suggested that students from low-income households are exposed to far fewer words than from their working-class or white-collar counterparts. After looking at the data, researchers stated, "Extrapolated out to the age of 4, this shows that children from white-collar families would be exposed to approximately 45 million words, and children in low-income families to only 13 million words—a vocabulary gap



of some 32 million words." It is my intention to scaffold vocabulary and comprehension instruction in order to provide an entry point for all learners. Vocabulary instruction is an integral part of student's comprehension. This is especially true in the science content area since many of the words and topics covered are not used in everyday language. I will deliver direct vocabulary instruction to explicitly teach words in this content area.

Through pre-reading activities, word banks, and journaling students will be exposed to scientific words and will be encouraged to use these words not only in their writing, but also during discussions in our classroom. As students learn to think like a scientist, they will speak like one as well.

### Connecting to Prior Knowledge

One of the best ways to improve comprehension is to link current information to previously known information or prior knowledge. In order to provide effective instruction, teachers need to assess what the students already know about a given topic and develop a path that the learning will take based on the needs of the students. Teachers have been using a K-W-L chart to help students link background knowledge to the purpose of the lessons and finish with a summary of their learning. This chart asks students to tell what the KNOW prior to instruction, then explain what they WANT to learn through the unit, and finalizing the unit with a summary of what they have LEARNED. Through my years of teaching, I have struggled with asking students what they know about a topic and hearing them present me with false information. I was never sure if I should immediately address this false information or let the true facts come out through the instruction and revisit the inaccuracies at the end. What I have done instead is to just retool this chart. In my classroom we now will be working with a T-I-D chart. As we begin our unit, the "T" portion will be: What do I THINK I already know? Then to guide our learning we will complete the "I" portion: What can I do to INVESTIGATE this knowledge? Our summary will be completed in the "D" section and will ask the question: What did I DISCOVER? By making these changes, facts and inaccuracies will be deemphasized. Students will develop a plan for their learning as they determine what and how to examine the topic. They will analyze their findings and communicate these findings. In a sense this form allows the students to begin to think like a scientist to build on previous information, formulate a plan, and then communicate the results, which is exactly what this unit is all about!

### Vocabulary Instruction

Vocabulary development is an integral part of all content learning. There is an undeniable link between vocabulary understanding and comprehension. As a teacher in the

elementary grades, one must realize that direct and implicit instruction of vocabulary is vital and should occur daily in the classroom. A variety of vocabulary activities can aid in highlighting the most important words for content area comprehension. Certain words are needed by students to understand the text that they are engaged in; other words will need to be added to their long-term, working vocabulary. The words that are needed for text comprehension should be taught prior to reading the text, but more than an introductory definition may not be needed. However, there are vocabulary words that are integral to the understanding of the entire unit. Students will need to be exposed to these words through a variety of methods. Using the Frayer Model or similar instructional device will aid in this instruction. The Frayer Model utilizes a framework to provide students with the correct definition, examples and non-examples of the word, and discusses the etymology of the word. Especially in science, it is extremely helpful to discuss root words, prefixes, and suffixes, this will help the students unlock the meaning of similar words and will enable students to make connections within and between concepts.

### Student VOC Strategy

This strategy helps students analyze word meanings from context. Create a list of key vocabulary words that are coming up. Have students write the original sentence from where the vocabulary word is found. Next students should make a prediction of what this new vocabulary word means. They should then consult a friend or a reliable resource, such as a dictionary, to determine the meaning of the word. Students will create an original sentence to show the meaning of the word. Finally they should draw a picture that will help them understand the word and explain it. This is a fantastic way for students to analyze and decode words in a text they don't understand and is a great strategy for students to tackle the vocabulary in the science content area.

### Word Banks

Word Banks are places where students can keep a list of words they have learned so that they can refer to them as needed. I prefer to have students keep their word banks on rings. I use a variety of color coded index cards and assign a specific color to a specific part of speech, such as all nouns are on blue cards. Using the rings enables students to develop alphabetizing skills, parts of speech skills, and is more mobile than a journal. Students should be expected to use the words in their writing and their speaking.

### **Classroom Activities**

#### Activity One

*Essential Questions:* How does questioning help me understand this text? What are the most important points in this text? How will the text features improve my understanding?

*Essential Outcomes:* Students will be able to ask and answer questions before, during, and after reading information texts. Students will be able to summarize the information they have read. Students will discover and utilize text features such as headings, bolded words, and glossaries to improve their understanding of the text.

*Materials:* Highest, Deepest, Hottest, Coldest; vocabulary lists see Appendix B

*Instruction:* Vocabulary words for the text will be introduced. Students will construct sentences, draw pictures, or act out words to build understanding (Appendix C). Prior to reading the text, students will write a set of questions to help guide their reading. These questions will focus on what students are wondering about the text and what students predict they will learn. Students will then read the text. Differentiation will take the form of students reading independently, with pairs, with the teacher, or with an audio recording of the text. During reading and after reading, students will review the questions they constructed prior to reading and will provide answers from the text. Students will analyze the unanswered questions to determine whether or not the text provided the answers to these questions. Students will then create new questions that will help build a research topic and extend their learning.

## Activity Two

*Essential Questions:* What is an adaptation? How do organisms acquire adaptations?

*Essential Outcomes:* Students will be able to explain what an adaptation is. Students will be able to recognize some adaptations organisms have acquired to survive in certain environments.

*Materials:* Students will use a variety of children's non-fiction texts and the internet to complete research on the topic of adaptations (suggested titles can be found in the bibliography, Appendix E)

*Instruction:* Students will work with partners to research information about animal adaptations. Students will complete a T-I-D graphic organizer (Appendix D) prior to the research to create a starting point for their understanding and a road map for their investigation. They will work to classify the adaptations they are learning about as physiological, morphological, or behavioral. Students will work to investigate how the

organism's environment affects the type of adaptations. Students will present their findings to the class through a presentation technique of their choosing.

### Activity Three

*Essential Questions:* How can the environment affect organisms living in that environment? What physical or behavioral adaptations have organisms developed in order to survive in the extreme environment?

*Essential Outcomes:* Students will be able to classify the type of adaptations organisms have developed to survive in their extreme environment. Students will create and justify arguments and critique the reasoning of others.

*Materials:* Non-fiction books, laptops

*Instruction:* Students will work in partners or small groups to investigate one of the extreme environments, hottest, coldest, highest, deepest covered in the mentor text. Students will research the climate, vegetation, and animal life living in this environment. Students will utilize their research on adaptations to determine what types of adaptations the organisms within their extreme environment have developed. After students have completed the research on regarding their extreme environment, we will jigsaw the information. New groups of four students will be formed; each group will have an "expert" from one of the extreme environments, hottest, coldest, highest, and deepest. Each "expert" will be responsible for teaching the other group members about their environment and the organisms and adaptations found there, thus jigsawing the information. Students will present their findings to the class through a presentation technique of their choosing.

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## **Appendix A**

### Common Core State Standards ELA

#### CCSS.ELA-Literacy.RI.3.1

Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

#### CCSS.ELA-Literacy.RI.3.2

Determine the main idea of a text; recount the key details and explain how they support the main idea.

#### CCSS.ELA-Literacy.RI.3.3

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

#### Craft and Structure:

#### CCSS.ELA-Literacy.RI.3.4

Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area*.

#### CCSS.ELA-Literacy.RI.3.5

Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

CCSS.ELA-Literacy.RI.3.6

Distinguish their own point of view from that of the author of a text.

Integration of Knowledge and Ideas:

CCSS.ELA-Literacy.RI.3.7

Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

CCSS.ELA-Literacy.RI.3.8

Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

CCSS.ELA-Literacy.RI.3.9

Compare and contrast the most important points and key details presented in two texts on the same topic.

Range of Reading and Level of Text Complexity:

CCSS.ELA-Literacy.RI.3.10

By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently.

Next Generation Science Standards

3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators and animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. [Clarification Statement: Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.]

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.\*  
[Clarification Statement: Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.]  
[Assessment Boundary: Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.]

LS4.C: Adaptation for any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. (3-LS4-3)

LS4.D: Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there. (3-LS4-4)

## **Appendix B**

### Vocabulary List

Hottest, Coldest, Highest, Deepest

Average-the quantity found by dividing the sum of all quantities by the number of quantities

Depth-the distance from the top to the bottom

Deserts-dry sandy regions without water and trees

Outrun-to run faster than someone or something else

Peak-the pointed top of a mountain or hill

Tides-the rise and fall of the ocean about every 12 hours

Waterfalls-stream of water that fall from a high place

### Adaptations

Adaptation- an adaptation is a mutation or a genetic change an organism acquires that enables it to survive in a changing environment

Behavioral-an adaptation that is social or behavioral can allow animals to help each other find food, provide defense against predators, and care for the young



Physiological-an adaptation that results in changes to an organism's metabolism or chemistry

Morphological-an adaptation which affects body form and structure

Mimicry- is a similarity of one species to another which protects one or both, can be in appearance, behavior, sound, smell or location

Camouflage- the use of any combination of materials, coloration or illumination for concealment, either by making animals or objects hard to see (crypsis), or by disguising them as something else (mimesis).

### **Appendix C**

Student VOC Strategy

Vocabulary Word: \_\_\_\_\_

1. Write the sentence where the word is found in the text.
2. Based on the sentence, what do you think the word means?
3. Consult an "expert" for the actual definition (friend, text, dictionary).

Expert:

Expert's Definition:

4. Write the word in a sentence of your own.
5. Choose one of the following ways to help you remember the word's meaning: draw a picture; create a movement; connect the word to a story, song, or news report you've heard. Write down how you are going to remember this word.

6. Explain

**Appendix D**

What do I <b>THINK</b> I already know?	What can I do to <b>INVESTIGATE</b> this knowledge?	What did I <b>DISCOVER</b> ?

**Curriculum Unit Title**

**Peeing on my leg: The things animals do to adapt to their environments**

**Author**

**Kathleen G Gormlev**

**KEY LEARNING, ENDURING UNDERSTANDING, ETC.**

Students will be able to ask and answer questions before, during, and after reading information texts. Students will be able to summarize the information they have read. Students will discover and utilize text features such as headings, bolded words, and glossaries to improve their understanding of the text. Students will be able to explain what an adaptation is. Students will be able to recognize some adaptations organisms have acquired to survive in certain environments. Students will be able to classify the type of adaptations organisms have developed to survive in their extreme environment. Students will create and justify arguments and critique the reasoning of others.

**ESSENTIAL QUESTION(S) for the UNIT**

How does questioning help me understand this text? What are the most important points in this text? How will the text features improve my understanding? What is an adaptation? How do organisms acquire adaptations? How can the environment affect organisms living in that environment? What physical or behavioral adaptations have organisms developed in order to survive in the extreme environment?

**CONCEPT A**

**CONCEPT B**

**CONCEPT C**

**ESSENTIAL QUESTIONS A**

**ESSENTIAL QUESTIONS B**

**ESSENTIAL QUESTIONS C**

How does questioning help me understand this text? What are the most important points in this text? How will the text features improve my understanding?

What is an adaptation? How do organisms acquire adaptations?

How can the environment affect organisms living in that environment? What physical or behavioral adaptations have organisms developed in order to survive in the extreme environment?

**VOCABULARY A**

**VOCABULARY A**

**VOCABULARY A**

Average; Depth; Deserts; Outrun; Peak; Tides; Waterfalls

Adaptation ;Behavioral; Physiological; Morphological; Mimicry; Camouflage;

**ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES**

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