

TEACHER'S MANUAL

This Suitcase Program provides the materials and lesson plans for teachers of grades 3-5 with content and activities increasing in difficulty by grade level. Activities in this Suitcase Exhibit may assist in meeting the Tennessee State Standards.

ACTIVITIES

ACTIVITY I: Get the Scoop on Skulls	2
ACTIVITY II: Types of Teeth and What They Do	3
ACTIVITY III: Identifying Predators and Prey	4
ACTIVITY IV: Adaptation: Camouflage	5
ACTIVITY V: Food Chains and Food Webs	7
ACTIVITY VI: Owl Pellets	7
INVENTORY CHECKLIST	8

TENNESSEE STATE STANDARDS FOR 3-5

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS2.1 Construct an argument to explain why some animals benefit from forming groups.
- 3.LS4.1 Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 4.LS2.2 Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers.
- 4.LS2.3 Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.
- 4.LS2.4 Develop and use models to determine the effects of introducing a species to, or removing a species from an ecosystem and how either one can damage the balance of an ecosystem.
- 4.LS2.5 Analyze and interpret data about changes (land characteristics, water distribution, temperature, food, and other organisms) in the environment and describe what mechanisms organisms can use to affect their ability to survive and reproduce.
- 5.LS3.1 Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment.
- 5.LS3.2 Provide evidence and analyze data that plants and animals have traits inherited from parents and that variations of these traits exist in a group of similar organisms.

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY I: Get the Scoop on Skulls

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn to identify major parts of the skull, looking at diagrams and at actual skulls. Students will learn the different bones that make up the skull and how the different features of a skull tell a story about an animal's behaviors.

GUIDING QUESTION

What can we learn from an animal's skull?

TENNESSEE STATE STANDARDS

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 4.LS4.1 Obtain information about what a fossil is and ways a fossil can provide information about the past.
- 5.LS4.1 Analyze and interpret data from fossils to describe types of organisms and their environments that existed long ago. Compare similarities and differences of those to living organisms and their environments. Recognize that most kinds of animals (and plants) that once lived on Earth are now extinct.
- 5.LS4.2 Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.

MATERIALS INCLUDED

Skulls and skeletons
Mat for display
Animal Fact cards
See Supplementary Materials for:
 Transparency: Cat and Human Skull
 Skull Parts Worksheet (2 pages)
 Teachers Key to Skull Terminology

MATERIALS PROVIDED BY TEACHER

Drawing or coloring materials
Glue sticks
Scissors
Overhead or digital projector

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY II: Types of Teeth and What They Do

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn the names for the four different types of teeth and how each type is used. Students will also learn how to use these different types of teeth to identify carnivores, herbivores, and omnivores.

GUIDING QUESTION

Why are there different types of teeth and what are their functions?

TENNESSEE STATE STANDARDS

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS4.1 Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 4.LS2.2 Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers.
- 4.LS2.3 Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.
- 4.LS4.1 Obtain information about what a fossil is and ways a fossil can provide information about the past.
- 5.LS4.1 Analyze and interpret data from fossils to describe types of organisms and their environments that existed long ago. Compare similarities and differences of those to living organisms and their environments. Recognize that most kinds of animals (and plants) that once lived on Earth are now extinct.
- 5.LS4.2 Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.

MATERIALS INCLUDED

Grinders (2)
Deer Skull
Coyote Skull
Human Skull
Raccoon skull/Opossum skull
Poster: Teeth Types
Two or three other skulls to display
See Supplementary Materials for:

Transparency: Teeth Types or use Teeth Types poster
Mechanics of Chewing (3-5) worksheet
Create a Map of your Teeth worksheet

MATERIALS PROVIDED BY TEACHER

Crayons or markers
Snack bags with a small piece of jerky,
popcorn kernel, baby carrot, and small portion
of a granola bar
Piece of paper
Overhead or digital projector

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY III: Identifying Predators and Prey

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn three characteristics used to identify animals as either predators or prey: eye placement, snout length, and teeth types. Students will directly observe the skulls in the suitcase to determine whether they are predator or prey.

GUIDING QUESTION

What features of the skull distinguish a predator and a prey?

TENNESSEE STATE STANDARDS

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 5.LS4.2 Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.

MATERIALS INCLUDED

15 skulls, set the coyote and beaver skull aside for teaching examples and exclude the human skull
Animal Labels
Laminated flip chart
Poster: Eyes in the Front
Poster: Energy Pyramid
See Supplementary materials for:
Predator/Prey Identification Lab (3-5) worksheet

MATERIALS PROVIDED BY TEACHER

Index cards with animal names for lab

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY IV: Adaptation: Camouflage

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn the definition of adaptation and understand that camouflage is an example of adaptation.

GUIDING QUESTION

What types of strategies do animals use to survive from predators?

TENNESSEE STATE STANDARDS

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS4.1 Explain the cause and effect relationship between a naturally changing environment and an organism's ability to survive.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 4.LS2.5 Analyze and interpret data about changes (land characteristics, water distribution, temperature, food, and other organisms) in the environment and describe what mechanisms organisms can use to affect their ability to survive and reproduce.
- 5.LS1.1 Compare and contrast animal responses that are instinctual versus those that are gathered through the senses, processed, and stored as memories to guide their actions.

MATERIALS INCLUDED

Images of camouflage

MATERIALS PROVIDED BY TEACHER

Colored toothpicks – make sure there are green toothpicks
Newspapers, no colored ads
Construction paper
Small sticks or twigs or popsicle sticks cut in half
Glue
Drawing or coloring materials

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY V: Food Chains and Food Webs

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn the definition of a food chain and food web and will learn about the place of different animals in an ecosystem.

GUIDING QUESTIONS

How are different animals connected together to form an ecosystem? What is a food chain and food web?

TENNESSEE STATE STANDARDS

- 3.LS2.1 Construct an argument to explain why some animals benefit from forming groups.
- 4.LS2.2 Develop models of terrestrial and aquatic food chains to describe the movement of energy among producers, herbivores, carnivores, omnivores, and decomposers.
- 4.LS2.3 Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.

MATERIALS INCLUDED

Food chain cards

See Supplementary Materials For:

Energy Pyramid Transparency
or use Energy Pyramid Poster

MATERIALS PROVIDED BY TEACHER

A large area for the students to spread out,
like a playground or gym

Sidewalk chalk or two rolls of painters' tape

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

ACTIVITY VI: Owl Pellets

DURATION OF ACTIVITY: 50 minutes

LESSON OBJECTIVES

Students will learn about owl pellets by observing real samples from an actual owl pellet and participating in a web dissection of owl pellets.

GUIDING QUESTIONS

Do owls have teeth? Can we determine whether an owl is a predator or a prey by looking at what they ate? Do different owls eat different things?

TENNESSEE STATE STANDARDS

- 3.LS1.1 Analyze the internal and external structures that aquatic and land animals and plants have to support survival, growth, behavior, and reproduction.
- 3.LS4.2 Infer that plant and animal adaptations help them survive in land and aquatic biomes.
- 4.LS2.3 Using information about the roles of organisms (producers, consumers, decomposers), evaluate how those roles in food chains are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web.
- 5.LS1.1 Compare and contrast animal responses that are instinctual versus those that are gathered through the senses, processed, and stored as memories to guide their actions.
- 5.LS4.2 Use evidence to construct an explanation for how variations in characteristics among individuals within the same species may provide advantages to these individuals in their survival and reproduction.

MATERIALS INCLUDED

Owl Pellets encased in plastic
Great Horned Owl Skull and Animal Fact Card
Poster: Investigating Food Webs with Owl Pellets
See Supplementary Materials for:
Rodent skeleton sheet
Virtual Owl Pellet Dissection Worksheet (if desired)
Owl Information/Coloring Sheets

MATERIALS PROVIDED BY TEACHER

Internet access with Macromedia Flash – a link is included on the KidWings website
Alternately, owl pellets can be ordered online and dissected by students during a class period

For the entire activity and materials and to reserve a Suitcase Exhibit, please call 901.636.2362.

SUITCASE EXHIBIT INVENTORY CHECKLIST

School: _____

Check Out: _____

Return Date: _____

MoSH Check In:	Teacher Check In:	Item	Books/Videos/Posters	Teacher Return:
		A	Teacher's Manual	
		B	Binder: Teacher's Resource Materials	
		C	Poster: Investigating Food Webs with Owl Pellets	
		D	Poster: Diets of Animals	
		E	Poster: Eyes in Front	
		F	Poster: Teeth	
		G	Poster: Where Do You Fit In?	
		H	Folder: 13 Animal X-Rays	
		I	Binder: Zoobooks Magazines	
		J	Binder: Milliken Mammals, Birds, Fish, Amphibians & Reptiles	
		K	Book: Eyewitness Mammal	
		L	Book: Eyewitness Skeleton	
		M	Book: A Bold Carnivore	
		N	Chart: Laminated Flip Chart	

SUITCASE EXHIBIT INVENTORY CHECKLIST

MoSH Check In:	Teacher Check In:	Item	Materials	Teacher Return:
		1	Skull: Great Horned Owl	
		2	Skull: Jackrabbit	
		3	Skull: Human (reproduction)	
		4	Skull: Coyote	
		5	Skull: Shrew	
		6	Skull: Tree Squirrel	
		7	Skull: Little Brown Bat	
		8	Skull: Monkey	
		9	Skull: White-Tailed Deer	
		10	Skull: Beaver	
		11	Skull: Domestic Cat	
		12	Skull: Opossum	
		13	Skull: Non-Venomous Gopher Snake	
		14	Skull: Venomous Rattlesnake	
		15	Skeleton: Fish	
		16	Skeleton: Frog	
		17	Skeleton: Bat	
		18-18.3	4 magnifier boxes – #18 Owl pellet; #18.1, #18.2, #18.3 Owl prey remains	
		19	Vernier Calipers – 9	
		20	Tape measures-9	
		21	Grinders-2	
		22	Mat for table display	
		23	Information cards for display	