MoSH

DINOSAURS:
Suitcase Program [3-5]

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

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.
GLE 0307.2.1	Categorize things as living or non-living.
GLE 0307.2.2	Explain how organisms with similar needs compete with one another for resources.
GLE 0307.3.1	Describe how animals use food to obtain energy and materials for growth and repair.
GLE 0307.4.1	Identify the different life stages through which plants and animals pass.
GLE 0307.5.1	Explore the relationship between an organism's characteristics and its ability to survive in a particular environment.
GLE 0307.5.2	Classify organisms as thriving, threatened, endangered, or extinct.
GLE 0407.3.2	Investigate different ways that organisms meet their energy needs.
GLE 0407.4.1	Recognize the relationship between reproduction and the continuation of a species.
GLE 0407.5.1	Analyze physical and behavioral adaptations that enable organisms to survive in their environment.
GLE 0407.5.2	Describe how environmental changes caused the extinction of various plant and animal species.
GLE 0507.2.1	Investigate different nutritional relationships among organisms in an ecosystem.
GLE 0507.4.1	Describe how genetic information is passed from parents to offspring during reproduction.
GLE 0507.5.1	Investigate physical characteristics associated with different groups of animals.
GLE 0507.5.2	Analyze fossils to demonstrate the connection between organisms and environments that existed in the past and those that currently exist.

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

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ACTIVITY I: Is This a Dinosaur?

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVE

Students compare models of animals to classify them as dinosaurs, flying reptiles, or marine reptiles. They investigate tools and technology used to research prehistoric life.

GUIDING QUESTIONS

What makes an extinct animal a dinosaur, or something else? How do we know dinosaurs really existed? How did dinosaurs become fossils?

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.LS4.1 Obtain information about what a fossil is and ways a fossil can provide information about the past.

5.LS3.1 Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and 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.

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.

MATERIALS INCLUDED

Books and posters
All animal models
Paleontology Investigation Station cards
Magnetic Dinosaurs
ID display cards - models
See Supplementary Materials for:
Stations Set-up List

MATERIALS PROVIDED BY TEACHER

Notebooks or paper
Pencils, markers

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

ACTIVITY II: Call Me "Reptile"

DURATION OF ACTIVITY: 60 minutes

LESSON OBJECTIVES

Using tape measures and magnifiers to examine fossils, students investigate the life cycle of dinosaurs. They inspect teeth and claws to help identify herbivores and carnivores.

GUIDING QUESTION

How were dinosaurs born? What did they eat?
What did their bodies look like?

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.LS4.1	Obtain information about what a fossil is and ways a fossil can provide information about the past.
5.LS3.1	Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and the environment.
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MATERIALS INCLUDED

Books and posters
15 Models: **Apatosaurus** #15, **Apatosaurus** baby #15.1, **Camarasaurus** #17, **Allosaurus** #18, **Iguanodon** #19, **Tyrannosaurus rex #20, Maiasaura** #22, **Maiasaura** nest #22.1, **Pachycephalosaurus** #23, **Saltasaurus** #24, **Protoceratops** on nest #25, **Triceratops** #29, **Velociraptor** #32, **Spinosaurus** #36, **Giganotosaurus #58,**
7 Claws # 4-7, 49-51
8 Teeth #1, 2, 2a, 3, 11a, 11b, 46, 53
Egg #10, Baby Louie in egg #37, eggshell fragment #48
Skin impression #8
Gastroliths #9
Frill section #47

MATERIALS PROVIDED BY

TEACHER
Soft green leaves
Paleontology notebooks
Paper (cardstock or index cards)
Markers, pens, pencils

Thumb spike #52
Magnifiers
Tape measures
Zipper-top bag
2 Dinosaur egg cut-outs
Paleontology Investigation Station cards
See Supplementary Materials for:
- Stations Set-up List
- **Megaraptor** picture
- **Utahraptor** picture,
- **Maiasaura** nest picture
- **Maiasaura** hatchling picture

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

ACTIVITY III: Track Record

DURATION OF ACTIVITY: 60-90 minutes

LESSON OBJECTIVES

Students investigate dinosaur locomotion. They analyze footprints to detect what types of dinosaurs made them and how they reveal height information. Students discover how trackways provide clues to dinosaur behavior.

GUIDING QUESTION

How did dinosaurs stand and walk? Was their stance like other reptiles? Can dinosaur footprints help us learn about dinosaurs?

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.
4.ETS2.1	Use appropriate tools and measurement to build a model.
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.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.
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

Books and posters
8 Models: mammoth #12, **Apatosaurus** #15, **Allosaurus** #18, **Camarasaurus # 17, Tyrannosaurus rex** #20, **Maiasaura** #22, **Dimetrodon** #30, **Deinosuchus** #62
4 Footprint tracings
Footprint in stone
Display stand
Tape measures
10 carpet footprints
5 Stance Construction Kits
Paleontology Investigation Station cards
See Supplementary Materials for:
Stations Set-up List

MATERIALS PROVIDED BY TEACHER

Paleontology notebooks

4 Footprint charts
Sauropod trackway diagram
Allosaurus & Apatosaurus drawing
Body Fossils photographs
Trace Fossils photographs
Dinosaur Lake trackway photograph
Aerial Photographs
3 Stance diagrams
Calculating Hip Height diagram
What Happened Here? Activity Sheet

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

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DINOSAURS: Suitcase Program [3-5]

ACTIVITY IV: Measure Those Dinos

DURATION OF ACTIVITY: 60-90 minutes

LESSON OBJECTIVES

Students compare and contrast body designs of five dinosaurs. They use tape measures to determine head and body lengths and organize data into graphs.

GUIDING QUESTIONS

Were dinosaurs different lengths? How do their lengths compare to a car or a school bus?

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.
4.ETS2.1	Use appropriate tools and measurement to build a model.
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.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.
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

Books and posters
5 Models: **Apatosaurus** #15**, Stegosaurus** #28**, Triceratops #29, Tyrannosaurus rex** #20**, Velociraptor #32**
5 True Books: **Apatosaurus, Stegosaurus, Triceratops, Tyrannosaurus rex, Velociraptor**
Tyrannosaurus rex tooth with root #2
Tape measures
Measuring Dinosaurs Kit
Paleontology Investigation Station cards
See Supplementary Materials for:
- Transparency **T. rex** skull
- Dinosaur Size graph
- How Big? Activity Sheet

MATERIALS PROVIDED BY TEACHER

Overhead projector on a rolling cart
Paleontology notebooks
Graph paper or paper to create graphs
Rulers
Markers, pens, pencils

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

ACTIVITY V: When Dinosaurs Lived

DURATION OF ACTIVITY: 60-90 minutes

LESSON OBJECTIVES

Students investigate geological time periods. They observe, compare, identify, and explain characteristics of dinosaurs and sort models into groups.

GUIDING QUESTIONS

How were dinosaurs alike? How were they different? Were they all alive at the same time?

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.LS4.1	Obtain information about what a fossil is and ways a fossil can provide information about the past.
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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.
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.

MATERIALS INCLUDED

Books and posters
All dinosaur models
ID display cards -models
Rubbing plates and crayons
Knowledge cards
Flashcards
Magnetic Dino Puzzle
Paleontology Investigation Stations cards
Mesozoic Activity Area information cards
See Supplementary Materials for:
- Stations Set-up List
- Graphic Organizers

MATERIALS PROVIDED BY TEACHER

Paleontology notebooks
Paper for rubbings (newsprint works best)
Markers, pens, pencils

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

ACTIVITY VI: Imaginasaurus

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVE

Students use Greek and Latin root words, prefixes, and suffixes to create and name imaginary dinosaurs. They draw their “discoveries” and list their essential characteristics.

GUIDING QUESTION

How are dinosaurs named?

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.
4.ETS2.1	Use appropriate tools and measurement to build a model.
5.LS3.1	Distinguish between inherited characteristics and those characteristics that result from a direct interaction with the environment. Apply this concept by giving examples of characteristics of living organisms that are influenced by both inheritance and 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.
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.

MATERIALS INCLUDED

Books and posters
All animal models
Paleontology Investigation Station cards
Magnetic Dinosaurs
ID display cards - models
See Supplementary Materials for:
Stations Set-up List

MATERIALS PROVIDED BY TEACHER

Notebooks or paper
Pencils, markers

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DINOSAURS:
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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	set of 26 "Dinosaur Flashcards"	
		C	set of 48 "Dinosaur Knowledge Cards"	
		D	set of 11 "Magnetic Dinosaurs"	
		E	set of 6 "Dinosaur Rubbing Plates" and 8 Rubbing Crayons	
		F	Magnetic Dino Puzzle	
		G	Poster: "Triceratops"	
		H	Poster: "Dinosaurs" with Timeline	
		I	Poster: "Tyrannosaur	
		J	Poster: "Dawn of the Dinosaurs"	
		K	Poster: "Brachiosaurus" Poster	
		L	DVD: "Walking with Dinosaurs"	
		M	Book: Picture Atlas of Prehistoric Life	
		N	Book: A True Book – Pterodactyls	
		O	Book: A True Book – Velociraptor	
		P	Book: A True Book – Tyrannosaurus Rex	
		Q	Book: A True Book – Stegosaurus	
		R	Book: A True Book – Apatosaurus	
		S	Book: Digging Up Dinosaurs	
		T	Book: DK Eyewitness Books - Dinosaur	
		U	Book: TheVisual Dictionary of Dinosaurs	
		V	Book: Dinosaurs for Every Kid (activities)	
		W	Book: The Ultimate Book of Dinosaurs	
		X	Set of 37 ID cards for table display	
		Y a-d	Posters: 4 Dinosaur Footprints Tracings, laminated	
		Z a-b	2 Posters: English and Spanish Dinosaur Information	

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DINOSAURS:
Suitcase Program [3-5]

SUITCASE EXHIBIT INVENTORY CHECKLIST

MoSH Check In:	Teacher Check In:	Item	Materials	Teacher Return:
		1	Spinosaurus Tooth	
		2	Tyrannosaurus rex Tooth with Root	
		3	Gigantosaurus Tooth with Cerrated Edge	
		4	T-Rex Claw	
		5	Megaraptor Claw	
		6	Utahraptor Claw	
		7	Allosaurus Claw	
		8	Edmontosaurus (Duckbill) Skin Impression	
		9	3 Gastroliths (Stomach Stones)	
		10	Protoceratops Egg	
		11	Edmontosaurus (Duckbill) Tooth Row (or Battery)	
		12	Plastic Model- Mammoth	
		13	Plastic Model-Kronosaurus	
		14	Plastic Model-Brachiosaurus	
		15	Plastic Model-Apatosaurus	
		16	Plastic Model-Diplodocus	
		17	Plastic Model-Camarasaurus	
		18	Plastic Model-Allosaurus	
		19	Plastic Model-Iguanodon	
		20	Plastic Model-Tyrannosaurus	
		21	Plastic Model-Elasmosaurus	
		22	Plastic Model-Maiasaura	
		22.1	Plastic Model-Maiasaura Nest	
		23	Plastic Model-Pachycephalosaurus	
		24	Plastic Model-Saltasaurus	
		25	Plastic Model-Protoceratops on Nest of Eggs	
		26	Plastic Model-Corythosaurus	
		27	Plastic Model-Baryonyx	
		28	Plastic Model-Stegosaurus	
		29	Plastic Model-Triceratops	
		30	Plastic Model-Dimetrodon	
		31	Plastic Model-Oviraptor	
		32	Plastic Model-Velociraptor	
		33	Plastic Model-Flying Reptile-Quetzalcoatlus	
		33.1	Plastic Model-Flying Reptile-Pteranodon	
		34	Plastic Model-Parasaurolophus	
		35	Plastic Model-Tanystropheus	
		36	Plastic Model-Spinosaurus	
		37	Plastic Model-Baby Louie in Egg	
		38/38.1	2 Carpeted Sauropod Manus Footprints (1 right and 1 left)	
		39/39.1	2 Carpeted Sauropod Pes Footprints (1 right and 1 left)	
		40/40.1	2 Carpeted T-Rex Pes (1 right and 1 left)	
		41/41.1	2 Carpeted Allosaur Footprints (1 right and 1 left)	
		42	10 Felt Dinosaur Tracks	
		43	Theropod Footprint, stone	
		44	Straws	
		45	Wind Wizard wind speed indicator	
		46	Saran Wrap	