MoSH

DINOSAURS:
Suitcase Program [K-2]

TEACHER'S MANUAL

This Suitcase Program provides the materials and lesson plans for teachers of grades K-2 with content and activities increasing in difficulty by grade level. Activities in this Suitcase Exhibit may assist in meeting the TN State Standards.

ACTIVITIES

TENNESSEE STATE STANDARDS FOR K-2

K.LS1.1	Use information from observations to identify differences between plants and animals (locomotion, obtainment of food, and take in air/gasses).
K.LS1.2	Recognize differences between living and non-living materials and sort them into groups by observable physical attributes.
K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ESS3.1	Use a model to represent the relationship between the basic needs (shelter, food, water) of different plants and animals (including humans) and the places they live.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
1.ETS1.1	Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable questions.
2.LS1.1	Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.
2. LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS1.3	Use simple graphical representations to show that species have unique and diverse life cycles.
2.LS2.1	Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS1.1	Define a simple problem that can be solved through the development of a new or improved object or tool by asking questions, making observations, and gathering accurate information about a situation people want to change.

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

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ACTIVITY I: I am NOT a Dinosaur!

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students compare models of animals to classify them as dinosaurs, flying reptiles, or marine reptiles. They investigate how scientists collect information about these animals.

GUIDING QUESTIONS

Are dinosaurs alive today? How do we know dinosaurs really lived on Earth? What makes an extinct animal a dinosaur, or something else?

TENNESSEE STATE STANDARDS

K.LS1.2 Recognize differences between living organisms and non-living materials and sort them into groups by observable physical attributes.
K.LS1.3 Explain how humans use their five senses in making scientific findings.
K.ESS3.1 Use a model to represent the relationship between the basic needs (shelter, food, water) of different plants and animals (including humans) and the places they live.
1.ETS1.1 Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
1.ETS2.1 Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.
2.LS1.1 Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.
2.LS1.2 Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS1.3 Use simple graphical representations to show that species have unique and diverse life cycles.
2.LS2.1 Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2 Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).
2.ETS2.1 Use appropriate tools to make observations, record data, and refine design ideas.

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

Paper, markers

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

ACTIVITY II: Dinosaur Babies

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students use magnifiers to examine dinosaur fossils. They discover how dinosaurs were born and what their bodies looked like.

GUIDING QUESTIONS

How were dinosaurs born? Did offspring resemble the parents?

TENNESSEE STATE STANDARDS

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS1.2	Describe objects accurately by drawing and/or labeling pictures.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.
2.LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS2.1	Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation.
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS1.2	Develop a simple sketch, drawing, or physical model that communicates solutions to others.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS IN THE SUITCASE

Books and posters
6 Models: **Apatosaurus** #15, **Apatosaurus** baby #15.1,
Maiasaura #22, **Maiasaura** nest #22.1,
Saltasaurus #24, **Protoceratops** on nest #25
Egg #10, Baby Louie in egg #37, eggshell fragment #48
Skin impression #8
Magnifiers
2 Dinosaur egg cut-outs
See Supplementary Materials for:
- **Maiasaura** nest picture
- **Maiasaura** hatchling picture

MATERIALS PROVIDED BY TEACHER

Papers, markers, crayons

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ACTIVITY III: What's For Lunch?

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES
Students investigate the dinosaur diet and use magnifiers to examine dinosaur teeth and claws.

GUIDING QUESTIONS
What did dinosaurs eat? Can shapes of teeth help us learn about diet?

TENNESSEE STATE STANDARDS

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS1.2	Describe objects accurately by drawing and/or labeling pictures.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.
2.LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS2.1	Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation.
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS1.2	Develop a simple sketch, drawing, or physical model that communicates solutions to others.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.

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
Gastroliths #9, Frill section #47
Thumb spike #52
Paleontology Investigation Station cards
Magnifiers. Zipper-top bag
ID display cards (models & fossils)
See Supplementary Materials for: Stations Set-up List, **Megaraptor** picture & **Utahraptor** picture

MATERIALS PROVIDED BY TEACHER
Soft green leaves
Dinosaur Family Picture Albums
Paper, markers, crayons

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

ACTIVITY IV: How Big Were They?

DURATION OF ACTIVITY: 60 minutes

LESSON OBJECTIVES

Students compare and contrast body designs of five dinosaurs. They use tape measures to determine head and body lengths and compare sizes to objects in our modern world.

GUIDING QUESTIONS

How big were the dinosaurs?

TENNESSEE STATE STANDARDS

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS1.2	Describe objects accurately by drawing and/or labeling pictures.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.
1.ETS1.1	Solve scientific problems by asking testable questions, making short-term and long-term observations, and gathering information.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations answer testable scientific questions.
2.LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS1.2	Develop a simple sketch, drawing, or physical model that communicates solutions to others.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

Books and posters
5 models: **Apatosaurus** #15**, Stegosaurus** #28**, Triceratops #29, Tyrannosaurus rex** #20**, Velociraptor #32 Tyrannosaurus rex** tooth with root #2
Tape measures
Measuring Dinosaurs Kit
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
Dinosaur Family Picture Albums
Paper, markers, crayons

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

ACTIVITY V: Going For a Walk

DURATION OF ACTIVITY: 60-90 minutes

LESSON OBJECTIVES

Students analyze dinosaur footprints to determine what type of dinosaur made them and how tracks help interpret dinosaur behavior.

GUIDING QUESTION

Can dinosaur footprints help us learn about dinosaurs?

TENNESSEE STATE STANDARDS

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.
2.LS1.1	Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.
2.LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS2.1	Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

Books and posters
4 Models: **Apatosaurus** #15, **Allosaurus** #18,
Tyrannosaurus rex #20, **Maiasaura** #22,
4 Footprint tracings, 10 carpet footprints
Footprint in stone
Display stand, tape measures
See Supplementary Materials for: Footprint charts
Sauropod trackway diagram, Allosaurus & Apatosaurus
Drawing, Dinosaur Lake trackway photograph
Aerial Photographs, Calculating Hip Height diagram

MATERIALS PROVIDED BY TEACHER

Dinosaur Family Picture Albums
Paper, marker, crayons

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

ACTIVITY VI: Dino Sort

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students observe, compare, identify, and explain the physical characteristics of dinosaurs and then sort models into groups.

GUIDING QUESTIONS

Did dinosaurs look alike? Can we examine the models and sort them into groups?

TENNESSEE STATE STANDARDS

K.LS1.3	Explain how humans use their five senses in making scientific findings.
K.LS3.1	Make observations to describe that young plants and animals resemble their parents.
K.ETS1.1	Ask and answer questions about the scientific world and gather information using the senses.
K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable scientific questions.
1.ETS2.1	Use appropriate tools (magnifying glass, basic balance scale) to make observations and answer testable scientific questions.
2.LS1.1	Use evidence and observations to explain that many animals use their body parts and senses in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find, and take in food, water, and air.
2.LS1.2	Obtain and communicate information to classify animals (vertebrates-mammals, birds, amphibians, reptiles, fish, invertebrates-insects) based on their physical characteristics.
2.LS2.1	Develop and use models to compare how animals depend on their surroundings and other living things to meet their needs in the places they live.
2.LS2.2	Predict what happens to animals when the environment changes (temperature, cutting down trees, wildfires, pollution, salinity, drought, land preservation).
2.LS3.1	Use evidence to explain that living things have physical traits inherited from parents and that variations of these traits exist in groups of similar organisms.
2.ETS2.1	Use appropriate tools to make observations, record data, and refine design ideas.

MATERIALS INCLUDED

Books and posters
Dinosaur models
Paleontology Investigation Station cards
See Supplementary Materials for:
Stations Set-up List

MATERIALS PROVIDED BY TEACHER

Dinosaur Family Picture Album
Paper, markers, crayons

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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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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	

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