

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.

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TENNESSEE STATE STANDARDS FOR 3-5

K.ETS2.1	Use appropriate tools (magnifying glass, rain gauge, basic balance scale) to make observations and answer testable questions.
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4.LS4.1	Obtain information of 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.ESS1.7	Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

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

ACTIVITY I: Learning About Fossils

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

The students will take a pretest about fossils, modified by the teacher for grade level if necessary, and then view a 20-minute video which introduces the subject of fossils.

GUIDING QUESTION

What are fossils, how are they formed, and what can we learn from them?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

DVD/Videotape:
Fossils: Uncovering Clues to the Past
Fossil Sets 1 and 2

MATERIALS PROVIDED BY TEACHER

Television with VCR or DVD player

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

ACTIVITY II: Classifying Fossils

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students will examine a group of fossils, then categorize them into the two major types of fossils, "Remains and Trace", using common items, discuss how each is different and create a classification system to put the fossils into.

GUIDING QUESTIONS

Part A What are the two main types of fossils, and how does each kind form?

Part B Why is it necessary to classify fossils and what are some ways in which it can be done?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

Fossil Set 1
5 Hand Lenses
5 Rulers
Reference books

MATERIALS PROVIDED BY TEACHER

Index Cards
Transparency or chart paper
Play dough
Shells

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

ACTIVITY III: Relative Time

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

By observing material in layers, students will understand the geological Law of Superposition, which explains that when sedimentary rocks occur in strata, one above the other, the oldest deposits are the deepest and the youngest are the highest. **Adapted from *Who's on First: A Relative Dating Activity*, by Marsha Barber and Diana Scheidle Bartos**

GUIDING QUESTIONS

How are the relative ages of rocks and fossils determined?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

Five sets: Student version, sequence cards
Five sets: Student version, sequence cards
Set B (fossils)
Teacher's version, Set A cards
Teacher's version, Set B cards
Tall graduated cylinder
Set of 20 plastic fossils
Three sedimentary rocks: limestone, sandstone, shale

MATERIALS PROVIDED BY TEACHER

4-5 types of cereal Set A (letters)
(rice, oats, Cheerios, corn flakes, for example)

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

ACTIVITY IV: Puzzled by Fossils

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students will use fossil evidence and information about modern animals to infer what an ancient organism might have looked like as well as when and where it lived. **Activity taken from Earth Science Activities by Dr. Kenneth W. Carlson**

GUIDING QUESTION

How do paleontologists reconstruct the past using clues from fossils?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

9 Fossil Puzzles
Fossil Set 2

MATERIALS PROVIDED BY TEACHER

Drawing paper
Colored pencils or crayons
Books with pictures of modern animals and plants

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

ACTIVITY V: The Present is the Key to the Past

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students will examine the fossil shells of snails and clams that lived in the ocean off Florida during the Pliocene (1.8 - 5 million years ago) and compare them to similar modern shells. This will allow them to discuss how ancient animals and modern animals who lived in the same ecological niche tend to have similar characteristics. Much can be inferred about ancient organisms by studying the characteristics and lifestyles of modern animals.

GUIDING QUESTION

How do ancient species compare with modern relatives?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

Fossil Set 1
Fossil Set 3
Reference books
Hand lenses
Laminated artist's rendition of life in the Oligocene Epoch

MATERIALS PROVIDED BY TEACHER

Chart paper
Colored markers or crayons
Research material on modern marine snails and clams

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

ACTIVITY IV: Ancient Environments

DURATION OF ACTIVITY: 45-60 minutes

LESSON OBJECTIVES

Students will simulate actual fossil hunting by looking through fossiliferous ore. They will gather information about paleontology, different ecosystems, animal communities and ancient environments.

GUIDING QUESTION

How do fossils provide clues about ancient environments?

TENNESSEE STATE STANDARDS

- 4.LS4.1 Obtain information of 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.ESS1.7 Use evidence from the presence and location of fossils to determine the order in which rock strata were formed.

MATERIALS INCLUDED

Fossil Set 5, including Find-A-Fossil resource booklet
Forceps
Brushes
Hand lenses
Styrofoam plates
Laminated artist's rendition of life in the Oligocene Epoch

MATERIALS PROVIDED BY TEACHER

Poster paper
Markers or crayons

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	Poster: "Geologic Time Scale"	
		C	Poster: "What is a Fossil?"	
		D	Book: A Golden Guide to Fossils	
		E	Book: A Resource Book for Find-a-Fossil	
		F	Book: (True Book) Fossils	
		G	Book: (Watts) Fossils	
		H	Book: Eyewitness Books: Fossils	
		I	Book: My Book of the Prehistoric World	
		J	Book: Picture Atlas of Prehistoric Life	
		K	DVD: "Fossils: Uncovering Clues to the Past" Earth Science Video Lab, Activity 1	
		L	Video: "Fossils: Uncovering Clues to the Past" Earth Science Video Lab, Activity 1	

SUITCASE EXHIBIT INVENTORY CHECKLIST

MoSH Check In:	Teacher Check In:	Item	Materials	Teacher Return:
		1	Fossil Set 1	
		2	Fossil Set 2	
		3	Fossil Set 3	
		4	Fossil Set 4	
		5	5 Wire Screens	
		6	5 Styrofoam Trays	
		7	5 Small Paint Brushes	
		8	5 Small Hand Lenses	
		9	5 Rulers	
		10	Set of 21 Plastic Fossils	
		11	5 Forceps	
		12	Magiscope Lenses in Film Canisters (4X, 10X, 15.5m Eyepiece)	
		13	Magiscope Lenses in Film Canisters (4X, 10X, 15.5m Eyepiece)	
		14	Digging Tool	
		15	Magiscope (with Scope and 1 5X Eyepiece)	
		16	Magiscope (with Scope and 1 5X Eyepiece)	
		17	Bucket of Bone Valley Ore	
		18	Set of 6 Fossil Rubbing Plates	
		19	5 Sets of Student Cards Set A (8 Cards In Each Set)	
		20	5 Sets of Students Cards Set B (8 Cards In Each Set)	
		21	Set Blue Teacher Cards (8 Cards)	
		22	10 Fossil Puzzles & Info Sheet (15 Pieces Each Puzzle)	
		23	Plastic Graduated Cylinder	
		24	Slab Sandstone	
		25	Slab Limestone	
		26	Slab Shale	