



SAM NOBLE MUSEUM

EDUCATOR'S
GUIDE

2011-2012

WELCOME




Short-grass
Prairie

Ecological Niche

Organisms live in a complex world where they are affected by all parts of their environment, including the weather, food, water. Each species has its own niche, or role, in the ecosystem. Species may win the race for life by being a better competitor, avoiding competition by living in microhabitats, reproducing at different times, or eating different things.





Welcome to the Sam Noble Museum!

Dear Educators,

I am delighted to introduce the Sam Noble Museum 2011-12 Educator's Guide.

This detailed guide offers information regarding the museum's innovative educational programs, exhibits and experiences that inspire learners of all ages to understand the natural and cultural world.

This year, the museum expanded our Hall of Natural Wonders to include a 2,000-square-foot diorama showcasing Black Mesa in far northwestern Oklahoma. This breathtaking exhibit, generously funded by the Whitten-Newman Foundation, is sure to be a favorite with students. In addition, the Education Department has introduced several new programs that are approved for field trips funded by the Oklahoma Energy Resources Board – just look for the **OERB** logo!

The educators at the Sam Noble Museum are excited to work with you and your students this year. We look forward to serving you and hope that you share your ideas and feedback with us regarding your visit to the museum.

Sincerely,
Holly Hughes
Head of Education

TABLE OF CONTENTS

A Class Adventure	2
Field Trip Details	4
Discovery Room	6
Programs: PreK–Kindergarten	7
Programs: Grades 1–3	8
Programs: Grades 4–5	10
Programs: Grades 6–8	12
Programs: Grades 9–12	14
Programs: Whitten-Newman ExplorOlogy® Program	16

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ARE YOU A SCOUT?
Have your next meeting with the dinosaurs! The museum offers hands-on workshops designed especially to target badge, loop or pin requirements. After the workshop, spend the rest of the day exploring the museum! Workshop cost includes admission to the museum, materials and a museum educator to lead activities. For upcoming dates and registration information, check our website at www.snomnh.ou.edu.

Programs Your Students Will Love

Our education department staff has developed a range of inquiry-based programs for each grade level. All SNOMNH programs address PASS standards and are taught by professional museum educators.

Pre-visit Materials

Let us help you prepare your students for their museum visit! Pre-visit materials include background information, vocabulary lists, PASS objectives and classroom activities for each program. Visit our website, www.snomnh.ou.edu/schoolprograms, to download these resources.

Gallery Activities

Our gallery Discovery Guides include thoughtful activities that encourage students to explore the details in each gallery. Guides are available for grades K–2, 3–5, 6–8 and 9–12 in PDF form on the museum website. It takes about 30 minutes to complete the activities in one gallery.

Exhibit Interpreters

Trained volunteers in each gallery share stories, touchable specimens, artifacts and activities with your students as they explore the museum.

Hands-on Exploration

Our Discovery Room is a hands-on exhibit space designed for students to explore museum objects in a stimulating and fun environment. Students may explore collection drawers, complete a series of tabletop activities, excavate dinosaur bones or simply examine the many wonders displayed in the room.

Exhibits That Bring Science to Life!

Oklahoma's present Native American heritage and its archaeological past, its ecology and wildlife, and its ancient life forms are all beautifully showcased in museum galleries. Special temporary exhibits are featured several times a year. Check the museum's website for this year's schedule!

ENTURE!

Loan Kits for Teachers

Loan kits are available at no charge to teachers and can be picked up at the museum. The loan period is two weeks. Kits include *Diaries in the Dirt* (Archaeology), *Excavation to Exhibit* (Dinosaurs), *Dino Dig* (Dinosaurs), *Oklahoma's Ancient Seas* (Marine Fossils) and *Rocks and Minerals* (Geology). Visit our website at www.snomnh.ou.edu for loan kit descriptions. To arrange a loan, e-mail education@snomnh.ou.edu.

Professional Development Opportunities

We offer a variety of workshops for teachers throughout the year. Please check our website for current offerings.

Visit our website for up-to date information on special exhibits at www.snomnh.ou.edu.

Immerse Yourself in the Past

In The Hall of Ancient Life, your students can sit on replicas of 3-billion-year-old bacterial domes called stromatolites, wander the giant forests that became Oklahoma's coal deposits, and then be awed by the dinosaurs and mammoth.

Explore the Natural Wonders of Oklahoma

Breathtaking dioramas in the Hall of Natural Wonders allow students to explore some of Oklahoma's unique habitats. Walk through a limestone cave that is home to bats and salamanders, observe bison in their natural habitat and marvel at the beauty of Black Mesa.

Investigate Native Cultures of Oklahoma

The Hall of the People of Oklahoma explores how people lived in the state from 30,000 years ago to present day. The gallery includes mammoth-hunting tools, exotic trade goods from the Spiro mounds and a dugout canoe students can sit in. Also, learn about the cultures of Oklahoma's many Native American tribes.



KONRAD BEK

FIELD TRIP



Hours for School Groups

Monday–Friday	9:30 a.m. to 5 p.m.
Saturday	10 a.m. to 5 p.m.
Sunday	1 to 5 p.m.

School Group Admission

School groups receive a discounted admission rate when reservations are made in advance with the museum education department.

Students

PreK–Kindergarten	Free
Grades 1–12	\$2

Adult Chaperones

PreK–Grade 6: (1 adult per 5 students)	Free
Grades 7–12: (1 adult per 10 students)	Free
Additional Adults	\$4

School Group Program Fees

Enhance your museum experience with one of our inquiry-based programs! Advanced registration is required and programs are limited to a maximum of 25 students.

Classroom Program	\$35
Laboratory Program	\$70
Discovery Room Session	\$25
Discovery Room Program	\$35

Reservations

Begin the reservation process online at www.snomnh.ou.edu. You also may contact the education department

at (405) 325-1008, or e-mail us at education@snomnh.ou.edu. We recommend that reservations are made at least two weeks in advance of your planned visit.

Payment

Payment for admission and programs is due upon arrival. Payments may be made by purchase order, school check, credit card or cash. Schools that need to cancel a scheduled program should do so at least two business days in advance.

Fund My Field Trip!

Have your students missed out on visiting the Sam Noble Museum due to lack of funding? We offer a variety of funding opportunities. Apply to the Fossil Fuel Fund, for a Target school field trip grant, or funding from the Oklahoma Energy Resources Board. Visit <http://www.snomnh.ou.edu/schoolprograms/> for more information.

Field trip funding is made possible by the generous support of: President David Boren, H.A. and Mary K. Chapman Trust, Puterbaugh Foundation, Eric Sherburn, Walton Family Foundation, Whitten-Newman Foundation, Grand River Dam Authority, and the Oklahoma Energy Resources Board.

Chaperones

The required adult chaperones receive free admission to the museum in exchange for their active supervision of all students. A ratio of 1:5 is required for elementary school children; a ratio of 1:10 is recommended for 7th through 12th grades. Adults in excess of these ratios will need to pay the group museum admission price of \$4 each.

ALLS



TEACHER APPRECIATION DAY Friday, October 7 & 28, 2011 10 a.m. to 4 p.m.

All PreK through grade 12 teachers are invited to visit the museum and learn about our programs for school groups. Museum educators will be available to answer questions about planning field trips to the museum, programs for school groups, using traveling resource kits, professional development opportunities for teachers, and online resources. Classroom giveaways and other “goodies” will be available throughout the day. Admission for PreK through grade 12 teachers and homeschool educators and their families is free!

Lunch

- Outdoor tables are available on the museum grounds where school groups may eat sack lunches. Please bring group lunches in plastic totes: corrugated cardboard is a pest hazard and cannot be brought into the museum.
- The Red Bud Café, located inside the museum, can provide box lunches for groups under 25 that order

at least five business days in advance. To make arrangements for box lunches, call the café at (405) 325-8454.

- Reaves Park, about one-half mile east of the museum, is a great space for lunch. The park has play equipment and picnic tables.
- Jacobson House Foundation offers indoor seating for groups of fewer than 30 who have sack lunches. Contact Jacobson House at (405) 366-1667.
- Couch Restaurants on the OU campus is available for groups willing to purchase lunch. For more information call (405) 325-5185 or visit www.housing.ou.edu

Excavations: The Museum Store

The museum store offers a wide selection of T-shirts, books, toys and jewelry, with many items priced under \$5. Please provide supervision in the store in the ratio of 1:5 (PreK through 6) or 1:10 (7 through 12).



HADLEY JERMAN

DISCOVERY ROOM

DISCOVERY ROOM SESSION

Discovery Room Sessions allow students to participate in guided play activities that enhance their understanding of natural and cultural history. Each session begins with a short introduction to the room by a Discovery Room staff member. Students are then encouraged to explore the room independently. These 25 minute sessions are most appropriate for PreK through grade 5 and are limited to a maximum of 25 students per session.

FEE \$25 per session + museum admission

Discovery Room Visit

School groups may visit the Discovery Room on either a first-come basis, or they may schedule a Discovery Room Session. Please remember, if you choose not to schedule a session, there is no guarantee that the room will be available while you are at the museum.

DISCOVERY ROOM PROGRAMS

Discovery Room programs involve hands-on activities, live animals and scientific specimens. Programs are 25 minutes and are limited to a maximum of 25 students per class.

FEE \$35 per session

All About Amphibians

What makes amphibians unique? Students will learn all about amphibians by observing live salamanders and tadpoles and participating in an exciting activity that takes us through the life cycle of a frog.

PASS PreK Science Processes and Inquiry 1.1, 1.4 | Physical Science 2.2, 2.3 | Life Science 3.1, 3.2, 3.3

KINDERGARTEN Science Process 1.1, 1.3 | Physical Science 1.1, 1.3 | Life Science 2.1, 2.2, 2.3

HADLEY BERMAN



GRADES PreK AND KINDERGARTEN

EDUCATIONAL PROGRAMS

These programs last 25 minutes and involve hands-on activities with scientific specimens. Programs are limited to a maximum of 25 students per class.

FEE \$35 per class

Dinosaur Eggs and Babies

What challenges does a baby dinosaur face while it is developing inside the egg? What adventures might it have once it hatches? Students will learn about two young dinosaurs in Cretaceous Oklahoma and participate in engaging activities and experiments.

PASS PreK Science Process 1.1, 1.3 | Physical Science 2.1 | Life Science 3.1, 3.2

KINDERGARTEN Science Process 1.1–1.3 | Physical Science 1.1 | Life Science 2.1, 2.2

Creature Features

Fur, feathers, scales and slime! Students will find out first hand what characteristics make birds, amphibians, reptiles and mammals both different and similar.

PASS PreK Science Process 1.1, 1.4 | Physical Science 1.1 | Life Science 1.3

KINDERGARTEN Science Process 1.1, 1.3 | Physical Science 1.1 | Life Science 2.3



Natural or Not

How can you tell the difference between things you find in nature and things that people have made? Students will classify a variety of objects to decide if they are natural or produced by humans and learn how people use natural resources, such as oil, in everyday life. **OJERB**

PASS PreK Science Process 1.1, 1.2, 1.4 | Physical Science 2.2 | Earth/Space Science 4.1

KINDERGARTEN Science Process 1.1, 1.3, 1.4 | Physical Science 1.2 | Earth/Space Science 3.1

“The students were very engaged! The class on dino babies was great!”

KINDERGARTEN TEACHER
HAWTHORNE ELEMENTARY, OKLAHOMA CITY

GRADES 1, 2, 3

EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations or data collection and analysis. Programs are limited to a maximum of 25 students per class.

FEE \$35 per class + museum admission

Meet the Dinosaurs

What kinds of dinosaurs roamed Oklahoma? Were they meat eaters or plant eaters? Did they have sharp teeth, large claws or other interesting adaptations? Are they really all extinct?

Students will discover the answer to these and other questions as they examine fossils and participate in Cretaceous role-playing.

PASS GRADE 1 Science Process 1.2, 3.1 | Life Science 2.1, 2.2, 2.3
GRADE 2 Science Process 1.2, 3.1, 4.1 | Life Science 2.2
GRADE 3 Science Process 1.2, 3.1, 4.1 | Life Science 2.2



Prairie Connections

What sort of special adaptations do prairie animals need for living in their wide-open environment? Let your students meet the prairie dogs, bobwhite quail and other natives of the Oklahoma grasslands and find out the surprising ways they meet the challenges of prairie living. Bet you can't guess what a horned lizard eats!

PASS GRADE 2

Science Process 1.2, 3.1, 4.2, 4.3 | Life Science 2.1, 2.2

GRADE 3 Science Process 1.2, 3.1, 4.2, 4.3 | Life Science 2.1-2.3



KRISTEN MARSHALL



“Books and movies are good, but to actually have the complete dino fossils right in front of you is priceless!”

KINDERGARTEN TEACHER,
HAWTHORNE ELEMENTARY, OKLAHOMA CITY

Raw to Refined

How do people modify natural resources to create tools, household items and other basic goods? Students will examine and classify common objects based on their raw materials to discover how humans interact with the natural world.



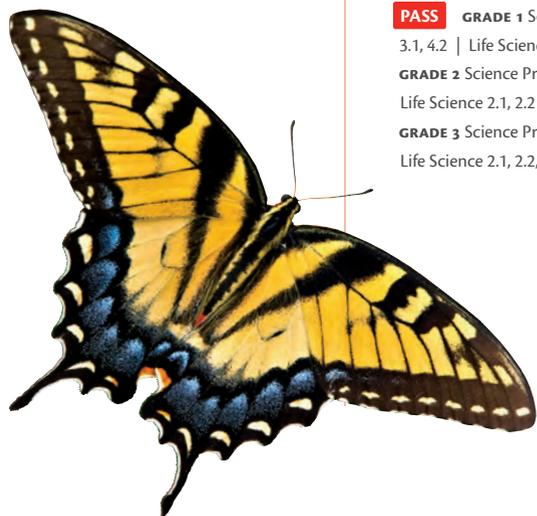
PASS GRADE 1 Science Process 1.1, 1.2, 2.1, 2.2 |

Physical Science 1.1, 1.2

GRADE 2 Science Process 1.1, 1.2, 2.1, 2.2 |

Physical Science 1.1. | Earth/Space Science 3.1

GRADE 3 Science Process 1.1, 1.2, 2.1, 2.2 | Physical Science 1.1



LAURA VAUGHN

Butterflies and Blooms

How does a caterpillar change into a butterfly? Which flowers attract what butterflies? Students will explore the beauty of nature through the life cycle of the butterfly, their identification and the flowers used to attract butterflies to your own garden.

PASS GRADE 1 Science Process 1.2, 2.2,

3.1, 4.2 | Life Science 2.1, 2.2

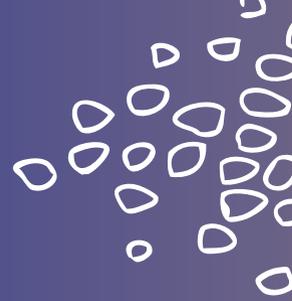
GRADE 2 Science Process 1.2, 2.2 |

Life Science 2.1, 2.2

GRADE 3 Science Process 1.2, 2.2, 3.1, 4.2 |

Life Science 2.1, 2.2, 2.3

GRADES 4,5



EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations, or data collection and analysis. Programs are limited to a maximum of 25 students per class.

FEE \$35 per class + museum admission

Dinosaur Feasts

What do scientists know about how dinosaurs ate? Students will compare dinosaur fossils and modern animal specimens to discover how both carnivorous and herbivorous dinosaurs crunched and munched their food.

PASS **GRADE 4** Science Process 1.2, 2.1, 4.4, 5.3 | Life Science 3.1, 3.2

GRADE 5 Science Process 1.2, 2.1, 4.4, 5.3 | Life Science 2.1

“It meets our PASS skills and brings them to life for the students. It was great!”

FIFTH-GRADE TEACHER
MEEKER ELEMENTARY

Web of Life

How is a tree connected to a coyote? From plants to animals to fungus, students will use museum specimens to create a community, learn about how an ecosystem works, collect and graph class data, and discover how all organisms in an ecosystem are connected.

PASS **GRADE 4** Science Process 1.2, 3.1, 4.2, 4.3, 5.1, 5.3, 5.4 | Life Science 3.1, 3.2

GRADE 5 Science Process 1.2, 2.1, 3.1, 4.2, 4.3, 5.3, 5.4 | Life Science 2.1, 2.2

Wild and Rare

Everyone hears about endangered species, but of the many plants and animals around us, which ones are endangered? Which ones are threatened? Which ones are surviving? Students will learn what makes a species vulnerable to extinction, then use museum specimens and hands-on materials to gather information and predict the futures of several species.

PASS **GRADE 4** Science Process 1.2, 3.1, 4.3, 5.1, 5.3, 5.4 | Life Science 3.1, 3.2 | **GRADE 5** Science Process 1.2, 2.1, 3.1, 4.3, 5.3, 5.4 | Life Science 2.1, 2.2





The Bison Hunters: Native Americans of the Plains

How did the Native Americans use the natural resources on the Great Plains to meet their needs? Student teams will analyze and measure tools, clothing and other artifacts from Plains Indian culture to discover the relationship between these peoples and their natural environment.

PASS GRADE 4 Social Studies 4.1, 4.2, 5.2 5.3, 5.5
GRADE 5 Social Studies 6.3, 7.2, 7.5

Rockin' Rocks

Did you know that not every rock is the same?

In this class, students will understand the difference between minerals and rocks, test the porousness of rocks and learn how sedimentary rocks are formed. **OERB**

PASS GRADE 4 Science Process 1.1, 1.2, 2.1, 2.2, 3.1-3.4, 4.1-4.4 | Earth/Space Science 4.1-4.4

GRADE 5 Science Process 1.1, 1.2, 2.1, 2.2, 3.1-3.4, 4.1-4.4



HADLEY JERMAN

EDUCATIONAL PROGRAMS

These programs last 90 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations, or data collection and analysis. Programs are limited to a maximum of 25 students per class.

FEE \$35 per class + museum admission

Clues to the Past

Did you know that southeastern Oklahoma was once a swamp at the edge of the sea? Students in this class will identify marine, wetland and terrestrial fossils and map their locations to re-create Oklahoma's ecosystem as it existed 300 million years ago.

PASS **GRADE 6** Science Process 2.1, 2.2 | Life Science 3.2, 4.1, 4.2

GRADE 7 Science Process 2.1, 2.2 | Life Science 4.2

GRADE 8 Science Process 2.1, 2.2 | Life Science 3.1, 3.2

Ecosystem Interactions

How do ecosystems work? Student groups will build food chains using museum specimens, collect and graph



data, and discover how the living and non-living components of an ecosystem are connected to each other.

PASS **GRADE 6** Science Process, 2.1, 2.2, 4.1–4.3, 5.1, 5.3, 5.4 | Life Science 3.2, 4.1, 4.2

GRADE 7 Science Process 1.3, 2.2, 3.1, 4.1–4.3, 5.3, 5.4, | Life Science 2.1, 3.1, 4.2

GRADE 8 Science Process 1.3, 2.1, 2.2, 4.1–4.3, 5.1, 5.3, 5.4 | Life Science 3.2

Science I.D.

How does a scientist identify organisms and study differences among species? Students will observe, measure, identify and describe several different groups of museum specimens, from turtles to trilobites.

PASS **GRADE 6, 7, 8** Science Process 1.1, 1.3, 2.1, 4.3

GRADE 7 Life Science 2.2, 3.1

GRADE 8 Life Science 3.1, 3.2



LABORATORY PROGRAM

Laboratory programs last two hours and include experiments or simulations and active investigation by students.

Laboratories are limited to a maximum of 25 students per class.

FEE \$70 per class + museum admission

Geology Laboratory

Did you know that you could experience the rock cycle in minutes, rather than eons? In this laboratory, students will investigate the rock cycle by “making” sedimentary, igneous and metamorphic rocks, and then experience the processes of erosion, sedimentation and soil formation. Students also will identify a variety of rocks and minerals through observations and tests. **OERB**

PASS GRADES 6–8 Process Skills 1.1, 1.2, 2.2, 3.1, 4.1, 4.3, 5.1

GRADE 6 Earth-Space Science 5.1

GRADE 8 Earth-Space Science 4.1, 4.2

Archaeology Laboratory

Students will experience the process of scientific archaeology from excavation through data collection, artifact

“I saw my students respond to the hands-on activity with wonderful interest. This gave the students more opportunity to connect to the materials and extra lab experience.”

**EIGHTH-GRADE TEACHER
LOOKEBA-SICKLES SCHOOLS**

identification, interpretation and reporting. The “sites” excavated represent five cultures from Oklahoma’s past, ranging from the dramatic mammoth-hunting cultures of 11,000 years ago to the historic Wichita.

PASS GRADE 6 Social Studies 1.1, 3.1, 3.2

GRADE 7 Social Studies 1.1, 5.1, 5.2

GRADE 8 Social Studies 1.1



EDUCATIONAL PROGRAMS

These programs last 50 minutes and include activities using artifacts or scientific specimens. Some programs also include investigations, demonstrations, or data collection and analysis. Programs are limited to a maximum of 25 students per class.

FEE \$35 per class + museum admission

It's Classified!

Scientists classify species into taxonomic groups based on characteristics such as tooth structure, skull shape, nostril placement and body type. Students will identify and group a variety of museum specimens based on quantitative and qualitative characteristics.

PASS GRADES 9–12 Science Process 1.1, 2.1, 2.2, 4.7 | Biological Diversity 3.1, 3.2

Extinction

Extinction events can be observed in the fossil record as dramatic changes in life forms and communities. Scientists use these changes in the fossil record to define time periods. Students will



LAURA VAUGHN

identify and organize fossil specimens from different time periods to determine the factors that influence extinction, including two famous mass extinction events.

PASS GRADES 9–12 Science Process 2.1, 2.2, 4.1, 4.7, 6.4
GRADE 8 Life Science 3.1, 3.2

"I thought the 'It's Classified' program we did was amazing. My students were engaged with the activity and I feel they really learned something."

TEACHER
 LINCOLN ACADEMY, STILLWATER



KONRAD ERK



LABORATORY PROGRAM

Laboratory programs last 90 minutes and include experiments or simulations and active investigation by students.

Laboratories are limited to a maximum of 25 students per class.

FEE \$70 per class + museum admission

CSI Red River

Students canoeing on the Red River find fish swimming erratically; a fisherman on the Mountain Fork of the Little River is stunned to find piles of dead and dying fish. What is happening? It is up to wildlife biologists to collect data and find the answers! Students in this class will use a variety of chemical tests, interviews and other data collection skills to solve the mysteries.

PASS GRADES 9–12 Science Process 1.1, 1.2, 1.3, 4.1–4.8, 6.1– 6.4

All SNOMNH programs have companion pre-visit materials. Check them out on the museum's website at www.snomnh.ou.edu.



LAURA VILCHIN

WHITTEN-NEWMAN EXPLOROLOGY[®] PROGRAM

WHITTEN-NEWMAN EXPLOROLOGY[®] PROGRAM

The Whitten-Newman ExplorOlogy[®] Program is a series of innovative educational opportunities designed to engage Oklahomans in “doing science” by immersing them in exciting science experiences. All programs provide participants with an adventure in science discovery!

About

During these discovery-based programs students and teachers explore the natural world we all share. This is a chance for Oklahomans to work alongside scientists and experts from the museum. Participants will have a unique opportunity to combine nature experiences with hands-on participation in field-based science, where the laboratory is the great outdoors.

Elementary, middle and high school students and teachers are encouraged to find out more about these exciting programs at explorology.snomnh.ou.edu or call (405) 325-3183.



JESCOLE

The Whitten-Newman
ExplorOlogy[®] Program
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Sam Noble Museum

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