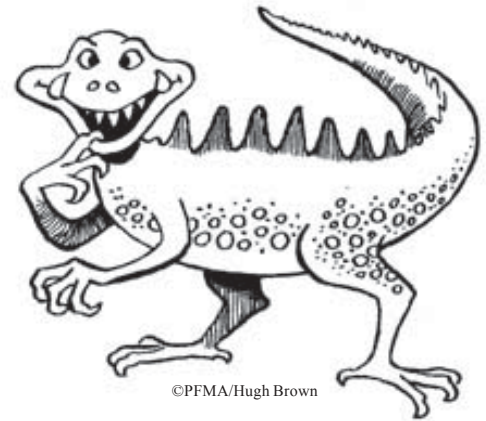


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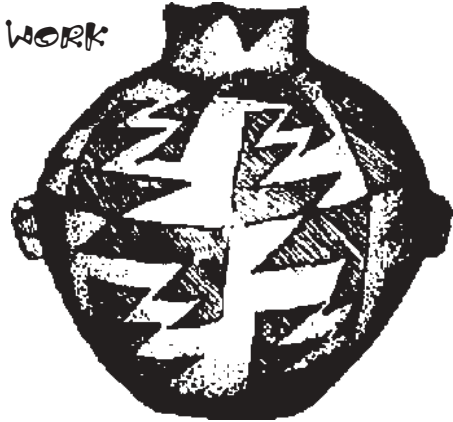
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ROCKIN' THROUGH THE AGES: FROM FOSSILS TO PETROGLYPHS

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INTRODUCTION

ROCKIN' THROUGH THE AGES: FROM FOSSILS TO PETROGLYPHS is a curriculum-based, science program for Grades 4-8. The program was developed by park rangers, scientists and teachers to meet the needs of educators and to instill in students a sense of appreciation for, and knowledge of, Petrified Forest National Park and the National Park Service. The concepts center around natural and cultural history at the park, specifically paleontology and archeology. Educators will introduce these themes to their students by developing knowledge, concepts, and skills, conducting a scientific research investigation in the park with the assistance of a park ranger, and following up with the development of student research projects.

BENEFITS TO EDUCATORS

This program has been developed not just for students, but also for educators.

- Program concepts and themes are interdisciplinary and involve the use of science, mathematics, language arts, and social studies.
- Each lesson is aligned with the Arizona Science (5-24-04) and Mathematics Standards for Grades 4-8.
- Each module uses cooperative learning and follows a constructivist approach to education.

GOALS

The goals of this education program are to:

- increase communication among park rangers, teachers, and parents interested in science education at the park;
- develop an outreach program between the national park and local school communities;
- develop in teachers and students an understanding of the mission of the National Park Service and the struggle to balance protection and preservation with visitor enjoyment;
- provide teachers with learning opportunities that integrate the study of science and mathematics with applications to language arts and social studies;
- promote student problem-solving, critical-thinking, decision-making, and cooperative learning skills; and
- facilitate student understanding of the practical use of scientific knowledge, inquiry, attitudes, and values in resource management and research careers.

OBJECTIVES

By the end of the program, students will be able to:

- describe natural and cultural resources at the park, specifically paleontological and archeological;
- use writing strategies, critical-thinking skills, mathematical applications, decision-making skills and scientific attitudes through engagement in scientific research;
- gather, organize, analyze, and communicate data as scientists; and
- recognize how personal and public values affect resource management and policy decisions.

MODULE DESIGN

Throughout each module, students will be required to maintain a journal which includes work from activities and assignments, but also includes their thoughts, ideas, notes, and questions about the lessons and topic of study. By maintaining journals, students will develop good writing habits and critical thinking skills. The journals are also part of the scientific process, used to record, analyze, interpret, and organize information.

In order to monitor and record student understanding and achievements throughout each module, teachers may want to maintain portfolios for each student. A portfolio would include student work samples in order to track progress. Samples may include writings, drawings, tables or graphs created for activities, and the research project work. The portfolio could also include systematic observations on a student's contribution to the cooperative group and the class. This may be a checklist or inventory based on instructional observations and monitored outcomes, such as knowledge, process skills, mathematical applications, and attitudes. Students should also be observed while working in their cooperative groups and within the large group, with their behavior and performance being recorded. An assessment rubric for the final project, developed by Joelle Clark of Northern Arizona University, is provided as an evaluation tool in Lesson 7.

Each module includes lessons arranged in a systematic order. Lessons introduce and reinforce concepts, skills, and knowledge with increased levels of complexity. The lessons conducted at school are essential in the development of knowledge and skills for the field exploration and final project. The park ranger assigned to your group assumes that students know how to use a compass and create maps to scale, that they understand the value of protecting resources within a national park, and that they have a basic knowledge of the subject matter. In this way, students and teachers receive the greatest benefit from their field work.

Please have each student complete the *What You Know BEFORE* questions in Lesson 1 *before* beginning work. Upon completion of the program, they should then complete the *What You Know AFTER* questions in Lesson 8. These questions will help the park to determine how well students learned during the field exploration and provide an opportunity for feedback directly from students. They are an assessment tool used to improve the education program offered at Petrified Forest National Park.

Feedback from teachers is also important! Upon completion of this education program, please complete the Teacher Evaluation in Lesson 8. This education program provides a tool for you, as an educator, to utilize a national park and its resources as a "classroom" learning environment. Let us know how we can improve the program and better serve you and your students.

Mail the completed student surveys and teacher evaluation to:

Education Technician
Petrified Forest National Park
P.O. Box 2217
Petrified Forest, AZ 86028

PRE-VISIT CHECKLIST

- Booked a field trip date with the park's education technician several weeks in advance.
- Education Fee Waiver* request sent to the park and the approved form received. A copy must be provided for each vehicle entering the park.
- What You Know BEFORE* questions have been completed by each student. These can be mailed to the park or brought with you on the day of your visit.
- Classroom lessons and activities are completed.
- Request to Conduct Research* application is completed and ready to present to the park ranger at the park.
- Rules, Regulations, and Safety Points* are understood by students.
- Field guides have been duplicated and stapled, one per student.
- Students understand what they need to wear/bring:
 - Comfortable clothes that can get dirty
 - Closed-toe shoes
 - Bad weather gear
 - Water (at least 1 quart per person)
 - Hat and sunscreen
 - Field guide and pencil
- Students divided into no more than 6 field groups (maximum of 30 students).
- Chaperones, at least one for each student field group, recruited and confirmed.
- Transportation arrangements made.
- Lunch arrangements made.
- Nametags made and ready for distribution the morning of departure.
- Questions? Concerns? Call the Education Technician at (928) 524-6228 ext 264.

Petrified Forest National Park



Educational Fee Waiver Request Instructions for Grades K-12

Fee Management FAX (928) 524-6781

For an uncomplicated application process, please submit an Educational Fee Waiver request at least 2 weeks prior to your park visit.

Using your official school letterhead, please include the following information:

- Date of request
- School name, address, phone number, and fax number
- Educator in charge of the group
- Number of Students age 16 and younger
- Number of Students over 16
- Number of Adults
- Number of Vehicles
- Date of Arrival and Approximate Time
- Indicate the educational purpose of the trip. For example, what aspect, feature, or resource of the park is to be studied.
- If you have a ranger-led activity booked, please indicate the type of program the group will participate in. For example:
 - Rockin' Through the Ages: from Fossils to Petroglyphs:
 - Petrified Tree Orientation
 - Fossil Excavation
 - Studying Fossils in the Laboratory
 - Monitoring Petroglyphs
 - Archeological Excavation
 - Subsistence Lifestyle Study
 - Ranger-led program such as a walk or talk
- The request should be signed by either the educator in charge of the group or the school principal.

You will receive confirmation of an approved educational fee waiver from Petrified Forest National Park. You must bring the approved request to the park on the day of your visit and present it at the entrance station. A copy must be provided in each vehicle.

DRIVING DIRECTIONS

ENTERING AT THE NORTH END

Enter Petrified Forest National Park from I-40, using Exit 311. Stop at the Painted Desert Visitor Center for restrooms, to fill water bottles, and, if scheduled, to watch the twenty-minute orientation movie, *Timeless Impressions*. Let the desk staff know that you are scheduled for an education program, and they will call the appropriate park ranger.

The park ranger conducting your field trip will meet you at the Painted Desert Visitor Center, unless otherwise arranged. Present your approved Educational Fee Waiver at the entrance station. Each vehicle in your group must have a copy of the fee waiver.

If your students are participating in either the Fossil Excavation or the Archeological Excavation, follow the park ranger to Chinde Point, two-miles north of the entrance station. Park and allow students to unload at the first picnic shelter.

If your students are participating in the Monitoring Petroglyphs or Subsistence Lifestyle Study, meet the park ranger at Puerco Pueblo, eleven-miles from the entrance station. Park and allow students to unload in the designated parking area.

Upon completion of the field study, you are encouraged to continue through the park, exiting at the south end onto Hwy 180, returning home through Holbrook or St. Johns. Allow at least forty-five minutes driving time.

ENTERING AT THE SOUTH END

Enter Petrified Forest National Park from Hwy 180. Present your approved Educational Fee Waiver at the entrance station. Each vehicle in your group must have a copy of the fee waiver. Let the entrance station ranger know that you are scheduled for an education program; and they will call the appropriate park ranger.

Stop at the Rainbow Forest Museum, two-miles north of the entrance station, for restrooms, to fill water bottles, and to meet the park ranger conducting your field exploration, unless otherwise arranged.

Upon completion of the field study, you are encouraged to continue through the park, exiting at the north end onto I-40. Allow at least forty-five minutes driving time.

Sheltered picnic areas are located at Chinde Point and Rainbow Forest Museum. You may have lunch at any wayside area, provided you remain in the developed area and do not picnic off-trail. Please help us keep the park clean and ensure that all trash is disposed of properly. Where trash receptacles are not provided, please carry out all trash with you.

LOGISTICS



FIRST AID

If you have any medical problems during the field exploration, let the park ranger know immediately. If a medical problem occurs after the park ranger has left your group, contact any park employee or, in case of an emergency, use the emergency phones located at Puerco Pueblo, Blue Mesa, and Crystal Forest. First aid supplies are located at the Painted Desert Visitor Center, the Painted Desert Inn, and the Rainbow Forest Museum.

RESTROOMS

Year-round facilities are found at the Painted Desert Visitor Center, the Painted Desert Inn, Puerco Pueblo, and the Rainbow Forest Museum. During summer months, facilities are also available at Chinde Point and Agate Bridge.



PICNIC AREAS

Sheltered picnic areas are located at Chinde Point and the Rainbow Forest Museum. You are welcome to stop and have lunch at any of the other viewpoints, provided you remain in the developed area and do not picnic off-trail. Please help us keep the park clean and ensure that all trash is disposed of properly.

WATER FOUNTAINS

Each member of your group should carry a water bottle while in the park. Water is available at the Painted Desert Visitor Center, the Painted Desert Inn, and the Rainbow Forest Museum.



FOOD SERVICE

The Fred Harvey Company operates a year-round restaurant and snack bar next to the the Painted Desert Visitor Center and seasonal food service near Rainbow Forest Museum. If you would like Fred Harvey to cater your lunch, call ahead to make arrangements (928) 524-3756.

LOST AND FOUND

If anyone in your group misplaces something or finds a lost item to turn in, contact either the Painted Desert Visitor Center, the Painted Desert Inn, or the Rainbow Forest Museum as soon as possible. You may also call (928) 524-6228.

