

Dinosaur Dig!

State the Challenge: Specifically describe your issue and how your project will address and attempt to solve it. (250 words max)

"Science is the systematic classification of experience. "

This quote is from an English philosopher, George Henry Lewes, a proponent of Darwinism in Victorian England. His statement points to how important it is for everyone to experience science; to touch, hold, see scientific objects and to perform experiments. These ideas are especially important for an elementary school student. In second grade, students have probably read about dinosaurs and fossils. Perhaps, they may even know that fossils provide evidence about the plants and animals that lived long ago. There may even be students that want to be paleontologists, scientists who study fossils, when they grow up. However, they may not have had the experience of seeing a cast of a dinosaur, touch a real fossil, understand how fossils are actually made or hear a paleontologist discuss their occupation. We are fortunate that UC Berkeley is accessible by BART and has the Museum of Paleontology. This project will augment the California Standards for science education, Earth Sciences, 3c,d and Investigation and Experimentation by having the second graders of Fairmont Elementary school immerse themselves in the field of paleontology. They will make fossils and prints from plaster of paris. They will visit the UC Berkeley Museum of Paleontology (UCMP) to visit the full *T.rex* cast as well as examine fossils and fossilization process in their science labs. They will also learn that there are fossils in their own backyard, at the Mt. Diablo State Park!

Detailed Project Description: Describe your project idea. Be sure to include examples of envisioned student activities. (350 words max)

This project will focus on the fossil unit which satisfies the California State Standards in Earth Science and Investigation and Experimentation. Some activities include:

1. What is a fossil? Students will brainstorm and give examples of fossils. Responses will be posted on a classroom wall chart.
2. Students will use the school library and find books about dinosaurs and fossils. Students will meet in groups of 4 to share their books, focus on favorite pages, and ask each other questions.
3. Students will bring in materials that can be made into plaster casts. Materials can include seashells, leaves, bark, plastic dinosaurs, dead insects, and snail shells.
4. Students will make casts of the items using plaster of paris.
5. The second graders will have a dino dig –students will dig up and find fossils, using tools that a paleontologist would use.
6. Students will also map out their dig area using a grid system.
7. Students will visit UCMP to see a real cast of a dinosaur. They will also visit a real science lab, talk with University Personnel, and learn about the fossilization process as well as learn what paleontologists do out in the field.

8. Students will compare and contrast their plaster of paris casts with that of "real" fossils.
9. Looking at the geography and geology of California, students will study Mt. Diablo and how fossils can form in that mountain.

Project Objectives: Specifically state what students will learn and be able to do as a result of this grant. (250 words max)

At least 90% of the Fairmont Elementary School Second Graders will participate in the following:

Learning outcomes:

1. Students will learn that fossils are preserved remains of organisms that lived a long, long time ago.
2. Students will learn how those imprints could have been made through making imprints of their own using plaster of paris.
3. Students will learn what paleontologists do and how they work to dig up fossils.
4. Students will learn that paleontology, like all sciences, uses observations and systematic recording of data and using proper techniques.
5. Students will learn that a community can consist of a university where people, like scientists, share their knowledge and their occupation.
6. Students will learn that fossils do not only exist in exotic locales but can exist in their own "backyard".
7. Students will learn how to locate dinosaur/fossil books in the non-fiction section of the school library.

Schedule of Events: Please include a time line of activities, starting in November, to show that the project is well-planned. (250 words max)

Student friendly project rubrics will be used to guide the following work.

1. In January, Students will begin a series of visits to the Fairmont Library to find library books pertaining to fossils and or dinosaurs. They will begin a Fossil Journal to record their research findings during the next two months.
2. During the month of January, students will read about paleontology, paleontologists, dinosaurs, fossils, and how fossils are formed.
3. Beginning in January, students will bring in materials with which to make casts. They will share leaves, bark, shells, etc with the class.
4. By the end of January, students will make plaster casts from materials contributed to their project.
5. Students will make a dig site during the 2nd week in January. They will use a grid system. They will dig for dinosaur bones or fossils in this site.
6. Students will visit UCMP and see some examples of real dinosaur fossils, touch the fossils and learn how they fossilize. They will also learn about paleontologists and their work.
7. Students will compare and contrast the fossils they see at UCMP with the own casts that they make.

8. Students will write a final essay in their Fossil Journal about their paleontology experience.

Project Evaluation: How will you determine if your objectives have been met? Include at least one quantitative method. (250 words max)

The Student friendly project rubrics used during events listed above will be the quantitative method to measure and determine if the objectives have been met. With each event, at least 90% of the students will complete at least 80% of the designated rubric criteria. Additional measurements will include.

1. Re-surveying the class for their ideas of what is a fossil.
2. Assess their understanding of a real fossil with the imprints they make through their journal writing.
3. Evaluate their knowledge of the subject through participation.

Budget Outline: Please provide specific information on the materials to be purchased with the grant funds. (150 words max)

\$360 = 4 classroom T.rex Deluxe tour at UCMP tours(\$90 each)

\$20 = 25lb bag of plaster of paris

\$5 = bag of sand

\$126 = BART tickets to Berkeley campus: \$3.50 round trip for 80
(discount for students)

\$60 = Books such as: Magic School Bus in the Time of the Dinosaurs,
Fossils tell of long ago (for each classroom)

\$55 = DVDs: such as Dinosaur Giants Found (a story about the
paleontologist, Paul Sereno and his search for dinosaurs) or the
Essential Dinosaur pack from the Discovery Channel (to share)

\$85 = Dinosaur footprint and trackway kit

\$45 = Inflatable T-rex & inflatable pteranodon

\$50 = Dinosaur puzzles (for each of the classrooms)

\$806 = Grand total