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ABSTRACT
                This material describes a fossil-building activity
using sea shells, chicken bones, and plaster for grade one through
three students. Related process skills, vocabulary, computer
principles, time requirements, and materials are listed. Two methods
of building the fossils are discussed. After building the fossils,
classes may be divided into pairs of students. Students are allowed
to examine their fossils, compare the fossils with the real object,
conduct a class discussion, and make a hypothesis about what it might
mean if the fossils are not good duplications of the original.
Children may write their reports using a computer/word processing
program. Four activities for curriculum extension are suggested.
(YP)

Building Fossils In The Elementary School
And Writing About Them Using Computers

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INTRODUCTION

Dinosaurs, dinosaurs, dinosaurs everywhere! You what to witness excitement, you say! Well, all you need do is walk into a first, second or third and start talking about dinosaurs Surly as night f llows day you ll see the excitement Kids in these grades know more about the brontosaurus than most adults. They know these animals are extinct, many fossils of them have them have been found and so on. A natural extension of a child s understanding that much of what we know of dinosaurs comes from the fossil record is that many other organisms are extinct but their evidence is found in the record

PRESENTATION

Children, who participate in this activity, build their own fossils using such materials as sea shells, chicken bones and plaster of Paris. If you elect to have children make fossils of chicken bones, you need to prepare early. After stripping the bones of as much muscle tissue as possible (a good chicken dinner will take care of this), the remaining cartilage and muscle tissue may be removed by boiling the bones. Two methods of building the fossils are discussed below. In the "Curriculum Extension" you ll some suggestions about integrating the computer into this activity.

Grade Level Grades 1-3

Science Principles.	Vocabulary
1. Observation.	1. Fossil.
2. Hypothesizing	2. Dinosaur.

Computer Principles.

1. Word processor file construction.

2. File storage.

3. File printing.

4. Disk formatting.

5. Program loading.

Time Requirements. Allow approximately 1/2 hour to construct the fossil and 1 hour for the plaster to dry.

Materials.

1. 1 empty half gallon milk carton for each student (students bring milk cartons from home)

2. Approximately 2 pounds of plaster for each class of 24 students (each student will need about 1/2 cup of plaster).

3. 5 pounds of modeling clay per class

4. 1 jar of vegetable oil for each class.

5. Several pastry brushes for each class.

6. 1 roll of aluminum foil for each class

7. Approximately 2 liters of water per class (each student will need about 6 table spoons).

8. 1 paper drinking cup for each student

9. 1 sea shell, chicken bone or other item to be used in making the fossil (leaves, plastic insects etc.).

10. 1 box of food coloring which includes several colors, for each class.

11. 1 tongue depressor for each student.

12. At least 1 meter stick.

13. 1 small porcelain dish or cup.

14. 1 measuring cup.

15. 1 table spoon for every 4 students.

16. At least 1 Apple IIe or GS computer with printer for each class.

17. 1 copy of the AppleWorks program for each computer (Versions 1.2, 1.3, 2.0 and 2.0GS can be used; 2.0 and 2.0GS are normally used only with the Apple IIGS).

18. 1 data disk for each computer

Procedures.

1. **Milk Cartons.** Cutoff the milk cartons approximately 4cm from the bottom and discard the top (see Figure 1).

2. **Method 1** (without clay).

INSERT FIGURE 1 ABOUT HERE

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a. **Materials Handout.**

(1) 1 piece of tin foil approximately 25cm long (students do their work on the shiny side of

the foil).

(2) 1 paper cup.

(3) 1 tongue depressor.

(4) 1 milk carton bottom.

(5) A quantity of plaster.

b. **Plaster Mixing.** Mix a quantity of plaster in the paper cup. The tongue depressor is used for this purpose. The quantity should be such that, when used, it will just about fill the bottom of the milk carton.

c. **Plaster Coloring.** mix the food coloring together in the porcelain dish to produce a dark slate color. Stir the food coloring into the plaster

d. **Painting with Oil.** Paint the shell, bone or other object of which you plan to make a fossil, with vegetable oil. Be sure not to use excess oil and to cover all parts of the object that will be in contact with the plaster.

e. **Object Placement.** Place the object in the milk carton, in the desired position (see Figure 2).

INSERT FIGURE 2 ABOUT HERE

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f. **Drying.** Allow a period for the plaster to dry

3. **Method 2** (without milk carton).

a. **Materials Handout.**

(1) 1 piece of tin foil (students do their work on the shiny side of the tin foil).

(2) 1 paper cup.

(3) A quantity of plaster.

(4) A quantity of clay.

b. <u>Clay Molding</u>. Mold a piece of clay longer and thicker than the object of which you desire to make the fossil.

c. <u>Object Painting</u>. Paint the object of which the fossil is to made with a light coat of vegetable oil.

d. <u>Making An Impression</u>. Make an impression of the object in the piece of clay and then remove the object.

e. <u>Painting</u>. Paint the impression with a light coat of vegetable oil.

f. <u>Plaster Mixing</u>. Mix a quantity of plaster in the paper cup. The quantity should be sufficient to fill the depression made in the clay.

g. <u>Plaster Coloring</u>. Mix food coloring into the plaster.

g. <u>Impression Filling</u>. Fill the impression with plaster and allow a small amount of plaster to spill over the top of the impression.

h. <u>Drying</u>. Allow a period for the plaster to dry.

4. <u>Research Teams</u>. Divide the class into pairs of students.

5. **Examination Period**. Allow a period during which the research teams examine their fossils, comparing the fossil with the real object

6. **Class Discussion**. Conduct a class discussion during which students are led toward the idea that the fossil and the real object a¹ , for practical purposes, identical Ask students to hypothesize what it might mean if the fossils are not good duplications of the original (objects not in the correct position when they are buried may produce poor fossils).

7. **Report Writing** Teachers electing to use this portion of the activity should know how to set up, save and print AppleWorks word processing files and format blank computer disks.

   a. **Formatting**. Format the blank data disk. This is accomplished by selecting option #5 from the AppleWorks program 'main menu' and option #5 of the "other activities" menu

   b **Program Loading**. Load the AppleWorks program into the computer.

   c. **File Construction**. Have each student construct a word processor file in which will be written a report about the activity (see Figure 3).

INSERT FIGURE 3 ABOUT HERE

Students last names could be used for the file
names.

c. **File Storage**   Store the file on the blank disk
This can be accomplished by pressing the OPEN-APPLE
and "S" keys at the same time.

d. **Writing**. Write the report

e. **File Storage**. Store the file

f. **Printing**. Print the file. THis is accomplished by
pressing the OPEN-APPLE and "P" keys at the same
time and following the directions provided on the
screen.

Curriculum Extension.

1. Make various art objects like leaf models which can be
painted.

2. Build a dinosaur out of chicken bones once the fossil
activity has been completed.

3. Make a plaster cast of each students palm. then, fill
the cast with modeling clay to show how fossils or
animal foot prints are made (a track hardens and fills
with another kind of rock).

4. Write a letter to a friend about making fossils This
could be done using the word processing portion of the
AppleWorks program.

SUMMARY

Children are really enthusiastic about doing "hands-on"
concrete activities. If you have tried other methods of

introducing students to the study of dinosaurs and found
them less excited than you thought they should be. why not
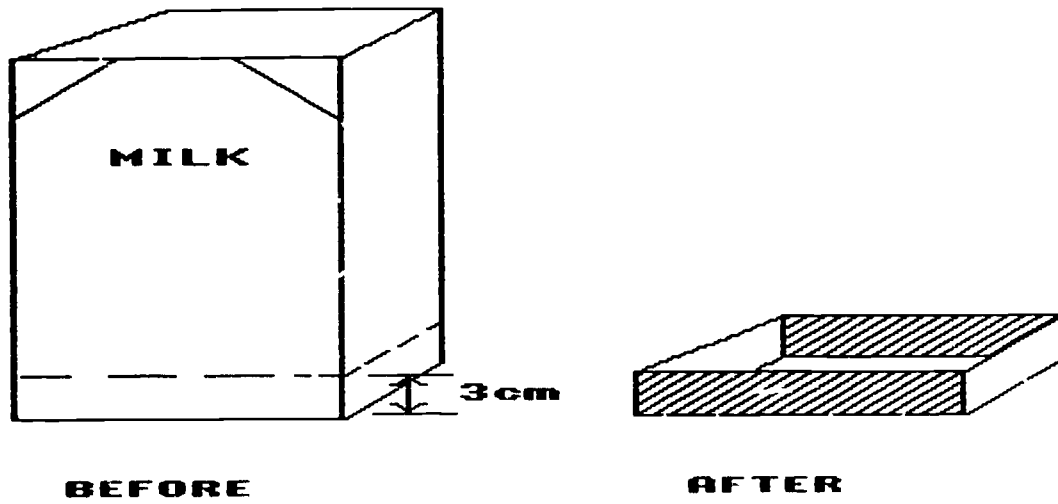try this activity as an introduction?
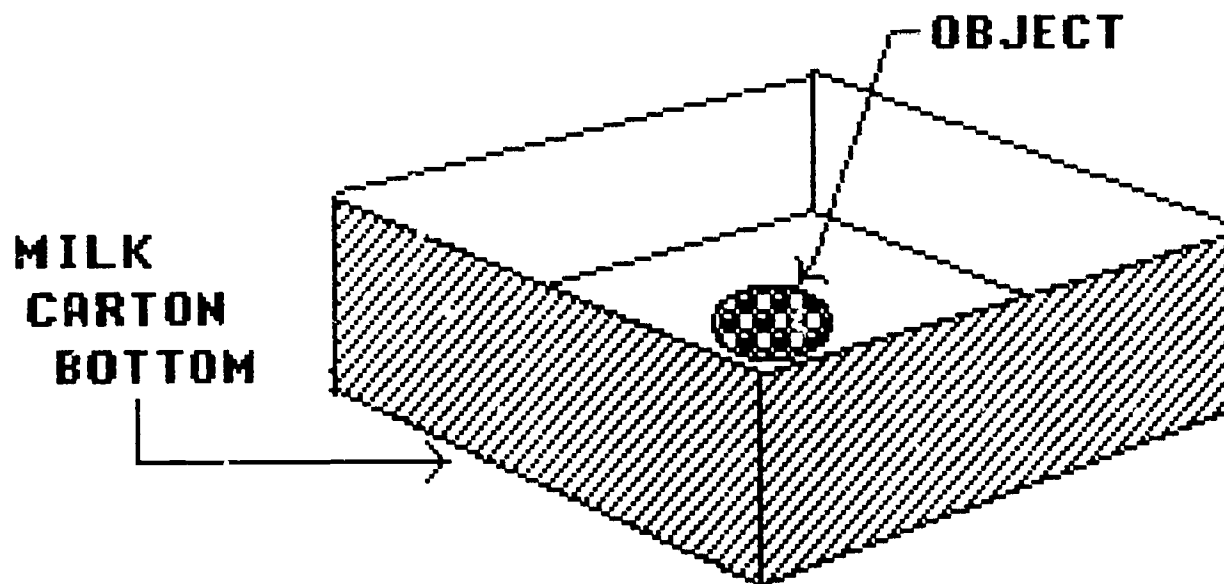
Figure 1.   Cutting The Milk Carton.

Figure 2. Milk Carton Showing The Placement Of The Object

File: SARAH SMITH   REVIEW/ADD/CHANGE   Escape: Main Menu
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Type entry or use @ commands   Line 1   Column 1   @-? for Help

Figure 3.   Blank Word Processor File.