NATURE KIDS

SCIENCE PROJECTS JUST FOR FUN.

CACTUS CRAFTS

Make your own desert cactus. Here are two ways to make a cactus to keep.

PLAYDOUGH

Materials:

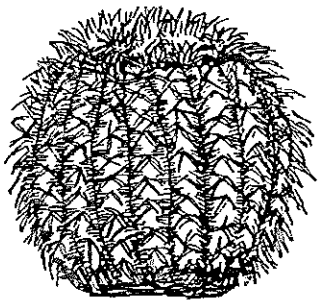
Dough (playdough #4 from Kids' Create)

- 1/2 cup salt
- 1 cup flour
- 1 cup water
- 1 tbs. oil
- 2 tsp. cream of tartar
- green and yellow food coloring

Spaghetti - broken into short lengths

Colored tissue paper for flowers- cut into small circles

Aluminum foil - optional



What to do:

For simple shapes, like barrel cactus, you can form the dough with your hands, make the pleats with your fingers, or score the surface with a fork, and poke pieces of spaghetti in for the spines. If you put the spaghetti spines along the ridges of then pleats, it will look very realistic.

For more complicated shapes, like saguaro cactus, crush the aluminum foil and form it into the shape you want. Pat the dough into pancakes and mold it on the outside of the foil. Add spines.

For flowers, poke the center of a tissue circle into the dough. Let dry.

BAKED DOUGH CACTI

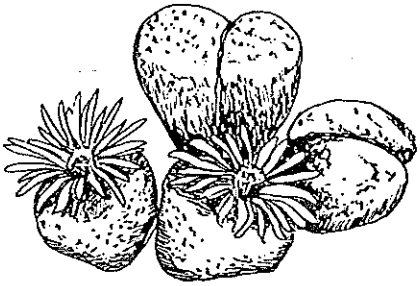
Materials:

dough

- 1 cup salt
- 1 1/2 cup WARM water
- 4 cups flour
- (dissolve the salt in the water. add the flour and knead for 5 or 6 minutes)

Markers

Tissue paper for flowers (as above)



What to do:

The shaping process is the same as for the playdough. BUT this dough needs to be baked, so the flowers have to be glued on after it is baked.

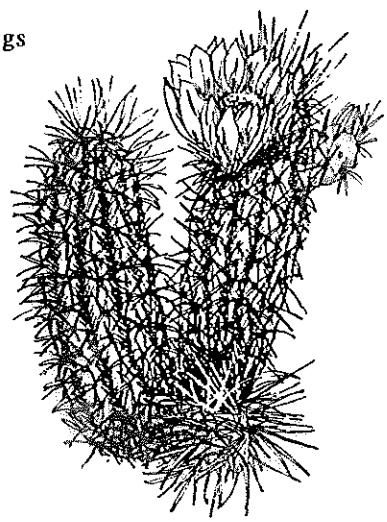
Bake at 250 degrees (200 for very chunky pieces) for 2 hours or more. The pieces should be dry but not brown. Cool and color. Glue on Flowers if you choose.

TEACHER'S CORNER

by Jenni Malone

DESERT SURVIVORS

As a habitat, the desert is one of the most challenging on earth. There is little precipitation to provide water to deep groundwater levels and few springs or streams. Additionally, clear skies and bright sunshine increase the evaporation rate of the water that is there. Extreme temperatures dominate both day and night, heat from the sun baking the ground and air by day, to be lost at night to the clear skies.



Strawberry Cactus

What kinds of adaptations allow plants to survive these harsh conditions? They need to be able to absorb and, more importantly, retain, what water comes their way. They need to be able to withstand both extreme heat and extreme cold, sometimes within a single day, and they need to be able to survive the intense sunlight without withering up.

The plants that *do* survive these harsh conditions can be broken down into two major groups; *ephemerals* and *xerophytes*. Ephemerals consist of most wildflowers and some grasses which sprout, grow, bloom and set seed within a brief span of time after a significant rainfall. The rest of the time they lay dormant as seeds, awaiting the next big rain. The primary adaptations are the speed at which they grow and produce, the length of time the seed can remain viable, and (for many) a protective coating on the seed which requires water, and (for some) a ride in a flash flood to germinate.

Xerophytes comprise the ongoing plant life of the desert. Xerophytes include yucca and agave in the lily family; acacia, huisache and mesquite in the legume family, and cacti.

Two of the most prominent groups in U.S. deserts are the agave and the cacti. They both have special tissues called *parenchyma*, which can absorb and store water, and lose water without either bursting or collapsing. In addition cacti often have dense spines which provide shade and insulation to the plant, protecting it from both the most intense light and heat of the day and the most extreme cold of the night. The densest area of spines is usually at the top where the most sensitive growing tissue is, protecting it as a hat might protect us from light and temperature extremes.

Both cacti and agave have deeply recessed *stomata* (pores through which air exchange takes place). Additionally, these plants often open their stomata at night, when the air is less dry and cooler, absorbing the carbon dioxide then and storing it within the tissues until the next day, when it is utilized in photosynthesis.

Both cacti and agave have thick "skins" with a waxy coating which aids in preventing water loss. Agave generally store water in the base of the plant. Cacti often store it right in the stem. The accordion-like pleats found on saguaro and related cacti, allow the stem to swell to twice its diameter, and later shrink again, without breaking.

The roots of desert perennials generally follow one of two patterns: they grow very deep, like mesquite, to tap the groundwater far below the surface, or they spread out widely, to absorb quickly and efficiently what rainfall comes, cacti and agaves follow this latter pattern.

The agaves include the famous century plant, sotol, nolina and lechugeia. The cacti we are familiar with in the U.S. belong to two groups: *Opuntieae* and *Cereae*. Opuntieae means: a plant with points" and includes both prickly pear and cholla cactus. Cereeae (or Cereus) includes saguaro, hedgehog and barrel cacti.

All these desert survivors, both xerophytes and ephemerals rely on their adaptations to survive their unique, extreme environment.