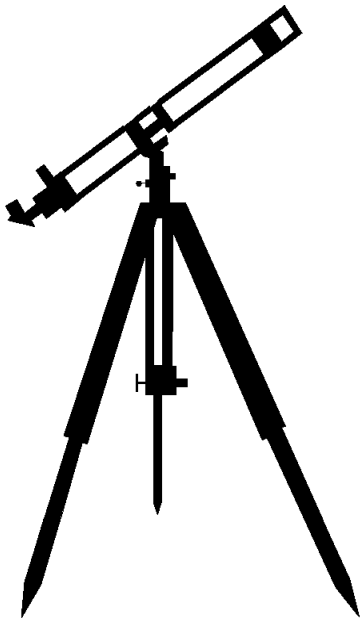
Universe Cycle

The Search for Our Beginnings

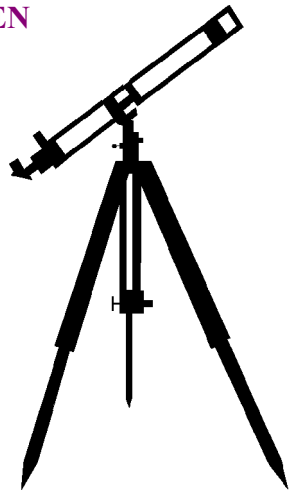
KINDERGARTEN

EARTH



1 WEEK
LESSON PLANS AND
ACTIVITIES

UNIVERSE CYCLE
OVERVIEW OF KINDERGARTEN



UNIVERSE

WEEK 1.
PRE: *Discovering misconceptions of the Universe.*
LAB: *Comparing size and distances in space.*
POST: *Exploring the living requirements in space.*

SOLAR SYSTEM

WEEK 2.
PRE: *Distinguishing the different planets.*
LAB: *Distinguishing rotation and revolution of planets.*
POST: *Exploring the Solar System.*

EARTH

WEEK 3.
PRE: *Discovering the shape of the Earth.*
LAB: *Exploring mountains and plains.*
POST: *Observing different landforms.*

GEOGRAPHY

WEEK 4.
PRE: *Distinguishing between land and water.*
LAB: *Identifying continents and oceans on a globe.*
POST: *Exploring the Earth's surface.*

UNIVERSE CYCLE - EARTH (K)

PRE LAB

Students make models of the Earth using playdough.

OBJECTIVES:

1. Discovering the shape of the Earth.
2. Exploring the composition of the Earth.

VOCABULARY:

rocks
round
spherical

MATERIALS:

crayons
geometric shapes (optional)
playdough
worksheet

BACKGROUND:

Geometric shapes help students to describe natural objects. However, real things rarely have shapes as perfect as those created by a ruler or a computer. This sometimes confuses children. They imagine the perfect geometric shape, but the real object is imperfect. Learning different shapes by using models thus enriches a child's understanding of shapes, but does not fully define the appearance of natural objects. Students must learn that shapes are only guides to the characteristics of real things.

Children naturally see in the world in three dimensions. At an early age, however, they should begin to distinguish three dimensional shapes from their two dimensional equivalents. They must learn that when three dimensional shapes are drawn on a flat surface, they usually appear or "become" two dimensional. Since this adjustment is natural for adults, they usually guide students' understanding of this distinction poorly. It is important to give students examples of equivalent three dimensional and two dimensional objects. For instance, if you show the students a globe, also show them a circle drawn on the board or on paper.

In this exercise, the students are introduced to different shapes - a cube, a hexagon, and a circle. They will try and determine which of these is most similar to the Earth's shape. Most children know that the Earth is spherical, but when asked, they will say the two dimensional term, circle. Make sure the students begin to understand the distinction between a sphere and a circle.

PROCEDURE:

1. If you have a set of geometric models, you may wish to use them to demonstrate different shapes to the class. Make sure to show the students the two dimensional equivalents of the shapes as well.

2. Have the students complete the upper part of the worksheet.

3. Ask students how we know that the Earth is spherical. Most children have seen pictures of Earth from space, or have seen a globe, so they know that the shape is spherical. You can tell the students that hundreds of years ago people thought the Earth was flat and that ships could sail off the face of the Earth. People slowly began to realize that ships coming from long distances appears from the top of the mast before the entire ship could be seen.

4. The lower part of the worksheet has students think about what is inside the Earth. Evidence about this is more difficult to observe than the shape of the Earth. Most students eventually arrive at the correct answer, “rocks” by a process of elimination. This is basically correct; the Earth is basically a ball of rock that is rotating and revolving in space. The interior of the Earth is very hot, but there is no fire per se within it.

5. As an added exercise, you may want to give students playdough , and have them fashion a spherical "Earth." Here are a pair of playdough recipes:

PLAYDOUGH RECIPE #1 (the dough formed is not as durable as recipe #2)

1 cup flour
1\2 cup salt
2 teaspoon cream of tartar
1 cup water

RECIPE #2. CLASSROOM QUANTITIES (alum helps preserve the playdough)

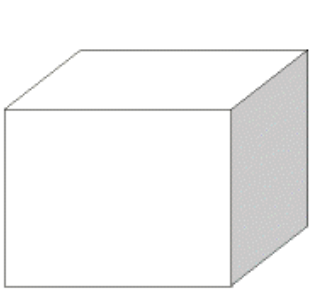
5 cups of flour
1 cup of salt
2 tablespoons of alum
2 tablespoons oil
3 cups of very hot water

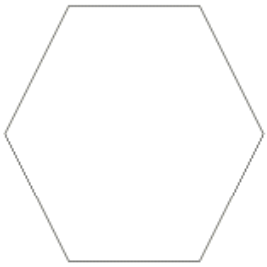
For both recipes, first mix together all the ingredients. Cook them over medium heat while stirring, for 3 to 4 minutes, until a dough ball forms and separates from the sides of the pan. You may add food coloring or glitter for special effects. Adding food coloring works best when it is added with the water at the start of the recipe.

UNIVERSE CYCLE - EARTH (K) PRE LAB

Circle the correct answer

What is the shape of the Earth?

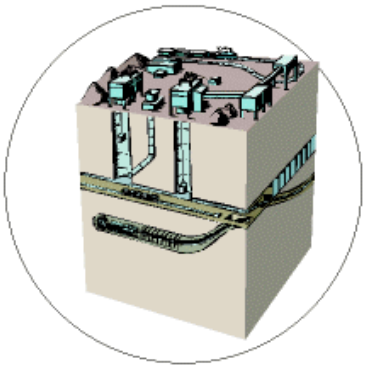




What is inside the Earth?

Fire

Dragon



Rock

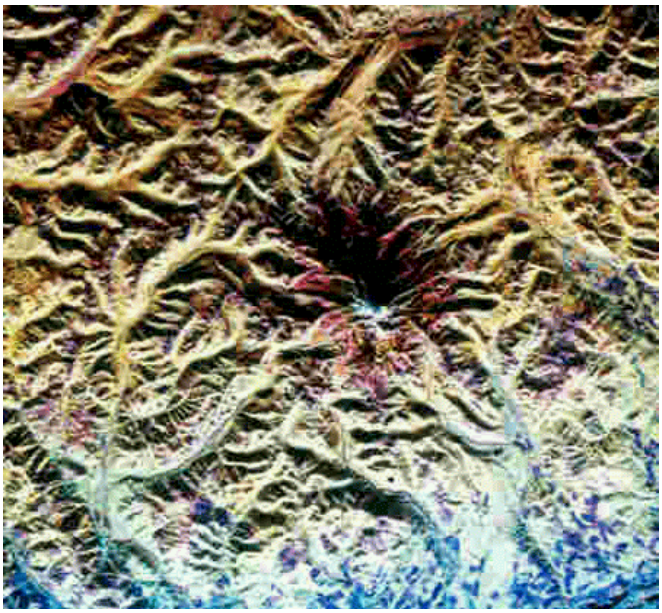
UNIVERSE CYCLE - EARTH (K)

LAB

Students make a relief map.

OBJECTIVES:

1. Exploring mountains and plains.
2. Identifying mountains on a map.



VOCABULARY:

east
land
mountain
plain
relief
west

MATERIALS:

United States relief map
United States Placemat
playdough

BACKGROUND:

When students look outside, they see that the Earth is not flat like most maps make it appear. The Earth has mountains and valleys, hills and depressions. The Earth has what is called "relief", or changes in elevation on its surface

A map is usually a two dimensional picture or representation of the Earth's surface. Maps have many purposes, such as showing distances between objects, portraying relief, and navigation. Most maps, whether printed on a flat piece of paper or viewed on a computer screen, are two dimensional representations of the real, three dimensional Earth.

A map is not a picture or photograph of the Earth's surface. It is a drawing which highlights some feature of interest, such as a road map. Maps can thus make clear details that might be hard to interpret from photographs.

All maps have a scale, which relates map distances to real world distances. On the United States placemat, a bar scale shows distances in miles and kilometers. Note that different scales are used for the Alaska and Hawaii insets.

In this lab, the students will use the United State placemat. The colored side of this shows the fifty states, their principal cities, national parks, and major rivers and mountains. The black and white shows major rivers and the locations of state capitals. You may wish to explain the scale to them, as a way of understanding “how far away” things are from

each other. The relief map is a special type of three dimensional map which portrays changes in elevation on the Earth's surface. They are an excellent tool to help students understand the concept of relief. Note that relief is exaggerated on the map. This is necessary, because in reality mountains are really tiny "bumps" on the Earth's surface.

PROCEDURE:

1. Introduce maps to the students. Some of them may be familiar with maps from computer or video games. You may wish to show them a road map of your local area, to demonstrate maps as navigational tools. Explain the concept of relief to the students, and tell them that some maps show relief.

Show students the United States relief map. Have them touch all the "bumps". Explain that these bumps are mountains. Make sure the students see that the United States has mountains on the east coast and the west coast. Explain that the middle of the United States is flat. When land is flat it is called a plain. You may wish to illustrate mountains and plains with photographs.

2. Have the students work individually or in groups. Give each student or student group a United States placemat and play dough. Have the students make a relief map, using the two dimensional map as a base. The key objective is for the students to outline mountains near the east and west coasts. The western mountains should be larger. Have the relief map available, so that the students can refer to it. Check their maps after they completed their assignment.

3. Check the students' maps. Do not expect too many sculptured master pieces! Just working with the playdough, attempting to make mountains is sufficient. Have the students clean their placemats and put the playdough away.

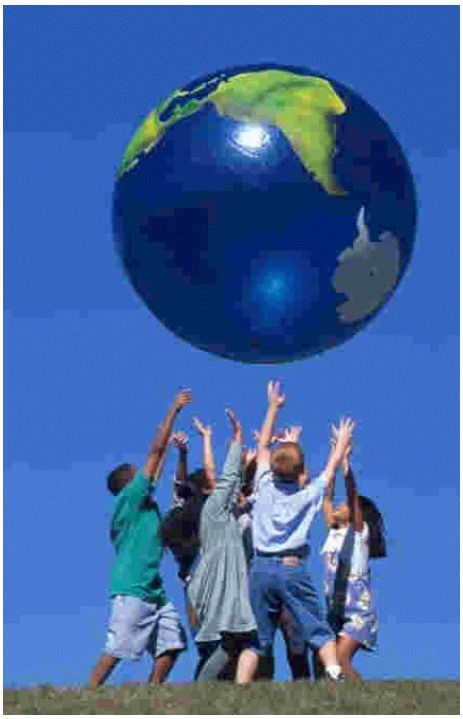
UNIVERSE CYCLE - EARTH (K)

POST LAB

Students use a worksheet to look at different landforms on Earth.

OBJECTIVES:

1. Observing different landforms.
2. Comparing and contrasting landforms.



VOCABULARY:

beach
desert
valley
lake
mountain
ocean
river

MATERIALS:

worksheet
Internet

BACKGROUND:

A landform is a feature of the Earth's surface. Beaches, deserts, lakes, rivers, mountains, and valleys are all examples of landforms. Children are familiar with their own backyard, and many do not know that other "landforms" exist. If you are in a flat area, they may not have seen a mountain. If they live in an urban setting, they may have never seen the ocean.

PROCEDURE:

1. This activity introduces students to the vocabulary words. They match pictures with the words on the worksheet. You can also use pictures from other sources. For example, if you have a slide collection, (maybe from your travels), you project the pictures, and take the students on a walk through a forest, up a mountain, or through some other landscape.

2. If you have Internet access, you may wish to have the children look at several travel sites. You can thus go to exotic places without leaving the classroom. Students could also do this at home, under their parent's supervision.

MATCH THE WORD AND THE PICTURE

BEACH

MOUNTAIN

OCEAN

LAKE

PLAIN

VALLEY

RIVER

DESERT