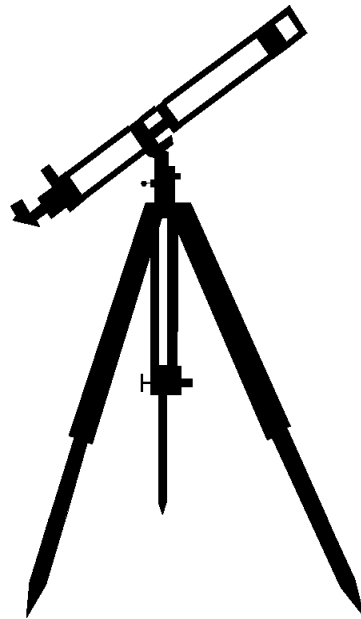




Universe Cycle
The Search for Our Beginnings



KINDERGARTEN UNIVERSE



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.*

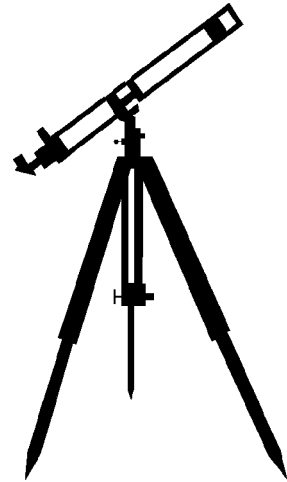
GEOGRAPHY

WEEK 4.

PRE: *Distinguishing between land and water.*

LAB: *Identifying continents and oceans on a globe.*

POST: *Exploring the Earth's surface.*



UNIVERSE CYCLE - UNIVERSE (K)

PRE LAB

Students look at the night time sky.

OBJECTIVES:

1. Exploring outer space.
2. Discovering misconceptions of the Universe.

VOCABULARY:

Solar System
Universe

MATERIALS:

worksheet
crayons

BACKGROUND:

The Universe refers to everything that exists, including galaxies, nebulae, black holes, quasars, and other large items. The Earth is just a small portion of the entire Universe. The Universe is so vast an area, that it makes our planet look tiny by comparison. The Solar System is also a very small part of the Universe. It refers to our Sun and its surrounding planets.

The night sky is one of the most beautiful sights in nature. Just imagine the broad area of the Universe that you can observe, just by looking up. The vastness of the Universe makes many people wonder what it is and why it is there. These questions are very difficult to understand. Scientists throughout the last few thousand years have made many observations, but still do not fully understand the Universe. Learning about the Universe can act as a powerful lesson that humankind does not know many details about our existence.

Children are exposed to many television programs, movies, and cartoons that may suggest unproven ideas are facts. Aliens, space invasions, faster than light travel, and the ability to work in different galaxies make wonderful story lines, but are only science fiction. Children should realize that the Universe has many proven wonders, but many unknown components.



PROCEDURE:

1. Prior to this unit, it would be useful to ask students go outside at night (with their parent's permission) to observe the night sky. If you have a favorite book on looking at the night time sky, you may want to read it to your students in advance.

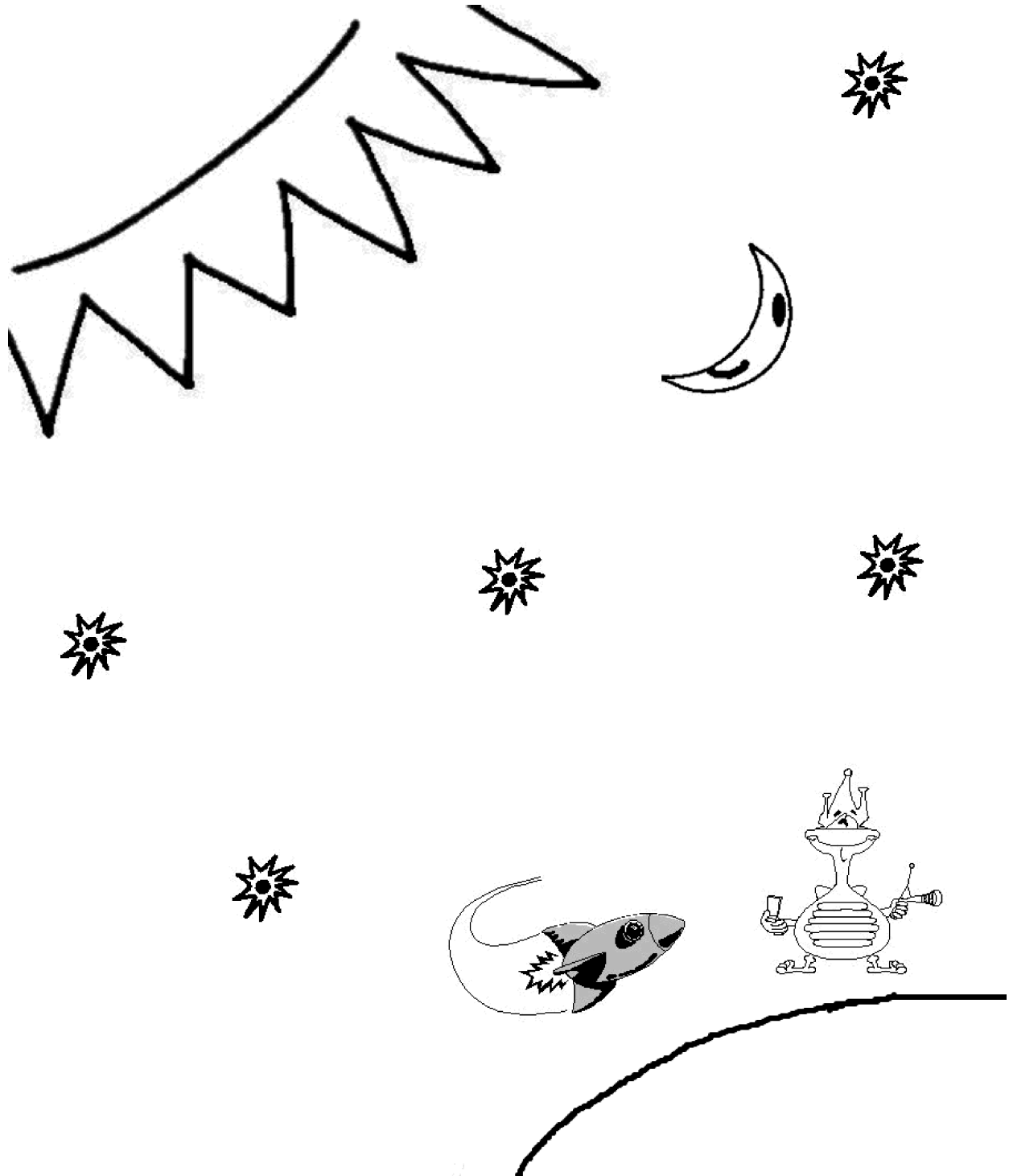
2. Discuss with the students that the Universe is everything that exists, including our Sun, Moon, and all the galaxies and stars we see at night. The Solar System is a smaller "family" of one star (the Sun) and its planets. The Earth is one of those planets. If the students grasp these concepts, you may wish to explain that the Universe even extends beyond what we can see with our eyes, to more distant objects visible only through telescopes.

3. Use the worksheet as a way for students to visualize what is really out in space. Before they color, ask them to express themselves orally on what is really in space. They usually relate stories they have seen on television or what they have heard at home. Ask the students to put them into the picture or other items that they think may be in space.

4. After the students color and draw in items that they think are in space, ask them if everything in the picture is really in space. Little funny creatures are probably not just "hanging" out. The Moon does not have a face. Stars don't really twinkle, they just appear to, because of the Earth's atmosphere. Stars are not star-shaped, but are actually round, just like our Sun. All the points of light that we see at night are either stars in our galaxy, the Milky Way, or other galaxies.

5. There are many other misconceptions that are in children's stories and poetry. Ask the children if a cow can jump over the Moon, or if the Moon is made of cheese or if there is a man on the Moon. You might want to talk about whether TV shows or cartoons that use "space" as a theme are realistic. Many of these shows talk about aliens, but no documentation exists that verifies them.

UNIVERSE CYCLE - UNIVERSE (K) PRE



UNIVERSE CYCLE - UNIVERSE (K)

LAB

Students try to find the largest star.

OBJECTIVES:

1. Comparing sizes and distances in space.
2. Discovering that stars are far away.

VOCABULARY:

absolute brightness
relative brightness
star
space
Universe

MATERIALS:

Styrofoam balls
Universe Cycle - Universe (K)

BACKGROUND:

The night sky is full of points of light. It is difficult to tell if one light corresponds to a small star that is close to the Earth or a large star that is far away. A point of light could also be an entire galaxy!

The real or "absolute brightness" of stars depends on their size and the types of fuel they are burning. Our eyes are not able to detect the absolute brightness of stars. Instead, we see "relative" brightness, which depends on how close a star is to Earth. A nearby star appears brighter than a faraway star, even if the absolute brightness of the faraway star is greater.

PROCEDURE:

1. Introduce "absolute" and "relative" brightness to your students. Make sure you repeat the terms and their definitions over and over. Here are simple ways to define absolute and relative brightness:

Absolute means that if all the stars were put at the same distance, some would be brighter than others, because some are larger or give off more radiation.



The brighter the star does not mean it is closest.

Relative means the brightness as our eyes see the object from the Earth. A star that is bigger, but farther away, will not shine as bright to our eyes.

2. Discuss how far the stars are from Earth. Ask students if the Moon is closer than the stars. You may want to show students a picture of the night sky showing the Moon and stars. Then ask them which objects look bigger. Most of the children will say the Moon is larger. However, tell them that the stars are larger, much larger, but they are just far, far away. Tell them you will be proving this to them during this activity.

3. In this lab, give each child a styrofoam ball, make sure there is at least one ball that is larger than all the rest. You may want them to paint the balls yellow, red, blue, or orange to represent stars. Go outside and position the students at different distances from one central point "A." All students will rotate around this central point. Use a "star" or circle figure which represents the person at point "A". You may want have two students in the front. Make sure the smallest balls are closer to point "A" and the larger ball is further away.

4. Tell students that they should make-believe they are stars in the sky. Each child should have a chance to be at point "A." Ask the students to try and find the largest ball. After they have tried to find the largest "star," discuss with the children that the distance of stars plays an important part on how we see things with our eyes. Sometimes what we see is not how it really is!

UNIVERSE CYCLE - UNIVERSE (K)

POST LAB

Students make a space suit and blast off.

OBJECTIVES:

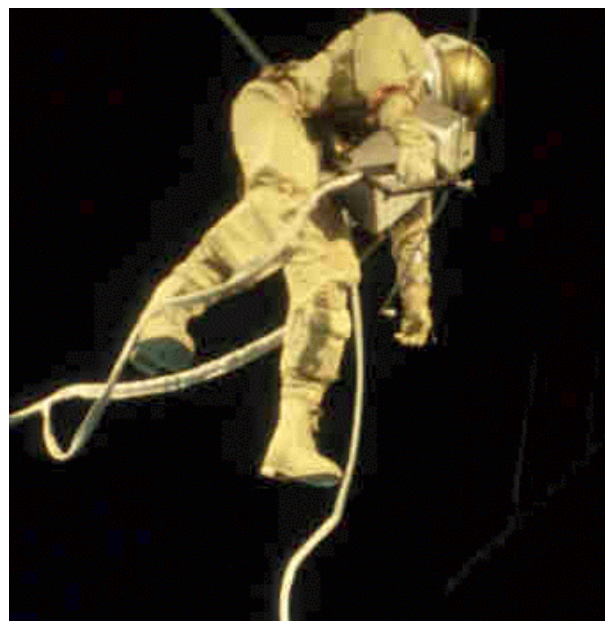
1. Describing space.
2. Exploring the living requirements in space.

VOCABULARY:

space
space suit

MATERIALS:

white spray paint
knobs from an old oven
kids shoe box
dryer vent vacuum hose (white)
extra knife
velcro
2 liter plastic soda containers (with caps)
strong tape (electrical or packing tape)
large ice cream container (ask ice cream stores to save their large tubes, usually about 22 cm in diameter)



BACKGROUND:

Outer space is not like the surface of our planet. It does not have an atmosphere. If we want to travel in space, we must develop appropriate dress, so that we can breathe, stay warm, and be protected from dangerous types of solar radiation, such as ultraviolet rays, which cause sunburns and skin cancer.

Emphasize with students that we cannot breathe or stay warm in outer space, and there may be harmful radiation. We must protect ourselves. We would need to bring our own gas to breathe, and protection against radiation and extreme heat and cold. We also have to figure out a way to go to the bathroom!

There is little gravity in space, so people and loose objects float around inside space ships and in space itself. This can cause problems - imagine a bubble of soda getting into electrical equipment. Astronauts must eat out of squeeze tubes, and be tethered to their beds to sleep.

Space is a wonderful fantasy for children. In this activity, you have the children

playact what it might be like in space. Children should be encouraged to use their imaginations.

PROCEDURE:

1. Have the students create their own space suit using arts and craft material. This space suit makes it more realistic for the students to imagine what it is like to live in space.

Many parts of a space suit can be created. Here are some examples, along with suggested materials. Feel free to use your imagination to create other items.

Oxygen tanks. - Paint 2 liter plastic soda containers white. After they dry, tape the two containers together. Secure the containers with a belt, fabric, or velcro so the students can wrap it around their chest.

Oxygen tank control. - Paint a small box white. Either draw knobs (oxygen control) or use knobs from an old oven or other source. Tape or glue the vacuum hose to the tank control.

Helmet - use an ice cream cardboard container. Cut the container with a sharp knife, making a rectangular hole for a "faceplate". Paint the helmet white and decorate it.

2. Encourage the children to wear clothes that simulate what astronauts wear in space. You may want them to bring in a large white shirt to represent the a space suit. Oven mitts can act as protective gloves. A hard hat, bike helmet, or box can represent a space helmet.

3. Students also have fun "blasting off". Have them put on their space suits, and "blast off" into space using the script below. Let your imagination go wild!



You are putting on your space suit, to protect you from heat and radiation.

You get into the space craft, and sit down.

You get ready for countdown, 10,9,8,7,6,5,4,3,2,1 BLAST OFF!

You feel you body trembling from the blast.

You are into space, there is calm.

You can now walk around in the space craft, but you are flying.

You land down on a planet....explore the new planet.

4. You can also use a projector with slides of planets or stars, or a mural painted by the children as a back drop. In their costumes, they can playact in front of the space scene. Challenge the children to feel weightlessness or imagine what would happen if they lost their helmet.