**Sun, Earth and Moon**

by Amy Record

**Objective**: Students will demonstrate their understanding of the relationships between the sun earth and moon by doing a performance as a group in class.

**Class Level:** Beginning; 25-minute classes

**Main Concepts:** sun, earth, moon, relationship of sun earth and moon to each other, gravity

**Description:** Students learn basic facts about the earth, sun, and moon and their relationship to each other through process drama activities.

**Lesson Plans**

Lesson 1: How the Earth looks

Students will be able to describe the shape and appearance of the surface of the earth by participating in a process drama activity.

Lesson 2: The Sun

Students will be able describe the sun and its relationship to the earth by writing a short essay on the importance of the sun.

Lesson 3: How the moon looks

Students will be able to describe the appearance and shape of the moon in comparison to the earth by creating drawings of the earth and moon to be hung around the room.

Lesson 4: How the Earth, Moon and Sun interact

Students will demonstrate their understanding of how the sun, moon, and earth interact by doing a short performance.

Lesson 5: The sun and the moon

Students will demonstrate their understanding of the cycle of the moon by doing shadow performances.

Lesson 6: Effects of the moon on the earth

Students will demonstrate their understanding of effects of the moon on the earth by writing a short story about what their life would be like without the moon.

Lesson 7: Review/ Unit Assessment

Students will demonstrate their understanding of the relationships between the sun earth and moon by doing a performance as a group in class.

**How the Earth looks**

**Objective**

Students will be able to describe the shape and appearance of the surface of the earth by participating in a process drama activity.

**Materials Needed**

A beach ball globe, photograph of the earth from space.

**Lesson Directions**

**Anticipatory Set/Hook**

Ask the students about some places they know of around the world. Toss the beach ball to volunteers and ask them to show the class where these places are? Ask them what each of these places look like? Are they the same? Are they different? How? Possible answers include the different countries, states, land, oceans, islands, lakes, mountains

**Instruction**

Briefly explain that each of these places has at least one thing in common; that they are on Earth and it would not be the same without them all.

Have them pass the beach ball around the class so everyone gets a chance to look at it. Have them make more observations about the earth. **If you need to**ask questions such as what shape is the earth, what covers most of the surface? If the beach ball is a political map, ask the students if that is what the earth really looks like, with the countries different colors and the latitude longitude lines. Have them explain what it looks like to you before showing them pictures of the earth from space, particularly where we are as well.

Since we are on the side of the earth, ask them why we don’t fall off the side. Do they know what makes us stay on? If they do have them explain gravity as well as they can, fill in gaps **only if needed.**Try to include where gravity comes from, i.e. the rotation of the earth.

**Assessment**

Have all the students stand and push their desks to the side of the room and have them stand in a complete circle. Tell the students that they are going to act and what they are going to be is the earth, but not just one person is going to be the whole earth. Everyone is going to be different parts of the earth.

Divide the students into pairs of 3s and give them one of these things: Land, Oceans, Trees, Grasslands, Mountains, Air, and Deserts. Have them each show the class their movements for their part. When all the class has done their parts, have all the students do their parts at the same time. Next, have them do these movements while walking around in the circle together.

**Author's Notes**

Standards covered: **Standard 1**   
Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

Supplementary material:

<http://www.google.com/imgres?imgurl=http://www.creationoutreach.com/sitebuildercontent/sitebuilderpictures/earth-from-space-western.jpg&imgrefurl=http://www.creationoutreach.com/id44.html&usg=__AEkhmmeEb4tgfvWTxkApmu9cFRA=&h=2048&w=2048&sz=360&hl=en&start=0&zoom=1&tbnid=hAaAtwkVKvYmUM:&tbnh=144&tbnw=147&ei=BglDTeaWG4KesQP7lZmHCg&prev=/images%3Fq%3Dearth%2Bfrom%2Bspace%26um%3D1%26hl%3Den%26sa%3DX%26biw%3D1366%26bih%3D667%26tbs%3Disch:10,166&um=1&itbs=1&iact=hc&vpx=129&vpy=41&dur=739&hovh=225&hovw=225&tx=154&ty=133&oei=BglDTeaWG4KesQP7lZmHCg&esq=1&page=1&ndsp=21&ved=1t:429,r:0,s:0&biw=1366&bih=667>

**The Sun**

**Objective**

Students will be able describe the sun and its relationship to the earth by writing a short essay on the importance of the sun.

**Materials Needed**

Beach ball globe and a flashlight

**Lesson Directions**

**Anticipatory Set/Hook**

Tell the students to close their eyes; we are going on a trip into outer space. After we have reached outer space, ask them to tell you what they see. Stars? The Moon? The Sun? What does the earth look like (possible review moment)? Tell them to turn towards the sun and tell you what it looks like. Now look back at the earth. What is it doing? After they answer they may open their eyes.

**Instruction**

Does the sun shine on all of the earth all the time? Why not?  Demonstrate with the beach ball globe and a flashlight what is happening when the earth spins. Have them walk around the model to see all sides.

After the demonstration and they have returned to their seats, ask them what else the sun does on the earth. (answers will probably include, heat, light, making plants grow).

**Assessment**

Assessment: Have the students write a short essay about the sun, what it looks like and what it does.

Also have them write about how night and day is created. They must include the spin of the earth in their answer. Ask them to draw a picture of how this is done on their essay.

Optional: Play “Why Does the Sun Shine?” by They Might be Giants as they write to “inspire” them.

**Author's Notes**

Standards covered:**Standard 1**   
Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

**Objective 2**   
Describe the movement of Earth and the moon and the apparent movement of other bodies through the sky.

a.        Describe the motions of Earth (i.e., the rotation [spinning] of Earth on its axis, the revolution [orbit] of Earth around the sun).

**Standard 5**   
Students will understand that the sun is the main source of heat and light for things living on Earth.

**How the moon looks**

**Objective**

Students will be able to describe the appearance and shape of the moon in comparison to the earth by creating drawings of the earth and moon to be hung around the room.

**Materials Needed**

Pictures of the moon posted around the room, do not draw attention to them. (See supplemental material in author's notes.)

Butcher block paper and markers/colored pencils/crayons.

Recording of Mannheim Steamroller’s Fresh Aire V

**Lesson Directions**

**Anticipatory Set/Hook**

Tell the students we are going into outer space again. Have them close their eyes, and while playing excerpts from Mannheim Steamroller’s Fresh Aire V, take them to the moon. Have them open their eyes, walk to the clear portion of the room and look around on the moon.

Ask these questions as they walk around, but have them answer them silently for now. What does it look like? Are there colors? What does it feel like? Does anything live there? Can they see the earth? When they see the earth, tell them it is time to come back. Have them walk back to their seats.

**Instruction**

When they have been seated, ask them to share what they saw and felt on the moon.  Hold up pictures taken of the moon, both from space and on its surface, describe some things such as the many craters the moon has. Why does the moon have so many craters? Why doesn’t the earth have that many craters? Why is the moon gray and not blue and brown like the earth? Ask how big the moon is, bigger or smaller than the earth? Pass those pictures around the class during the discussion.

**Assessment**

Divide the students into groups of three and give each group a sheet of butcher block paper and coloring utensils. Have the groups draw and label the earth and moon, ensuring they include the shapes and essential characters such as size shape and colors properly.

**Author's Notes**

Standards covered: **Standard 1**   
Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

**Objective 1**   
Describe the appearance of Earth and the moon.

Supplementary material: photos of the moon:

<http://www.google.com/imgres?imgurl=http://static.howstuffworks.com/gif/moon-1.jpg&imgrefurl=http://www.howstuffworks.com/moon.htm&usg=__fp5oP1-80VIJeIy2PEpK63HqTfc=&h=400&w=400&sz=28&hl=en&start=0&zoom=1&tbnid=P1Khfw6FbOz9RM:&tbnh=159&tbnw=159&ei=m0pDTaPDMILCsAOD_eijCg&prev=/images%3Fq%3Dmoon%26hl%3Den%26sa%3DX%26rlz%3D1C1GGGE_enUS414US414%26biw%3D1366%26bih%3D667%26tbs%3Disch:1%26prmd%3Divnsb&itbs=1&iact=hc&vpx=135&vpy=110&dur=1969&hovh=225&hovw=225&tx=127&ty=130&oei=K0pDTeTgKIK0sAPE25CTCg&esq=12&page=1&ndsp=18&ved=1t:429,r:0,s:0>

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**How the Earth, Moon and Sun interact**

**Objective**

Students will demonstrate their understanding of how the sun, moon, and earth interact by doing a short performance.

**Materials Needed**

Socks and several different sized objects that can be placed in the sock

**Lesson Directions**

**Anticipatory Set/Hook**

Have the students stand in a clear space and bring with them a pencil. Have them hold it out and drop it on the count of three and ask them what happened. The have them jump in place as high as they can. Ask what happened.

As they return to their seats, ask them why the pencil fell and why after they jumped, they came back down. What causes this? Do they remember talking about gravity a few lessons ago? Also refresh their memories of talking about the earth moon and sun. Gravity is important to them as well.

**Instruction**

Ask for three volunteers and use them as your examples as you explain the movements of the three objects. Place one student in the center as the sun; tell him/her to burn bright as s/he can. Take the second student and make them the earth. Have them circle the sun while spinning around. DO it slowly so they don’t get sick. Then add the third child as the moon. Show how it rotates around the sun while the earth rotates around the moon. Gravity is what makes the earth and moon revolve around the sun and the spinning of the earth is what creates gravity that keeps us on the ground.

Do more demonstrations of gravity using a ball in a sock or something else you can spin around (be sure to keep them from hitting each other with the objects. Use different sized objects in the sock to show how the force is greater the bigger the object. That is how the sun keeps the earth in orbit as well as the earth keeps the moon, which is smaller, in its gravity.

**Assessment**

Divide the students into groups of three. Tell the students that they must find a way to recreate what they have learned today about the rotation of the sun moon and earth. They may use objects or just their own bodies as long as they are safe. Give them a warm up to shake out the wiggles, give them five minutes and walk around the room to see if they need help.  All students should be doing their performances at once for you, so walk around and watch them.

**Author's Notes**

Standards covered:**Standard 1**   
Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

**Objective 2**   
Describe the movement of Earth and the moon and the apparent movement of other bodies through the sky.

 Describe the motions of Earth (i.e., the rotation [spinning] of Earth on its axis, the revolution [orbit] of Earth around the sun).

Use a model of Earth to demonstrate that Earth rotates on its axis once every 24 hours to produce the night and day cycle.

**Standard 4**   
Students will understand that objects near Earth are pulled toward Earth by gravity.

**The sun and the moon**

**Objective**

Students will demonstrate their understanding of the cycle of the moon by doing shadow performances.

**Materials Needed**

An overhead projector, a cut out of a circle, a Styrofoam ball on a stick, a flashlight

Supplementary material: A chart showing all the moon phases to hang in the class room.

**Lesson Directions**

**Anticipatory Set/Hook**

Question to the class: Where does the light from the moon come from? Does it shine on its own? If not, where does the light come from?

**Instruction**

The class should understand by this time that the moonlight comes from the sun, reflecting off the moon and down to earth. What are some other things they notice that are different about the moon? Does it look the same all the time? Why does it look different every night?

Do the example with the ball on a stick and flashlight to show that as we rotate around the sun and the moon around the earth, light shines on the same part of the moon at all times, but the different positions create the different phases of the moon which cycle around every 28 days. Have the students walk around the model as you explain and show them. Let them see the different phases for themselves.

The names of the phases are based on how much is showing of the moon and whether it is getting bigger or smaller. Have them think of different motions or ways to remember some of the different words. Such as waxing (to get bigger), waning (to get smaller), crescent, half, new and full. Other names will end up being fractions, such as three quarter and quarter moon.

**Assessment**

Turn out the lights and turn on the large lamp (such as from an overhead projector. Have a circle shape appear on the screen, outlining the moon.  Have the students line up. As you call out one of the phases, the students will use their body to cover up the appropriate amount of the circle to show that phase.

Multiple students may be in a single phase. Do this until all students have had a chance to participate and all phases have been called.  Note: do not call out full moon. Point out that a full moon is one with none covered.

**Author's Notes**

Standards covered:**Standard 1**   
Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

Explain that the sun is the source of light that lights the moon.

**Objective 2**   
Describe the movement of Earth and the moon and the apparent movement of other bodies through the sky.

Use a chart to show that the moon orbits Earth approximately every 28 days.

**Effects of the moon on the earth**

**Objective**

Students will demonstrate their understanding of effects of the moon on the earth by writing a short story about what their life would be like without the moon.

**Materials Needed**

Pre-prepared booklets for every student

**Lesson Directions**

**Anticipatory Set/Hook**

Ask the students: What if the moon didn’t exist. What would earth be like without a moon? Have them brainstorm with the students around them what would be different. Discuss their ideas for a few minutes.

**Instruction**

The moon is much smaller than the earth, so it exerts less gravitational force on the things around it. The closest object to the moon is earth and it does a few things to affect the earth. First, Tides are made much higher because of the moon. The moon pulls at the water causing it to rise as the moon rises. Hence the tide “coming in” at night. Ask if anyone in the class has ever seen it happen? Tides would not disappear, but not get as high.

Next, the moon slows down the earth’s rotation with its gravity. Ask for two volunteers. Have them hold hands and one student spin the other one around. What does the class notice about the student who is spinning the other one around? Is she moving faster or slower than the outside student? She is moving slower. The student in the center is the earth and the outside student is the moon. Their linked arms are the pull of gravity.

Because the earth’s rotation is slowed, the days are longer. If we didn’t have a moon, then days would be only 8 hours long, with only 3-4 hours of sunlight!

Because the earth isn’t moving as fast, the winds are not moving as fast. If the moon were not there, winds would reach up to 100 mph every day! It’d be like a hurricane all over the world! And they would all be moving in the same direction, east to west. North and southward winds would be very rare. What would happen if the winds were that fast every day? Would houses still be the same, plants?

**Assessment**

Have the students write a story about what their lives would be like if there was no moon. They must include the three things we talked about, tides, winds and length of the day. They may include other legitimate differences as well that were discussed at the beginning of class.

Give them all blank booklets to write their story. Due in a week

**Author's Notes**

Standards covered:**Standard 4**   
Students will understand that objects near Earth are pulled toward Earth by gravity.

**Standard 3**   
Students will understand the relationship between the force applied to an object and resulting motion of the object.

**Objective 1**   
Demonstrate how forces cause changes in speed or direction of objects.

**Review/ Unit Assessment**

**Objective**

Students will demonstrate their understanding of the relationships between the sun earth and moon by doing a performance as a group in class.

**Materials Needed**

student written stories from previous lesson

**Lesson Directions**

**Anticipatory Set/Hook**

Have the students pull out the stories they wrote from the last lesson and ask for a few students to share a few things about what happened in their stories.

**Instruction**

After they have shared, tell them they are going to perform the story of what life would be like without a moon. They are to use the material from their stories, movement, pantomime and they don’t all have to be human. Some can be the earth, the tides, winds, whatever  they need in their performance.

Give practice time

**Assessment**

Performances