Earth and Space Science

Lesson #1: Day and Night

Book(s): Unit 4 –

Time Frame: 1 session of 20-30 minutes

Learning Standards:

Science
Earth and Space Science: Periodic Phenomena

1) Identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Skills of Inquiry
- Ask questions about objects, organisms, and events in the environment.
- Tell about why and what would happen if?
- Make predictions based on observed patterns.
- Discuss observations with others.

Student will be able to:

1) Relate the repeating patterns of seasons to the repeating patterns of day and night.
2) Explain why there is day and night.

Anticipatory Set: Ask the students to brainstorm natural events that go in cycles. For example, the seasons go through the same cycle every year with fall, winter, spring, and summer (and then start again). Plants and animals (living things) also have cycles of birth, growth, reproduction, and death (relate to animal and plant life cycle activities). Ask them to think about what happens every day and night. Is this a cycle? Why is it light for some of each day and dark for some of each day?

Activity:

1) Discuss the concept of the earth as a planet and ask the students where the earth gets its light (the sun). Explain that the location of the earth and sun determine whether or not it is day or night.

2) Turn on a light at the front of the classroom (during the activities, turn off the other lights and get the rest of the room as dark as possible). Tell the students that the light represents the sun. Then, ask for a student volunteer to represent the earth. Tape a large colored dot on the front of the student and tell them that this represents the Berkshires in Massachusetts. When the dot is lit, it is day and when the dot is not lit it is night. Start with the student facing the lamp so that the dot is lit.

3) Explain that the earth does not just stay in one place. It rotates once every 24 hours. Explain that rotating is turning and demonstrate with the globe what happens during one rotation. Ask the student volunteer to
rotate (slowly) one time. Discuss what happens with the students. When is the dot lit? When is it dark? How long does it take the earth to complete one rotation? How do you know? Ask other student volunteers to stand in different positions and have the class tell if it is day or night at the dot.

4) Get all the students to participate in the modeling activity. Tell them that when they are facing the sun it is day and when they are facing away it is night. Students (standing in one place) may slowly rotate to simulate day and night.

5) Using a globe ball and the light to model and demonstrate ask the students if the earth is ever all dark or all light. Why or why not? When it is nighttime here, is it daytime somewhere else?

6) If time permits, discuss the seasons with the class. Using the globe, show that sometimes our location gets more sunlight (warmer) with longer days and sometimes less sunlight (colder) with shorter days because the earth tilts on its axis and revolves around the sun. Students can model how the earth rotates and revolves.

Closure: Discuss the following questions as a class: Why is day/night an example of a cycle? Does it happen again and again? Why do we have day and night? Where does our light come from? What would happen if the sun was no longer around?

Assessment: Participation in class discussions and activities

Resources and Materials: Large lamp, globe ball, regular globe, colored paper, tape
Unit 6: Earth and Space

Lesson #2: Night Sky / Day Sky - What can you see in the sky?

Book(s): When the Wind Blows; Charlotte Zolotow

Time Frame: 1 session of 30 minutes

Learning Standards:

Skills of Inquiry
- Ask questions about objects, organisms, and events in the environment.
- Tell about why and what would happen if?
- Make predictions based on observed patterns.
- Record observations and data with pictures, numbers, or written statements.
- Discuss observations with others.

Earth and Space Science
1) Recognize that water, rocks, soil, and living organisms are found on the earth’s surface.
2) Understand that air is a mixture of gases that is all around us and that wind is moving air.
3) Describe the weather changes from day to day and over the seasons.
4) Recognize that the sun supplies heat and light to the earth and is necessary for life.
5) Identify some events around us that have repeating patterns, including the seasons of the year, day and night.

Life Science
7) Recognize changes in appearance that animals and plants go through as the seasons change.

Technology/Engineering
3) Identify and describe the safe and proper use of tools and materials (e.g., glue, scissors, tape, ruler, paper, toothpicks, straws, spools) to construct simple structures.

Student will be able to:

1) Tell what can be found in the day and night sky.

Background Information: This lesson introduces the day and night sky and natural patterns found in nature. The term cycle is introduced as a never ending pattern. Future lessons will look at these patterns in a more comprehensive way.

Anticipatory Set: Ask the children to tell you one thing they know about the sky.
1) Read, *When the Wind Blows*; Charlotte Zolotow.

2) What do you think the mother was trying to tell the little boy?

3) We call these patterns of the seasons and day and night, cycles. These cycles depend on the sun. Weather, seasons, day and night are all results of the affects of the sun on us.

4) Let's look at the sky during the day. Look at the sky and make observations. What do you see? If it were night, what would you see?

Closure: Have children construct the paper plate activity and add the things in the day sky and the night sky. Why do they think the plates go around and around?

Assessment: The children will be able to tell what can be seen in the night sky and the day sky.

Resources and Materials: *When the Wind Blows*; Charlotte Zolotow; paper plates; paper fasteners; day/night template; glue sticks; scissors
Night Sky and Day Sky: Rotating on an Axis

Directions:
- Cut out the circle and half circle
- Glue the circle on the whole plate
- Glue the half circle on the cut plate
- Place a paper fastener in the hole to connect the plates
- Have the students find the day sky and draw what they see in the day sky. Where is the sun at noon?
- Have the students find the night sky and draw what they see in the night sky, constellations, moon, planets
- How long does it take for a complete rotation in real time?
Night Sky and Day Sky

day sky

night sky
Earth and Space

Lesson #3: The Globe and How Maps Work

Time Frame: 1 session of 30 minutes

Learning Standards:

Recognize that water, rocks, soil and living organisms are found on the earth's surface.

Skills of Inquiry:

Ask questions about objects, organisms and events in the environment.
Tell about why and what would happen if
Record observations and data with pictures, numbers or written statements
Discuss observations with others.

Student will be able to:

Learn how the globe and maps work. Draw a map of their own room.

Activity:

Last week we talked about the earth and how it orbits around the sun. Briefly review how the earth turns to make day and night, and how the earth rotates around the sun to cause the seasons.

Today we will talk about how to read the globe and find things on a map. The globe is a model of our earth. Show the kids where we are on the globe and talk about the continents and where countries are on the continents. What part is water? What part is land?

Show them a map of the earth that is flat and compare that to the globe. Talk about how the map is a diagram of the earth and its continents. Then show them a map of the United States, and compare that to the US on a globe, then show them a map of Massachusetts, and compare that to the US map. Then show them a map of Williamstown and where the elementary school is on that map. Talk about how we are “zooming in.” They “get” this term from using computers. Then ask them how to walk from the elementary school to Lickety Split on Spring Street.

Have the kids go to the tables and talk about how you can draw a map of a room – like the science room. Draw a map of the science room on the whiteboard. Then have them draw a map of their own room at home. Where is the bed? Where are the

Closure:

Remind the students that a globe is a model, and a map is a diagram.

Assessment: Participation in class discussion and activities

Earth and Space
Lesson #4: Map Treasure Hunt

Time Frame: 1 session of 30 minutes

Learning Standards:

Recognize that water, rocks, soil and living organisms are found on the earth's surface.

Skills of Inquiry:

Ask questions about objects, organisms and events in the environment.
Tell about why and what would happen if
Record observations and data with pictures, numbers or written statements
Discuss observations with others.

Student will be able to:

Talk about the globe and how maps work. Follow a map of the science room.

Activity:

Review last week lesson about the earth and how to read maps of various places, including a map of their room. Today they will follow a map of the science room to find treasure! The treasure is a set of 5 colored sidewalk chalks. Each station marked on the map has a different color of chalk. Follow the map and you will find all 5, and you can take them home for your very own.

Remind the children of the rules – ask them what they are and they will tell you. No running, no pushing, no shoving, etc. Take only one chalk from each box. Be polite. At the end, they should have one of each color.

Before you start, send them out in the hall with the teacher. Set up the stations with the colored chalks in boxes as they appear on the map of the room. Give each child a map of the science room and zip lock bag to carry their chalks in.

Closure:

When the students are all done, have them sit down again and review the map of the room and where the chalks are.
Assessment: Participation in class discussion and activities

Resources and Materials: Maps of science room with chalks indicated in certain locations – one for each child. Chalks for each child to have one of each of five colors. Zip lock bags.