**October 30: How the Earth, Sun, and Moon move together to create Day & Night**

1. Learning Objectives: Students will understand and model that
   * the Earth rotates on its axis every 24 hours.
   * the Earth revolve around the Sun once every year.
   * the moon revolves around the Earth in approximately 27.5 days.
2. Standards
   * 3.1.3 Keep and report records of investigations and observations\* using tools, such as journals, charts, graphs, and computers.
   * 3.1.4 Discuss the results of investigations and consider the explanations of others.
   * 3.1.5 Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one’s own conclusions about findings.
   * 3.2.3 Keep a notebook that describes observations and is understandable weeks or months later.
   * 3.2.6 Make sketches and write descriptions to aid in explaining procedures or ideas.
   * 3.3.1 Observe and describe the apparent motion of the sun and moon over a time span of one day.
   * 3.3.3 Observe and describe that the sun can be seen only in the daytime.
3. Materials
   * Cards with the words Earth, Moon, and Sun written on them also a number on the back
   * Moon model – me
   * Something that looks like the Sun
   * Globe
   * Large paper for drawing – Half sheets of chart paper
   * Books
     1. What Makes Day and Night by Franklyn Branley – BPL: 525.35BRA
   * Websites for students to find information (listed below)
   * Article – Dance of Earth and Moon
   * On Earth Book
   * Earth, Moon Orbits sheet on cardstock
   * Hole puncher - 6
   * Brads - 60
   * Crayons and/or markers
4. Engage: (9:30 – 10:00)

* What is at the center of our solar system?
* What shape are the Earth, Moon, and Sun?
* How does the Earth experience day and night?
* Show students name tags that either say “Sun”, “Earth”, or “Moon”. (Write a number on the back which corresponds to when they will be required to perform).
* Tell students they will be divided into groups of three. Each group will be working together to decide how best to show the Earth, Sun, and Moon movement in the sky.
* Students will be given 5-10 minutes to practice their dramatizations and then will regroup and share their movements. Your presentation will be 30 seconds.
* Please do a skit as well as draw a model of your presentation.
* Draw up your idea in your journal as well.
* Teacher – observe what the students are doing.
* Bring students back together and have students perform.
* Students should look on the back of their cards to know when their group will be performing.
* Once all groups have performed they will answer the following questions: (Also, discuss the fact that the model we created is not to scale right, nor is it completely accurate in the timing of the Earth and moon moving in relation to each other).
  + Did groups show different ways that the Earth, Sun, and Moon move?
  + Why do you think that groups had different ideas?
  + Question to explore: How do the Sun, Moon, and Earth move in relation to one another?
  + Question to explore: Why do we have the day/night cycle on Earth?
* You are all going to do RESEARCH to find **TWO WAYS** THAT THE EARTH MOVES THROUGH THE NIGHT SKY, **TWO WAYS** THE MOON MOVES THROUGH THE NIGHT SKY, AND **ONE WAY** THE SUN MOVES IN THE NIGHT SKY.
* Your goal is then to construct a way to demonstrate what you have learned, using another skit. (draw a model of your presentation as well).

1. Exploration (10:00 – 11:15) with a break in between at around 10:30)
   * Students will do research using the materials we provide: books, websites, and articles.
     1. <http://www.bbc.co.uk/schools/scienceclips/ages/9_10/earth_sun_moon.shtml>
     2. <http://www.forgefx.com/casestudies/prenticehall/ph/eclipse/eclipses.htm>
   * Students will take 30-45 seconds to perform demonstration. (11:00- 11:15)
2. Explain (11:15 – 11:30)
   * Did all the groups show the same idea? (If not, you will need to stress the correct model and have someone act it out again)
   * Did some groups change from their original ideas? What was different about the movements?
   * Did some discover what is it called when the Earth goes around the Sun or the Moon goes around the Earth? (revolve)
   * What is the path that the Earth takes around the Sun called? (orbit)
   * So how does the Earth experience day and night? (Earth rotates on its axis)
3. Extend: (11:30 – 11:45)
   * Have students pretend their table is the Sun.
   * Tell the students they will become the Earth this time.
   * Orbit the sun while spinning on your “axis”.
   * Chant “Orbit is a revolution; spinning is a rotation”.
4. Evaluate: (11:45 – 12:00)
   * Have students fill out the pages in their journal
   * Look at how students portray their models of the Earth, Sun, and Moon movement
   * Fill out definitions in journal – revolution and orbit

If there is time: Read the book On Earth or create the Earth, Moon Orbits activity.

**Sing Farmer in the Dell Song**! (Have 3 students demonstrate this)

"The earth turns around, the earth turns around.  Once a day, every day, the earth turns around."

"The moon goes 'round the earth, the moon goes 'round the earth.  Once a month, every month, the moon goes round the earth."

"The earth goes 'round the sun, the earth goes 'round the sun.  Once a year, every year, the earth goes 'round the sun."