## **LESSON PLAN**

Teacher's Name: Samantha Green

Date: 20 November 2014

**Professor/Cooperating Teacher's Name:** Dr. Ed Donovan **Course:** EDEL 448: Teaching Science in the Elementary School

Time: 9:25am – 11:55am School District: None

School/Room: USC Upstate/Health Education Complex (HEC) 2007

Grade Level(s): 4th Grade

Subject (Circle all that apply): Science-Astronomy, Mathematics-Patterns, Social Studies, Language

Arts, Reading Lesson Title:

Phases of the Moon

Activity Source(s):

http://www.moonconnection.com/moon\_phases.phtml

http://aa.usno.navy.mil/faq/docs/moon\_phases.php

http://teachers.henrico.k12.va.us/staffdev/clough\_d/moon/links.html

http://www.usc.edu/org/seagrant/Education/IELessons/Docs/MoonAndTides.pdf

# Value/Learning Goal (Why we are doing this lesson?):

The students will begin their exploration of STEM concepts and inquiry by creating a tangible model of the phases of the moon and using the model, create mathematical pattern, and explain the pattern.

### Advanced Organizer/Theme(s):

KLW chart, Moon Phase/CD model, patterns, demonstration

#### Types of Learning:

Visual-Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Logical-Mathematical

## Essential Questions/Big Ideas:

- 1. How are day and night caused? Day and night are caused by the rotation of Earth on its axis.
- 2. Why does the moon shine at night? The moon reflects the light of the sun.
- 3. Why does the moon look different every night? The moon goes through phases because it orbits around the Earth while it reflects the Sun's light.
- 4. How does the moon affect the tides? Tides are caused by a gravitational tug-of-war between the sun, moon, and earth.

## Major Topic(s)/Concepts Addressed (and/or Conceptual Framework):

Gravitational force, rotation on axis, moon phases, sun's reflection, orbit

# Process Skill(s) and/or Learning Domain:

Observing, communicating, collaboration, critical thinking, problem solving

#### Main Teaching Strategies:

Demonstrating, summarizing, creating, analyzing, evaluating

# Standards & Indicators Addressed:

South Carolina Science Standard 4-3.6: Illustrate the phases of the Moon and the Moon's effect on ocean tides. Common Core State Standard Math 4.OA.C5: Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

# Organizational Sizes in Instruction (Circle all that apply): Whole Group, Small Group (Size = 2 & 4)

# Purpose (Plan) - (What will we be doing?):

The students will explore the phases of the moon and its affect on the tides by creating a visual representation of each phase on a "wheel".

## Materials, Resources & Technology Needed/Used:

Recycled CDs (one for each student)

Promethean Board (with audio)

"S'more" digital flyer (<a href="https://www.smore.com/566y1-phases-of-the-moon">https://www.smore.com/566y1-phases-of-the-moon</a>) (visual lesson plan for students)

Construction Paper (different colors)

Scissors (for pairs of 2)

Glue (for pairs of 2)

Markers

Metal Brads (one for each student)

Dry Erase Board

Dry Erase Markers

## Literature - Author, Title & Date; What will you do with the literature? Questions?:

The Moon Book by: Gail Gibbons, Phases of the Moon by: Gillia M. Olson

The literature will be use to introduce the topic of the Phases of the Moon to the class. The teacher will allow the students to complete a KWL chart while the teacher reads these two books to the class. The students will be instructed to complete the K and W columns of the chart.

## Objectives - The learner will (Use 1.0, 2.0, etc.):

- 1.0 The students will be able to explain the phases of the moon.
- 2.0 The students will be able to model each phase of the moon.
- 3.0 The students will be able to collaboratively create a pattern with the phases of the moon.

#### Related Activities/Math Skills:

Math Skills: Finding and labeling patterns using the phases of the moon.

### Safety Provisions:

The teacher will explain to the students about scissor safety since they will be using these to cut the construction paper. The teacher will explain that bending or breaking of the CDs could potentially cause harm to the students and they should avoid doing either one. The teacher will also explain to the students how to properly use the metal "buttons" since these have sharp edges and could potentially break the skin.

# Procedure (Exploration, Explanation & Elaboration; Introduction/Set & Activity that includes Engagement, Launch, Anticipatory Set, Hook; List Using 1.1, 1.2...2.1, 2.2...):

#### 1.1 Lesson Introduction

- 1.2 The teacher will give each student a KWL chart. She will tell the students the topic is Phases of the Moon and she will allow them to fill in the K column in the chart.
- 1.3 The teacher will introduce the lesson by reading two different books to the class. The first book is *The Moon Book* by: Gail Gibbons and the second book is *Phases of the Moon* by: Gillia M. Olson.
- 1.4 After reading both books, the teacher will instruct the students to fill in the W column in the chart. They should just the books that were read as an inspiration to want to learn, and any other questions or speculations they had prior to the lesson introduction.

#### 2.1 Lesson Content

- 2.2 The teacher will load the S'more and have it displayed on the Promethean board. The teacher will first tell the students the objectives of the lesson.
- 2.3 The teacher will next ask student if they know the phases of the moon. (Most students will respond with the Full Moon or Crescent Moon or New Moon). The teacher will inform the students that there are actually 8 phases of the moon. After the teacher tells the 8 phases, she will scroll down on the S'more to display the 8 different phases of the moon
- 2.4 The teacher will tell the students a neat trick of how to remember the different between a waxing and waning moon. (\*Wax on [light on], Wan off [light off]\*)
- 2.5 The teacher will pause here and ask if anyone has any questions/comments/concerns before moving on. This is a great time to pause, because students may get confused with the "trick" and need further explanation. 2.6 Next, the teacher will scroll down to the Fast Facts section. This section contains interesting facts about the
- moon and its phases. The teacher will address the question in the Fast Facts section about illumination. After the students have answered the question, she will show the clip of the illumination of the moon.

### 3.1 Technology

- 3.2 The next section on the S'more is the Crazy Cool Moon Links. These links are all educational and extensions to the lesson.
- 3.3 The teacher will begin by showing the students what the moon looks like today. This link shows what day the moon cycle is in as well as the illumination of the moon. (This link will also be used for the Moon Journal [see Extension Activities] to enforce what the moon looks like as well as the percent of the moon that illuminated).
- 3.4 The teacher will next show the student the Phases of the Moon From Earth and Space. This link is a GIF clip that show the phases of the moon from Earth and from space. It also shows the types of moon that is displayed in the clip.
- 3.5 The teacher will not show the other links. These links are listed for the student's reference in hope of extrinsically motivating them to want to know more than expected.

#### 4.1 Activity

- 4.2 The teacher will scroll down the S'more to the Activity section. This section displays the directions for the activity.
- 4.3 The teacher will read over the directions for the entire class and instruct the students to get in pairs of 2.
- 4.4 After she has read the directions, she will pass out the materials: construction paper, recycled CDs, metal brads, glue, and scissors.
- 4.5 While the students are working on the activity, the teacher will walk around the room to help students who

need extra help with the lesson.

4.6 The teacher will play a "Phases of the Moon" video with a rap. This video will play in the background while the students work on the activity.

#### 5.1 Math Extension

- 5.2 After the student have finished their activity. The teacher will instruct the student to get in a group of 4.
- 5.3 The students will be instructed to design a mathematical pattern using their "wheels." This should only take approximately 3 minutes.
- 5.4 Once the students have developed a pattern and time is called, the teacher will ask for volunteers to share their pattern. The remaining students will try and guess the pattern of they have assembled.

#### 6.1 Conclusion

- 6.2 The teacher will close the lesson with an open discussion about what they found interesting about the phases of the moon.
- 6.3 The teacher will answer any questions that the student still may have about the moon or its effect on tides.
- 6.4 The teacher will instruct the students to complete their KWL chart (L column).

# Closure (Review & Discussion of Purpose and Value):

The teacher will close the lesson with a class discussion about (1) the phases of the moon, (2) mathematical patterns created from the activity, and (3) any questions they may still have about the moon or its effect on tides. The teacher will allow time for the students to complete their KWL chart (L column).

#### Provisions for Rates & Accountability:

If student finish early, they will be required to develop a pattern containing 8 components.

If this task is completed, students may play the Phase Game under Crazy Cool Moon Links in the S'more.

# Assessment - The teacher will (Include evaluative criteria & attach examples):

- 1.0 The students will be asked a series of questions before and throughout the lesson to mentally note comprehension for each student. (KWL chart)
- 2.0 The students will create a model of the phases of the moon using recycled CDs.
- 3.0 The students will collaborate with a group of 4 to create a mathematical pattern using their models. These patters will be displayed to the whole class for the students to name the pattern.

#### Homework:

Over the course of a month, the students will keep a "moon journal" and draw what the moon looks like each night. Students will attempt to label the phases that they see.

#### Extension Activities:

- (1)The students will Write a pourquoi ("why" in French) tale explaining why the moon changes shape or why it looks like it does at a certain time.
- (2)The students will keep a 14-day moon journal. Each day for 14 days for homework the students will observe the moon. In their moon journal, they will record what the moon looks like, draw a picture of the moon, and list what type of moon it is displaying

## Reflection:

File:LessonPlanFormDonovan.09.17.14.V3

name:		
topic:	KWL	Chart

I Already <u>K</u> now:	I $\underline{\underline{W}}$ ant to Know:	I <u>L</u> earned:
1	1	1