Science Planning

**Unit 1: Structure and Motion Within the Solar System (6 weeks)**

**Week 1 Big Idea: The moon changes shape over time and has cyclical patterns.**

Week 1 – 8/26 to 8/30

8/27 YWBAT identify the components that contribute to a scientists job of answering questions about natural phenomena.

YWBAT use the components to determine the contents of a mystery bag and defend your answer with evidence.

Success is: understanding and using the key vocabulary correctly in writing.

* Warm up: without opening the bag, examine it and note any questions
  + Class discussion of questions elicited
* Discussion:
  + What is a phenomenon?
    - something natural that is observed to exist or happen, especially one whose cause or explanation is in question
* In groups, make a written plan for how they will investigate (question, evidence, argue claims and back with evidence)
  + Carry out plan
* Students will present and defend their hypothesis for what is in the bag
* Open bags and evaluate
* Write a paragraph explaining how scientists go about investigating phenomena
* Overview of year in science (solar system, matter and energy, earth’s weather patterns and climate, ecosystems)

8/28 - YWBAT prove that the moon changes shape in a predictable and cyclical pattern.

Success is: writing a paragraph citing evidence for how you know the moon changes shape in a predictable pattern.

* + In groups, students look at and analyze photos of the moon in its different phases (in folder labeled “first photos”)
    - Students come up with questions
    - Make a class list
  + Narrow the day's focus to answering the question: Is the cycle of moon phases predictable? Have students brainstorm what they'd need for evidence to prove whether it is predictable or not. Guide them toward the idea that having a calendar of moon phases would be helpful
  + In pairs, students observe the different appearances of the moon over several months, making notes in their journals and comparing with their own observations
    - <https://www.moongiant.com/calendar/September/2018/>
    - <https://www.moongiant.com/phase/today/>
    - Possible pieces of evidence are: pattern of waxing and waning order of the phases time between one new moon and the next what side of the moon is lit
  + Individually, students write in their journal arguing that the phases of the moon are or are not predictable using evidence
    - Class discussion
    - Class paragraph writing
    - Individual paragraph revisions

8/29 - YWBAT identify and name each phase of the moon.

Success is: drawing and labeling each phase of the moon.

* Warm up: read your paragraph from yesterday
  + - Discuss: how many phases of the moon are there? How long does it take for the phases of the moon to complete?
  + Label the moon phases as a class
    - Table groups look up: waxing, waning, crescent, and gibbous
    - Come up with a reason these word are used to describe moon phases
  + Draw and label 8 phases of the moon

8/31 - YWBAT identify the causes of the moon’s phases.

Success is: modeling and explaining the causes of the phases of the moon.

* + Warm up: rapid fire pictures of phases of the moon (“first photos”)
  + Discussion: what causes the phases of the moon? How do we know this to be true?
  + Group demonstration with Styrofoam balls and flashlights
    - Frontload: <https://www.youtube.com/watch?v=wz01pTvuMa0>
    - Give each team a styrofoam moon and put a lamp without a shade in the center of the room. Tell them what each represents. Ask: what do we need to remember about how the earth, moon, and sun move? Write on the board
    - Let students explore, trying to recreate the phase cycle. By the end of day 1, they should have determined that the moon's movement is causing the phases to occur
  + Discuss as a class what students have discovered