Lesson Title: Soft Landing System

Grade Level: 4th

Essential Question:

-Why are different moon phases observed throughout the month, and what causes them?
-How can technology be used to observe distant objects in the sky?
-How does Earth's rotation affect the cycle of day and night?
-How does Earth's rotation affect the way we view the planets, Sun, Moon and Stars around us?

Standards:

Science Standards: S4E1, S4E2, S4P3

S4E1. Obtain, evaluate, and communicate information to compare and contrast the physical attributes of stars and planets.
S4E2. Obtain, evaluate, and communicate information to model the effects of the position and motion of the Earth and the moon in relation to the sun as observed from the Earth.
S4P3. Obtain, evaluate, and communicate information about the relationship between balanced and unbalanced forces.

Math Standards: MGSE4.MD.2

MGSE4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Other Content Standards: 4.W1

ELAGSE4W1 Write opinion pieces on topics or texts, supporting a point of view with reasons.

Technology Integration:

Legends of Learning : https://app.legendsoflearning.com/teachers/games/learning-objective/1332

Build a Mission : NASA - https://www.jpl.nasa.gov/education/BuildMissionGame.cfm?skipIntro=true

Career Connection:

Students will interact via Zoom with Mr. Vick from Huntsville International Space Center about the upcoming Lunar Landing.

Engineering Challenge:

Design and create a soft landing system for a new exploration vehicle on the Moon.

Materials:

Cardboard, tape/glue, scissors, plastic building materials, string/yarn, popsicle sticks, plastic bags, wax paper, fabrics scraps, eggs, cotton balls, plastic sandwich bags, construction paper, newspaper, balloons, bubble wrap.

Lesson Procedures

1. Students will explore NEWSELA and READWORKS passages to build background knowledge of the Moon.
2. Students will engage in a Legends of Learning lesson – Phases of the Moon.
3. Students will begin tracking the different Moon Phases over a two week period.
4. Students will join Dr. Young and the STAR Lab from GYSTC. (December 3rd)

5. Students will participate in a Moon Phases Oreo lab.
6. Students will use knowledge and research to create a Moon or Planet Brochure.
7. Students will write an opinion writing piece on their Moon or Planet.
8. Students will share their Moon Phases brochure with 2nd grade student partners.
9. Students will interact via Zoom with Mr. Vick from Huntsville International Space Center about the upcoming Lunar Landing. (December 6th)
10. Students will digitally build their landing system via the NASA Stem website – Build a Mission.
11. After digitally building, they will write a paragraph explaining their landing system, what features it has, etc.
12. Students will engage in the engineering design process to build their own Soft Landing System for a new exploration vehicle on the Moon.