Madison Public Schools

Grade 1 - Unit 1 - The Earth, Sun and Moon

Unit Focus

Students will engage in the Engineering Design Process through the lens of NASA rocket engineers to begin their unit on the Earth, Sun and Moon. They will learn how rocket science led to our ability to explore our solar system and that engineers had to test many different rocket designs to ensure they could make one that accomplished their task. Students will create, test and improve paper rockets.

Students will analyze data to understand that there are observable, predictable patterns that explain natural phenomena, such as the lunar cycle, and seasonal patterns of daylight. They will explore this concept through modeling the relative positions of the Earth, Moon, and Sun that cause the different lunar phases. Students will synthesize their learning using a model they created of the Earth, Sun, and Moon to demonstrate the lunar cycle and the orbits of the Earth and Moon.

Stage 1: Desired Results - Key Understandings

Established Goals

Next Generation Science
Elementary Standards: 1

- Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs. *K-2-ETS1-3*
- Make observations at different times of the year to relate the amount of daylight to the time of year. *1-ESS1-2*
- Use observations of the sun, moon, and stars to describe patterns that can be predicted. *1-ESS1-1*

Next Generation Science Standards (DCI)
Science: 1

- A situation that people want to change or create can be approached as a problem to be solved through engineering. *ETS1.1.A1*
- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. *ETS1.1.C1*
- Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. *ESS1.1.A1*
- Seasonal patterns of sunrise and sunset can be

Transfer

T1 Create models to explore complex systems, show mastery of key science concepts, and/or develop solutions through creation of a product open to testing and redesign.

Meaning

Understandings

U1 Scientists use special tools, such as telescopes and spacecraft to help them study the solar system.
U2 Patterns of the motion of the sun, moon, and stars in the sky can be observed, described, and predicted.
U3 The Earth, Moon, and Sun are related to each other and this relationship causes predictable patterns that we can observe on Earth.

Essential Questions

Q1 How do engineers solve problems?
Q2 How can patterns in the natural world be observed and predicted?
Q3 What causes the daily and seasonal patterns that we observe?

Acquisition of Knowledge and Skill

Knowledge

K1 Engineers use the Engineering Design Process to create tools and technology. This means asking questions, designing solutions, testing and redesigning.
K2 The Earth, Moon, and Sun move in a predictable

Skills

S1 Make observations to collect data that can be used to make predictions.
S2 Develop a simple model based on evidence to represent a proposed object or tool.

Stage 1: Desired Results - Key Understandings		
observed, described, and predicted. *ESS1.1.B1* **Student Growth and Development 21st Century Capacities Matrix** *Critical Thinking* • Analyzing: Students will be able to examine information/data/evidence to make inferences and identify possible underlying assumptions, patterns, and relationships. *MM.1.2*	pattern. **K3** The Earth revolves around a star, called the Sun. **K4** The moon revolves around the Earth. **K5** Sunlight reflects off the moon. **K6** The Earth and Moon rotate. **K7** The position of the Earth in relation to the Sun causes the seasons. **K8** The lunar cycle is determined by the location of the Earth, Moon, and Sun in relation to each other.	**S3** Analyze data from tests of an object or tool to determine if it works as intended.