Sun Rise and Set
Grade Band Elementary

Earth and Space Science	**Next Generation Science Standards**
1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
3-ESS2-1	Represent data in tables and graphical displays to describe typical weather conditions expected during a season.
5-ESS1-2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows.
Physical Science	
1-PS4-2	Make observations to construct an evidence-based account that objects can be seen only when illuminated.
4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
Engineering Design	
K-2 3-5-ETS1-1	Define a problem and develop a model to address it using criteria and constraints.
K-2 3-5-ETS1-2	Generate and compare multiple possible solutions based on how well each meets the criteria and constraints.

Reading	**English Language Arts (Reading & Writing)**
RI.1.7 to RI.5.7	Use diagrams and visuals (sun path, shadow graphs) to support comprehension.
RI.2.3 to RI.5.3	Explain cause/effect relationships (sun's position causes shadow change).

SL.1.1 to SL.5.1	Collaborate with peers to build and test the sun model.
SL.3.4 to SL.5.4	Present and explain the motion model and artistic design choices.
Writing	
W1.2 to W.5.2	Write informative texts to explain how the sun's movement affects shadow length and direction.
Measurement and Data	**Mathematics**
1.MD.4 2.MD.9-10	Measure and graph shadow lengths.
3.MD.1 4.MD.1	Measure the time of day to connect with the sun position.
5.MD.2	Display and interpret data using line plots.
Geometry	
2.G.1. 3.G.1 4.G.2	Create shapes and models (e.g., arcs, angles of sun paths).
Mathematical Practice Standards	**Modeling & Problem Solving**
MP2	Relate data points (angles/time) to sun position and model movements.
MP4	Use graphs, sun angle measurements, and shadow length data in motor programming.
MP5	Use measurement tools and coding platforms to train motors precisely.
Computer Science	**Missouri K-5 Draft Standards**
DA.K-5.1	Collect and represent data in various formats (e.g., recording shadow lengths at different times).
AP.K-5.2	Develop and test programs that include sequences and loops (e.g., programming the smart motor to simulate the sun's path).
IC.K-5.1	Recognize how people use computing devices in daily life (e.g., using technology to model natural phenomena).