

Standard

1-ESS1 Earth’s Place in the Universe

<https://www.nextgenscience.org/dci-arrangement/1-ess1-earths-place-universe>

The chart below makes one set of connections between the instruction outlined in this article and the NGSS. Other valid connections are likely; however, space restrictions prevent us from listing all possibilities. The materials, lessons, and activities outlined in the article are just one step toward reaching the performance expectation listed below.

Performance Expectation:

- 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 time of year.

Dimension	Connections to Classroom Activity
Science and Engineering Practice	
Analyzing and Interpreting data	Students combine observations from 360-degree images to develop 2-D models of the Sun’s apparent daily pattern of motion. Students analyze their daylight data to identify the pattern of the most daylight in the summer and the least daylight in the winter.
Developing Models	Students develop a 2-D model of the Sun’s apparent daily pattern of motion.

	Students use their observations of the Sun’s apparent motion in Washington, DC, to model the apparent motion of the Sun where they live.
Disciplinary Core Idea	
ESS1.A Patterns of the motion of the Sun, Moon, and stars in the sky can be observed, described, and predicted. (NGSS p. 14)	Students use observations from 360-degree photos to describe that the Sun appears to rise in one part of the sky, move in an arc pattern, and set in a different part of the sky.
ESS1.B Seasonal patterns of sunrise and sunset can be observed, described, and predicted. (NGSS p. 14)	Students analyze data to identify the time of the year that has the most daylight and the time of the year that has the least daylight. Students predict the Sun’s pattern of motion in the summer.
Crosscutting Concept	
Scale, proportion, and quantity	Students estimate the relative location of the Sun compared to buildings and trees in order to draw the location of the Sun five times in one day. Students identify the time of the year with the most daylight and the time of the year with the least daylight.
Patterns	Students describe the Sun’s apparent daily pattern of motion as rising in one part of the sky, moving across the sky in an arc pattern, and setting in a different part of the sky.

Students identify the pattern of the most daylight in the summer and the least daylight in the winter.

Connections to the *Common Core State Standards* (NGAC and CCSSO 2010):

ELA	
<p>CCSS.ELA.LITERACY.SL.1.1 Participate in collaborative conversations with diverse partners about <i>grade 1 topics and texts</i> with peers and adults in small and large groups.</p>	<p>Students discuss the Sun’s pattern of motion with a partner.</p> <p>Students discuss the best way to make a symbol to represent daytime and a symbol to represent night with a partner.</p>
Mathematics	
<p>CCSS.MATH.CONTENT.1.MD.B.3 Tell and write time in hours and half-hours using analog and digital clocks.</p>	<p>Students compare the sunrise and sunset times to activity times to determine if there was daylight or darkness for each activity.</p>
<p>CCSS.MATH.CONTENT.1.MD.C.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.</p>	<p>Students analyze their chart to determine the time of the year with the most daylight and the time of the year with the least daylight. Students interpret class data to draw a conclusion about annual daylight patterns.</p>