

5-ESS1 Earth's Place in the Universe

<https://www.nextgenscience.org/pe/5-ess1-2-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 expectations listed below.

Performance Expectation

5-ESS1-2 Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky

Science and Engineering Practices

Analyzing and Interpreting Data	Students graph length of daylight hours over a year in different locations and analyze the graphs for patterns
Developing and using models	Students construct explanations regarding the movement of the Earth around the Sun by creating models
Constructing Explanations and Designing Solutions	Students develop explanations that explain the north and south poles experience 24 hours of darkness or daylight.
Engaging in Argumentation	Students defend and critique groups' models.

Disciplinary Core Idea

ESS1.B: Earth and the Solar System <ul style="list-style-type: none">The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year.	Students create models to develop explanations for why the length of daylight changes the further away from the equator, or closer to the poles.
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Crosscutting Concepts

Systems and System Models	Students develop models to explain the cause of day and night (rotation) and different position of Earth in relation to the Sun (revolution) of the course of a year.
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Patterns	Students look for patterns in data to use as the basis for explaining changing length of daylight.
Cause and Effect	Students explain why the poles experience extremes in hours of daylight (effect) due to the angle of the Earth in relation to the sun (cause)
Common Core Standards	
CCSS.MATH.CONTENT.5.MD.B.2 Represent and Interpret Data	
CCSS.ELA-LITERACY.SL.5.1 Comprehension and collaboration	
CCSS.ELA-LITERACY.SL.5.4 Presentation of Knowledge and ideas	