Mini-Map for SCI.EE.5.ESS.SolSys-3

Subject: Science
Earth and Space Science (ESS)
Grade band: 3–5

Grade-Level Expectation

DLM Essential Element	DLM Disciplinary Core Idea Family[1]	Framework Disciplinary Core Ideas
SCI.EE.5.ESS.SolSys-3 Use data from different times of the year to determine seasonal patterns in the number of daylight hours.	Earth and Space Science – Earth in the Solar System	ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System PS3.B: Conservation of Energy and Energy Transfer

[1] DLM Science Essential Elements organize Disciplinary Core Ideas (defined in the *Framework for K-12 Science Education*) into DCI families. By combining similar concepts within a domain, science content from the general education standards is reduced in depth, breadth, and complexity to provide access for students that qualify for the DLM alternate assessment.

Linkage Level Descriptions

Initial Precursor	Distal Precursor	Proximal Precursor	Target[2]
Recognize the order in which actions and/or events occur (i.e., what action or event comes before another and what comes after another).	Identify the alternating pattern of daytime (i.e., daylight) and nighttime (i.e., darkness) in a daily sequence.	Count the number of daylight hours (i.e., the number of hours between sunrise and sunset) represented in tables and graphs as part of one day (i.e., 24 hours).	Quantify and qualify annual, seasonal patterns in data (i.e., in data tables and graphs) about daylight hours across the months of a year.

[2] The target linkage level description is a measurement target that describes the expectations (content and performance) of the Essential Element for assessment purposes.

Essential Element Three Dimensions

Each Essential Element is defined in the three dimensions described in the *Framework for K-12 Science Education*: disciplinary core ideas (DCIs), science and engineering practices (SEPs), and crosscutting concepts (CCCs). The table below lists the details of each dimension from the individual DLM Essential Element descriptions, with color-coding of dimensions corresponding to the Next Generation Science Standards (NGSS). The first row (in blue) lists the SEP(s) used to construct the Essential Element and describes ways each SEP could be incorporated. The second row (in orange) describes the science concepts within the DCI family related to this Essential Element. The third row (in green) lists the CCC(s) associated with the Essential Element and explains how each might be incorporated in the grade band (quoted from NSTA, 2013, matrix of CCCs). Note that the SEP is presented first here (rather than second, as it is in the full list of Essential Elements) to reflect the emphasis on practices in instruction and across the linkage levels. The final row (in white) includes examples of how the three dimensions could work together to support instruction for the Essential Element. These examples provide ideas for integrating the dimensions and are not exhaustive, nor are they intended to limit instruction.

Science and Engineering Practices	**Analyzing and Interpreting Data:** Analyzing data in grades 3–5 builds on K–2 experiences and progresses to using and interpreting data to support claims and relationships. • Represent and interpret data in tables or graphs to determine and identify patterns that indicate relationships. • Use data as evidence for constructing and supporting claims about relationships. **Using Mathematics and Computational Thinking**: Mathematical and computational thinking in grades 3–5 builds on K–2 experiences and progresses to using data and mathematical concepts to describe the natural and designed world. • Use simple data tables and graphs to determine and describe relationships in the natural world. • Use measurements and simple mathematical representations to describe characteristics of the natural world.
Disciplinary Core Ideas	**Earth in the Solar System** • Earth completes one full rotation upon its axis every 24 hours (see SCI.EE.5.ESS.SolSys-2). The part of Earth facing the Sun experiences daytime, or sunlight, while the part of Earth facing away from the Sun experiences nighttime, or darkness. • The number of daylight hours can vary throughout the year. This variation may result in seasonal patterns. Examples of patterns in the Northern Hemisphere could include that the number of hours of daylight in summer months is generally greater than in winter months, and the number of hours of daylight generally decreases from summer months to winter months.

Crosscutting Concepts	**Patterns:** Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them. • Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena and designed products. • Patterns of change can be used to make predictions. • Patterns can be used as evidence to support explanation.
How three dimensions support instruction for this Essential Element	Patterns help students understand the movement of objects in the solar system and seasonal changes on Earth. Students analyze changes in seasonal data to reveal patterns in the number of daylight hours in each of Earth's seasons. They also use patterns to understand that the Earth rotates once per day and revolves around the Sun once per year.

Instructional Resources

Resources
Learning modules and additional science instructional resources can be found at https://www.dlmpd.com/science/
A glossary defining key science terms found in the Essential Elements can be found at DLM Glossary for Science Learning Maps.

Link to Text-Only Map

SCI.EE.5.ESS.SolSys-3 Use data from different times of the year to determine seasonal patterns in the number of daylight hours.