



DYNAMIC[®]
LEARNING MAPS

Mini-Map for SCI.EE.5.ESS.SolSys-4

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-4 Make observations to support that Earth's gravity exerts a downward force on all objects on its surface.	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
Intentionally use an action to achieve a goal.	Participate in making observations to identify objects in motion and when they are being pushed and/or pulled.	Make and use observations to identify that objects fall downward toward the ground (i.e., the surface of the Earth) when they are dropped.	Make and use observations of falling objects to support the identification of Earth's gravity as a force that pulls objects downward to Earth's surface.

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	Planning and Carrying Out Investigations: Planning and carrying out investigations to answer questions or test solutions to problems in grades 3–5 builds on K–2 experiences and progresses to using tools and observations in investigations to record data and support claims. • Collect and record data using tools to determine and support an explanation of a phenomenon. • Use observations and measurements to determine and describe relationships. Engaging in Argument from Evidence: Engaging in argument from evidence in grades 3–5 builds on K–2 experiences and progresses to identifying information that can support claims about the natural world. • Identify relevant evidence to support a claim. • Use observations, information, data, or a model to support claims.
Disciplinary Core Ideas	Earth in the Solar System • Some forces act through contact, while other forces act even when the objects are not in contact (see SCI.EE.5.PS.Forces-2). • Gravity is the force that pulls all objects on Earth’s surface downward (i.e., toward the center of Earth). • Gravity pulls both heavy and light objects downward.
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.

	Cause and Effect: Mechanism and Explanation: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering. • Cause and effect relationships are routinely identified, tested, and used to explain change. • Events that occur together with regularity might or might not be a cause and effect relationship.
How three dimensions support instruction for this Essential Element	Through investigations, students can recognize the pattern that, when objects are dropped, they fall to the ground. This pattern can be used as evidence for the cause and effect relationship that gravity makes objects fall downward. Understanding the pull of Earth (gravity) can build from student investigations of how changes in motion are caused by variations in the strength and direction of pushes and pulls.

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-4 Make observations to support that Earth's gravity exerts a downward force on all objects on its surface.

