Mini-Map for SCI.EE.8.ESS.Earth-2

Subject: Science
Earth and Space Science (ESS)
Grade band: 6–8

Grade-Level Expectation

DLM Essential Element	DLM Disciplinary Core Idea Family[1]	Framework Disciplinary Core Ideas
SCI.EE.8.ESS.Earth-2 Use information to evaluate a claim about how the hydrosphere affects the shape of land (i.e., the geosphere) over time.	Earth and Space Science – Earth Systems	ESS2.A: Earth Materials and Systems ESS2.C: The Roles of Water in Earth's Surface Processes ESS3.C: Human Impacts on Earth Systems

[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]
Compare the characteristics of objects in multiple sets to identify the shared property that organizes the objects into each set (i.e., the characteristic shared by each set's members).	Use observations to support the idea that Earth's surface is made of both land and water and that water can be standing or moving.	Use evidence to support the idea that water, in its different and changing states, changes the shape of land over time.	Evaluate gathered evidence to determine if it supports claims about how the hydrosphere (i.e., water falling onto and moving across Earth's surface) affects the shape of land over time.

[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	**Engaging in Argument from Evidence:** Engaging in argument from evidence in grades 6–8 builds on K–5 experiences and progresses to use information to make and evaluate claims about the natural world. • Use observations, information, data, or a model to evaluate a claim. • Gather and use information as evidence to support a claim. • Use information to make claims. **Obtaining, Evaluating, and Communicating Information:** Obtaining, evaluating, and communicating information in grades 6–8 builds on K–5 experiences and progresses to combining information to describe and support scientific claims and ideas. • Decide which observations, images, texts, data, and other media are useful for defining problems and determining how the natural world works. • Combine information (e.g., observations, texts, tables, images, graphs, maps) to answer scientific questions and evaluate scientific ideas.

Disciplinary Core Ideas	**Earth Systems**
	• The geosphere refers to Earth features and components such as rocks, minerals, and landforms.
	• The hydrosphere refers to all water on Earth's surface. This includes water that is part of the general water cycle (e.g., clouds, rain) (see SCI.EE.8.ESS-Earth-1).
	• Gravity directs the flow of water (including glaciers) downhill.
	  o Moving water carries soil and rocks from one place to another.
	  o Over time, this affects the shape of land.
	• The force of precipitation (i.e., rain, sleet, hail) can also affect the shape of land over time (see SCI.EE.8.ESS-Earth-1 and SCI.EE.5.PS-Forces-2).

Crosscutting Concepts	**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. • Relationships can be classified as causal or correlational, and correlation does not necessarily imply causation. • Cause and effect relationships may be used to predict phenomena in natural or designed systems. • Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. **Stability and Change**: For both designed and natural systems, conditions that affect stability and factors that control rates of change are critical elements to consider and understand. • Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and forces at different scales, including the atomic scale. • Small changes in one part of a system might cause large changes in another part. • Stability might be disturbed either by sudden events or gradual changes that accumulate over time. • Systems in dynamic equilibrium are stable due to a balance of feedback mechanisms.
How three dimensions support instruction for this Essential Element	Students can learn about stability and change by evaluating evidence about cause-and-effect relationships where movement of water through the hydrosphere affects the stability of landscapes over time. For example, students can understand how gravity affects the flow of water and gather evidence about the effects of falling or moving water, in liquid and solid forms, on the shape of land over time.

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

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