



Mini-Map for SCI.EE.8.LS.Plant-1

Subject: Science

Life Science (LS)

Grade band: 6–8

Grade-Level Expectation

DLM Essential Element	DLM Disciplinary Core Idea Family ¹	Framework Disciplinary Core Ideas
SCI.EE.8.LS.Plant-1 Use data to explain that plants use energy (i.e., sunlight) and matter (i.e., air and water) to produce food (i.e., plant matter) for growth.	Life Science – Plants: Cycling of Matter and Flow of Energy	LS1.C: Organization for Matter and Energy Flow in Organisms LS2.B: Cycles of Matter and Energy Transfer in Ecosystems PS3.D: Energy in Chemical Processes and Everyday Life

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
Notice differences between objects and in the natural world to determine changes that occur over time.	Use observations of plant parts across multiple time points to identify that plants need light, water, and air to grow.	Use data to determine that plants must take in light, air, and water from their environment to grow.	Use data as evidence to explain that plants make and use their own food (i.e., plant matter) for growth by taking in and utilizing matter (i.e., air and water) and energy (i.e., sunlight) from their environment.

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 6–8 builds on K–5 experiences and progresses to representing and evaluating data to support explanations about relationships and solutions to problems in the natural world. <ul style="list-style-type: none">• Gather and represent data to determine and describe patterns.• Evaluate data to construct and support explanations.• Analyze data to evaluate solutions to problems. Constructing Explanations and Designing Solutions: Constructing explanations and designing solutions in grades 6–8 builds on K–5 experiences and progresses to constructing explanations about processes or relationships in the natural or designed world. <ul style="list-style-type: none">• Use information, data, or models to construct descriptions and explanations of processes and relationships in the natural world.
Disciplinary Core Ideas	Plants: Cycling of Matter and Flow of Energy <ul style="list-style-type: none">• Plants use light energy (i.e., sunlight) and matter (i.e., air and water) from the environment to produce food.• The food produced by plants is used for growth, used for energy, or stored for later use.• The apparent increase in plant matter or material (e.g., increase in mass, height of stalk, number of leaves) is evidence of the transfer of matter from the environment to the plant.

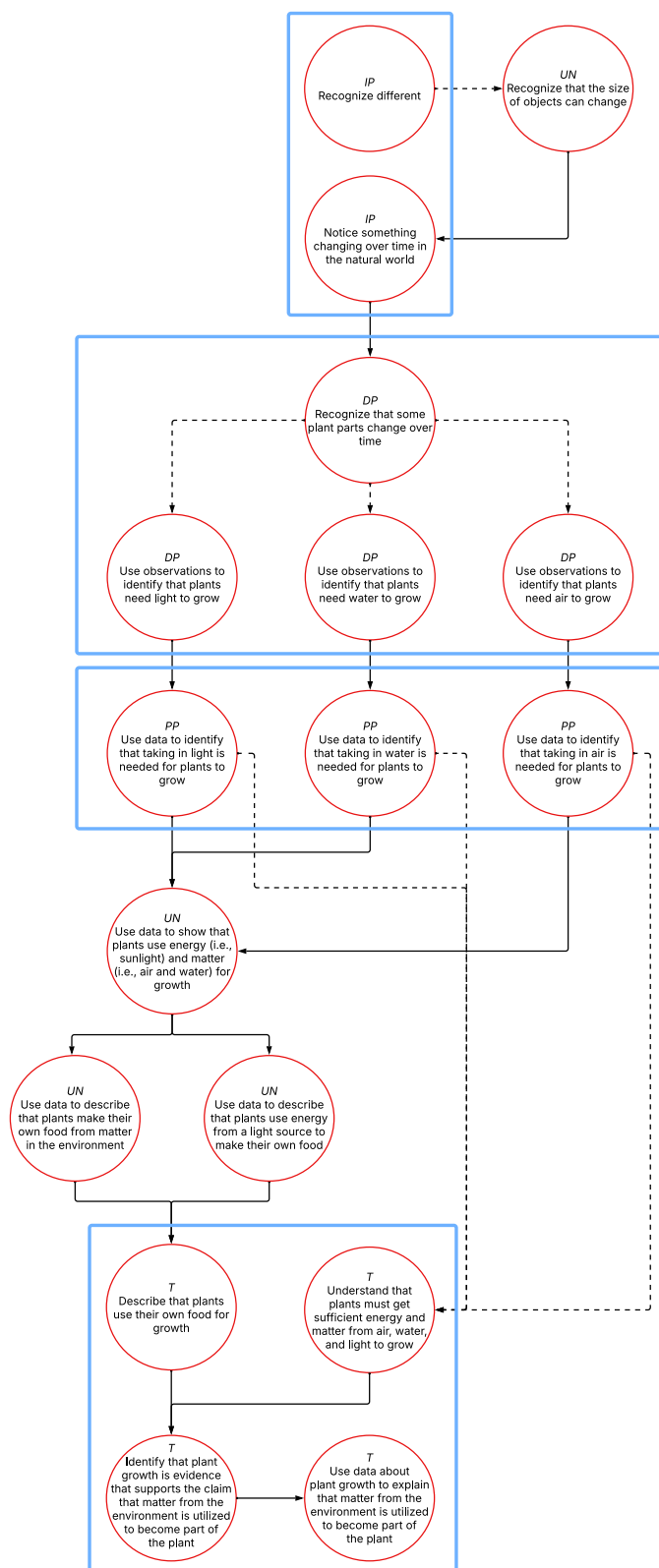
Crosscutting Concepts	<p>Systems and System Models: A system is an organized group of related objects or components; models can be used for understanding and predicting the behavior of systems.</p> <ul style="list-style-type: none"> • Systems may interact with other systems; they may have sub-systems and be a part of larger complex systems. • Models can be used to represent systems and their interactions—such as inputs, processes and outputs—and energy, matter, and information flows within systems. • Models are limited in that they only represent certain aspects of the system under study. <p>Energy and Matter: Flows, Cycles, and Conservation: Tracking energy and matter flows, into, out of, and within systems helps one understand their system’s behavior.</p> <ul style="list-style-type: none"> • Matter is conserved because atoms are conserved in physical and chemical processes. • Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter. • Energy may take different forms (e.g. energy in fields, thermal energy, energy of motion). • The transfer of energy can be tracked as energy flows through a designed or natural system.
How three dimensions support instruction for this Essential Element	<p>Students can use data (e.g., observations or measurements of plant growth in different conditions) to explain that energy and matter from the environment flow through plants. For example, they can use data to describe that plants make their own food from matter and light in the environment and explain that matter from the environment becomes part of the plant.</p> <p>Students can understand how plants make their own food from energy (i.e., light) and matter (i.e., air and water) as an entry point to understanding these components as being part of an ecosystem.</p>

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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Map Key	
IP	Initial Precursor
DP	Distal Precursor
PP	Proximal Precursor
T	Target
UN	Untested
	Direct Connection
	Indirect Connection that omits intervening node(s)
Boxes show nodes in each linkage level	