

K-PS3-2 Energy

Students who demonstrate understanding can:

- K-PS3-2. Use tools and materials provided to design and build a structure that will reduce the warming effect of sunlight on Earth's surface.*** [Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Constructing Explanations and Designing Solutions

Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.

- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem.

Disciplinary Core Ideas

PS3.B: Conservation of Energy and Energy Transfer

- Sunlight warms Earth's surface.

Crosscutting Concepts

Cause and Effect

- Events have causes that generate observable patterns.

Observable features of the student performance by the end of the grade:

1	Using scientific knowledge to generate design solutions
a	Students use given scientific information about sunlight's warming effect on the Earth's surface to collaboratively design and build a structure that reduces warming caused by the sun.
b	With support, students individually describe:
	i. The problem.
	ii. The design solution.
	iii. In what way the design solution uses the given scientific information.
2	Describing specific features of the design solution, including quantification when appropriate
a	Students describe that the structure is expected to reduce warming for a designated area by providing shade.
b	Students use only the given materials and tools when building the structure.
3	Evaluating potential solutions
a	Students describe whether the structure meets the expectations in terms of cause (structure blocks sunlight) and effect (less warming of the surface).