

## Purpose

In this activity, you will reflect on your experience guiding students in the construction of an explanation for shadows, or the designing of a solution for campers to communicate over a distance using light and/or sound.



*How does a teacher guide students in constructing explanations and designing solutions?*

## Predictions, Observations and Making Sense

### Part 1: Sharing Your Ideas about Your Experience



Did the student(s) you interviewed do the shadows activity or the communication design activity?



What went well during your facilitation of the shadows/communication activity?



What was challenging?



Did any of the child’s explanations or solutions surprise you? What was it about the explanation/solution that surprised you?

Spend a few minutes to discuss your group’s answers to the questions above with another group located nearby.



Name one thing that you found most interesting about the other group’s responses to the questions.

## Part 2: Performance Expectations

The table below lists some elementary grade level performance expectations for NGSS Practice 6, *constructing explanations (for science) and designing solutions (for engineering)*, edited slightly to apply to the specific contexts of the interview activity you just completed. The grade range for the expectation is indicated in parentheses. In the second column, indicate whether the child you interviewed achieved the expectation—or if the expectation is not applicable (e.g., because of age, or the expectation is for the science task (shadows) and your child did the engineering design task (communication)). In the third column, briefly indicate how your child achieved (or made progress towards achievement of) the performance expectation.

<b>Performance Expectation</b>	<b>Achieved (Y/N/ na)</b>	<b>How child achieved performance expectation</b>
Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (K-2)		
Construct an explanation of observed relationships. (3-5)		

Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation. (3-5)		
Identify the evidence that supports particular points in an explanation. (3-5)		
Use tools / materials to design a solution to a specific problem. (K-2)		
Apply scientific ideas to solve design problems. (3-5)		
Generate and/or compare multiple solutions to a problem. (K-2) <b>OR</b> Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design solution. (3-5)		

Now reflect further on the activity you did with the child and think about what you did to provide guidance to him or her.



What actions that you took helped the child achieve the (appropriate) performance expectation? You may focus on one expectation, or discuss more than one.



If the child did not achieve a performance expectation, or made progress towards its achievement, what do you think you could have done differently, or done in addition to what you did, to help the child achieve or make progress towards that expectation?

## References

- National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington, DC: The National Academies Press.
- Achieve (2012). *Next Generation Science Standards*. Available at <http://www.nextgenscience.org/>