

Module 2: Shadows

Grade 5

In this module, students investigate the question, “What variables affect shadows?” in order to learn how changing aspects of the light source or object affects the length, width, and direction of shadows. For their initial observation, students are shown an experiment in which two different colored lights are shone onto a block and students learn that the color of light does not affect the length, width, or shape of the shadow, but does affect the background color as well as the definition/crispness of the shadow’s edges. Students further learn about shadow length and width by planning and carrying out experiments in groups of ~3. Students in this module are able to design two experiments, the first changing up to three variables and the second changing one variable. The variables that students can explore include but are not limited to: block height, block width, block thickness, light angle, light height, and light distance. At the end of the investigation groups give a poster presentation to the rest of the class, which allows the group to teach the class about the variable they investigated. In addition, on the final day of the module students learn about how their experiments apply to the sun and the shadows the sun creates. To assist the students in angle measurements students are taught how to use a protractor to adjust a light source to a particular angle. The scientific practice this module focuses on is conclusions,

including identifying statements as claim, data, or neither as well as identifying appropriate claims and data based on given results. Students are given the option to change multiple variables on their first experiment and then are required to analyze their data to help them learn that when there are multiple changing variables that no claim or conclusion can be made from the data. In this module the Next Generation Science Standard performance expectation 5-ESS1-2 is covered.

