

CURRICULUM CONNECTIONS

This section is for educators who want more specific information regarding the Grade 4 curriculum connections for each activity in *Leonardo's Engineering Academy of Light and Shadow* crate.

Grade 4: Table of Knowledge Outcomes¹

Activity	Unit	STS-Knowledge Outcomes
Session 1: Luminosity	Topic D: Light and Shadow	SLE 2: Identify a wide range of sources of light, including the Sun, various forms of electric lights, flames, and materials that glow (luminescent materials). SLE 3: Distinguish objects that emit their own light from those that require an external source of light in order to be seen.
Session 2: Sun Shadows	Topic D: Light and Shadows	SLE 5: Describe changes in the size and location of Sun shadows during the day—early morning, to midday, to late afternoon.
Session 3: Shadow Casting	Topic D: Light and Shadows	SLE 6: Recognize that opaque materials cast shadows, and predict changes in the size and location of shadows resulting from the movement of a light source or from the movement of a shade-casting object.
Session 4: Transparency	Topic D: Light and Shadows	SLE 7: Distinguish transparent materials from opaque materials by determining if light passes through them and by examining their shadows. SLE 8: Classify materials as transparent, partly transparent (translucent) or opaque.
Session 5: Refraction	Topic D: Light and Shadows	SLE 10: Recognize that light can be bent (refracted) and that such objects as aquaria, prisms, and lenses can be used to show that light beams can be bent.
Session 6: Light Spectrum	Topic D: Light and Shadows	SLE 11: Recognize that light can be broken into colours and that different colours of light can be combined to form a new colour.
Session 7: Optical Devices	Topic D: Light and Shadows	SLE 12: Demonstrate the ability to use a variety of optical devices, describe how they are used, and describe their general structure. Suggested examples include: hand lens, telescope, microscope, pinhole camera, lightsensitive paper, camera, kaleidoscope. Students meeting this expectation will be able to provide practical descriptions of the operation of such devices but are not required to provide theoretical explanations of how the devices work.

¹ Alberta Education Programs of Study (1996)