

# Curriculum Planning & Assessment Resource

## Science

## Grade 2: Energy



**Alberta Regional Professional  
Development Consortia**

*Dedicated to the provision of professional learning  
opportunities at the local, regional and provincial levels*



# Curriculum Planning & Assessment Resource

## Science

### Grade 2: Energy

#### About This Document

This Curriculum Planning & Assessment Resource is intended to be a collection of sample activities, assessments, and resources that teachers may wish to use as they develop their unit plans. This document is not intended to be a sequential list of activities. Rather, the intent is that teachers choose from this resource what is appropriate for their context, and sequence it their planning.

The sample activities, assessments and resources included in this document have undergone an initial review to determine appropriateness and alignment to the curriculum. However, it is expected that teachers use their professional judgment in selecting activities, assessments and resources that are appropriate for their context.

While every attempt has been made to provide credit and receive permissions, some errors or omissions may have occurred. Please contact [info@arpc.ab.ca](mailto:info@arpc.ab.ca) to report any error or omissions.

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#### Acknowledgements

Thank you to all the teachers, curriculum specialists, and technical expertise from Alberta school divisions and ARPDC who collaborated to develop, review, and revise these planning and assessment documents to support curriculum implementation.

# INTRODUCTION

## Organizing Idea

**Energy:** Understandings of the physical world are deepened by investigating matter and energy.

## Guiding Question

Where do light and sound come from, and how do they move?

## Learning Outcome

**2E1 Students investigate the behaviours of light and sound.**

### Summative Assessment(s) - Transfer *(In Progress)*

Summative assessments can include the following.

- Understanding/making sense of a novel context from the real world using one or more concepts (eg. “Is this an example of diversity?”). Example
- Understanding/making sense of a novel context using one or more understandings (eg. Students watch a video or complete a case study and explain what they viewed/interpreted through the lens of the understanding).. [Example](#)
- Being able to describe why (developing predictions or hypotheses) something is unfolding, or what might happen next using learned concepts and understandings.
- Apply learning (create products; undertake projects; taking action such as creating a campaign) in a novel context or taking action using the understanding(s). Example
- Construct arguments by taking a position on a novel issue and defending it with known understandings.

**Summative Assessments:** [Surface, Deep and Transfer Assessment](#)

**Sample Summative Assessment:** This [sample summative](#) assessment has students participating in a research-based investigation, in which they make predictions about the similarities and differences of light, gather and record observations, and make conclusions.

[Sources of Sound - Summative](#)

[Investigating Light - Summative](#)

Computer Science & Matter Connection	Scientific Methods
<ul style="list-style-type: none"><li>• Introductory Video &amp; Slide Deck "Wait! What? I'm teaching Computer Science?"<ul style="list-style-type: none"><li>◦ <a href="#">(Part 1)</a> <a href="#">(Part 2)</a></li></ul></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Scientific Method Introductory Video - ARPDC</a> (How scientific method fits in the curriculum.)</li><li>• <a href="#">Integrating Energy and Scientific Methods Grade 2 Sample Unit Plan for Light (Planning Guide for Integrating Scientific Methods) See step 4</a></li></ul>
<ul style="list-style-type: none"><li>• Integrating Computer Science &amp; Grade 2 Energy<ul style="list-style-type: none"><li>◦ Video</li><li>◦ Slide Deck</li></ul></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Introducing Steps in an Investigation: Grade 2</a><ul style="list-style-type: none"><li>◦ asking questions</li><li>◦ making predictions</li><li>◦ planning the investigation</li><li>◦ observing and recording data</li><li>◦ analyzing data</li><li>◦ reaching conclusions</li><li>◦ discussing observations and conclusions</li></ul></li></ul>

	<ul style="list-style-type: none"> <li>• <a href="#">Grade 1-6 Investigation Steps Progression</a></li> </ul>
<ul style="list-style-type: none"> <li>• <a href="#">Computer Science Organizing Idea KUSP cards</a> - use these to help understand and integrate CS KUSPs throughout teaching and learning in Science and across curricula.</li> </ul>	
<ul style="list-style-type: none"> <li>• <a href="#">CS Unplugged</a> - “Computer Science without a computer”</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Grade 1-6 Investigation Steps Progression</a></li> </ul>
<ul style="list-style-type: none"> <li>• <a href="#">ScratchJr</a> - teach computer science outcomes using the ScratchJr app on a Chromebook, iPad or other device. This is a great way to introduce computational thinking outcomes before introducing them to block coding later.</li> </ul>	



Click to jump!

KUSPs

2M1.1

2M1.2

[Literature Connections](#)

## KUSPs 2E1.1

### Prerequisite Knowledge

Students know that:

- sounds can vary depending on the source
- Sounds can be blended to make words
- working collaboratively
- Safely working with water

### Misconceptions

Students may believe that:

- Sounds are inside whatever makes them. You have to do something to make a sound come out of the object.
- Pitch and loudness are the same characteristic of sound.
- Sound travels only to the person who hears it.

Sources: Operation Physics, American Institute of Physics. (n.d.). Children's misconceptions about science [compiled list for elementary and middle-school physics education] and

### I Know Statements

- I know that sound behaves in various ways, including travelling in a straight line from its source, transferring from one object to another, bouncing off a surface (reflection/diffusion) & stopping in an object (absorption).
- Sound is produced by vibrations of objects.
- Vibration is a rapid back-and-forth movement.
- Sources of sound can be natural or human-made.
- Characteristics of sound include, volume, pitch & duration.
- Sound can travel through air, water, and some solids.
- Properties of materials that affect the production and behaviour of sound include size, texture, shape & type.

### I Understand Statements

- I understand that behaviours of sound affect its characteristics.

### Student Language | Essential Vocabulary & Concepts

#### [The Concept Project](#)


- Vibration
- Volume
- Pitch
- Duration
- Sound

### I Can Statements | Skills

- I can relate vibration to the production of sound.
- I can identify sources of sound.
- I can listen to sounds and describe their characteristics.
- I can safely explore the production and behaviour of sound.
- I can build a device to change the behaviour of sound.

# KUSP 2E1.1

Learning Outcome		2E1 Students investigate the behaviours of light and sound.		
Knowledge	Understanding	Skills & Procedures	Sample Activities & Resources <a href="#">What is Surface, Deep and Transfer</a>	Assessments (formative)
<p>Sound behaves in various ways, including</p> <ul style="list-style-type: none"> <li>traveling in a straight line from its source</li> <li>transferring from one object to another</li> <li>bouncing off a surface (reflection/diffusion)</li> <li>stopping in an object (absorption)</li> </ul> <p>Sound is produced by vibrations of objects.</p> <p>Vibration is a rapid back-and-forth movement.</p> <p>Sources of sound can be natural or human-made, such as</p> <ul style="list-style-type: none"> <li>musical instruments</li> <li>speakers and headphones</li> <li>vocal cords of humans and other animals</li> <li>objects hitting each other</li> </ul> <p>Characteristics of sound include</p> <ul style="list-style-type: none"> <li>volume, which can be described as quiet or loud</li> <li>pitch, which can be described as high or low</li> <li>duration, which can be described as short or long</li> </ul> <p>Sound can travel through air, water, and some solids.</p> <p>Properties of materials that affect the production and</p>		<p>Relate vibration to the production of sound.</p> <p>Identify sources of sound.</p> <p>Listen to sounds and describe their characteristics.</p> <p>Safely explore the production and behaviour of sound.</p> <p>Build a device to change the behaviour of sound.</p>	<p><b>Sample Surface Level Activities</b> Relationship   Interaction   Cause &amp; Effect</p> <ul style="list-style-type: none"> <li>What is a relationship? <ul style="list-style-type: none"> <li><a href="#">Relationship</a></li> </ul> </li> <li>What is Interaction? <ul style="list-style-type: none"> <li><a href="#">Interaction</a></li> </ul> </li> <li>What is cause &amp; effect? <ul style="list-style-type: none"> <li><a href="#">Cause &amp; Effect</a></li> </ul> </li> <li><a href="#">What Is Sound?</a> Youtube (5:30)</li> <li><a href="#">What is Sound?</a> (SciShow Kids) Youtube (3:58)</li> <li><a href="#">What is Sound?</a> (The Dr.Binocs Show Learn Videos for Kid)s Youtube (1:52)</li> <li>Sound for Kids - Loudness, Pitch, and Timbre - Science for Kids Youtube <a href="#">Video</a></li> <li><a href="#">Game: Guess the Sound 1</a> (3:51)</li> <li><a href="#">Guess the Sound Multiple Choice</a> (8:38)</li> </ul> <hr/> <p><b>Local/Nearby Options for Experiential Learning Excursions</b></p> <ul style="list-style-type: none"> <li>Visit a musical instrument store.</li> <li>Visit band during practice</li> </ul> <hr/> <p><b>Infusing Indigenous Knowledge</b></p> <p><b>Infusing Indigenous Knowledge into Curriculum (Grades 1-12) Website:</b> <a href="#">Grade 2 Science:</a></p> <ul style="list-style-type: none"> <li>Make moose calls out of birch bark. Make connections to shape and measurement skills.</li> <li>Use big tin cans for moose calling.</li> </ul>	<p><b>Sample Assessment Questions</b></p> <ul style="list-style-type: none"> <li><a href="#">Concept Map Assessment</a></li> <li>Part 1) Provide a series of pictures of objects and living things that produce sound for a picture sort. Have the students work in small groups to sort the visual images according to the source of the sounds. Have students share their observations with the class. Part 2) Have students work with a partner to select one picture from the picture sort. Students should describe how sound energy is being used. Example: A singer uses sound energy to create music. Students can share their findings in a Sharing Circle. (See ELA, Grade 4, p. 212.) Source: <a href="#">Manitoba Ministry of Education Science Clusters</a> p. 4.40</li> <li>Sorting Sounds Brainstorm to create a list of familiar sounds. In small groups, have students sort the sounds according to their own categories. Have students share their categories. Encourage students to review their categories and make changes. Examples of categories can include: pitch (high/low); volume (loudness); and purpose of the sound (communication, warning, entertainment).</li> </ul>

<p>behaviour of sound include</p> <ul style="list-style-type: none"> <li>• size</li> <li>• texture</li> <li>• shape</li> <li>• type</li> </ul>			<ul style="list-style-type: none"> <li>• Compare the sounds made with the use of string, moose hide and willows.</li> <li>• Explore different calls used for moose and movements (e.g., bull or cow).</li> <li>• Describe how wind direction affects moose calling.</li> <li>• Identify different birds by their tones and melodies.</li> <li>• Compare different animal sounds (e.g., wolves, dogs).</li> <li>• Discuss when sounds that animals make are changed or affected (e.g., wolves howl differently when moon changes; woodpecker and other animals/birds behave differently when things are not right).</li> <li>• Use sticks and/or rocks to make different sounds (e.g., hitting rocks in different ways make different sounds/vibrations; skipping rocks make a sound).</li> <li>• Use antlers for moose calling (e.g., hitting the antler against the willows). Explore how vocal cords are used to call animals (e.g., moose, other animals).</li> <li>•  Learning from the Land</li> </ul> <hr/> <p style="text-align: center;"><b>Other Resources</b></p> <ul style="list-style-type: none"> <li>• <a href="#">Vibrations and Sound</a> YouTube (1:10)</li> <li>• <a href="#">The Science of Sound</a></li> <li>• <a href="#">The Science of a String Phone</a> (4:37)</li> <li>• <a href="#">How Sound Travels Across Different Mediums</a> (6:22)</li> </ul>	<p>Source: <a href="#">Manitoba Ministry of Education Science Clusters</a> p.4.42</p> <ul style="list-style-type: none"> <li>• <a href="#">Exploring Sound</a> - Let's Talk Science - students will learn about and explore the properties of sound through activity centres.</li> <li>• <a href="#">Animal Sounds</a> - Ontario Science Centre - students learn that different pitches and durations mean different things to animals - a way of communicating. The video also provides several hands-on activity suggestions for students. Below the video link are resources for the teacher - slide deck, lesson plan and activity sheets.</li> <li>• Describing Sound Words <a href="#">Sheet a</a> - K5 Learning - <b>Surface Level</b></li> <li>• Sound and Pitch - <a href="#">Sheet a</a> and <a href="#">sheet b</a> - K5 Learning - <b>Surface Level</b></li> <li>• <a href="#">Characteristics of Sound</a> - Surface</li> </ul>
	<p>Behaviours of sound affect its characteristics.</p>		<p style="text-align: center;"><b>Sample Deep Level Activities</b></p> <ul style="list-style-type: none"> <li>• Ask students the following questions for investigation. <ul style="list-style-type: none"> <li>○ What is the connection between <b>property of material</b> and <b>behaviour of sound</b>?</li> <li>○ How can <b>property of material</b> affect <b>behaviour of sound</b>?</li> <li>○ How can <b>property of material</b> affect <b>characteristics of sound</b>?</li> </ul> </li> <li>• Design your own device that makes sound with different characteristics <ul style="list-style-type: none"> <li>○ <a href="#">Four Sound Science Experiments for Kids</a></li> </ul> </li> <li>• 4 Sound Science Experiments for Kids Youtube <a href="#">Video</a></li> <li>• <a href="#">Does How You Hold Your Guitar Affect the Sound?</a> - Project (Science Buddies)</li> <li>• <b>STEM Activities</b> - <a href="#">Making Sound Waves</a> (connecting understanding about your eardrum), <a href="#">Make Sprinkles Vibrate with Sound</a> , <a href="#">Make a Kazoo</a>, <a href="#">Make Your Own Harmonical</a>!</li> </ul>	<p style="text-align: center;"><b>Sample Assessment Questions</b></p> <ul style="list-style-type: none"> <li>• Explain why you might hear an echo in a cave and not in your backyard.</li> <li>• Demonstrate how you can change the sound on a string instrument. Why does the sound change?</li> <li>• What is the relationship between pathway, object, and light?</li> <li>• What causes sound?</li> <li>• What is the relationship between properties, objects, and pitch?</li> </ul>

# Resources

## Additional Websites and Resources to Support Learning

### Indigenous Related:

- The [Learning Circle](#): Classroom Activities on First Nations in Canada - Ages 4 to 7- **The Learning Circle** has been produced to help meet Canadian educators' growing need for elementary-level learning exercises on First Nations. It is the second in a series of four classroom guides on First Nations in Canada. See Unit 2 for Seasons.
- [Learning from the Land \(teacher information\)](#) - Although there is much diversity between First Nations, Métis, and Inuit, a deep and abiding connection to the land is common. Dr. Leroy Littlebear says that "The land is a sacred trust from the Creator. The land is the giver of life like a mother. The ecological aspect of Indigenous knowledge is all about the land. The land is a source of identity for Aboriginal People. CASS Resource.

### General:

## Additional Websites and Resources to Support Learning

### Indigenous Related:

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### Specific to Grade 2 Energy - Sound

- [Energy - Grade 2 - ARPD Video](#)
- **PBS: [What is Sound?](#)** - you may wish to watch half of the video and then have a discussion with students about the sounds they heard.
- [Motion: How Things Move](#) Next generation Science - includes the various pathways of movement.
- [Patterns of Movement](#) - STEM Science - In this activity, students demonstrate and describe how objects move in a straight line, zigzag, up and down, round and round, back and forth, and fast or slow.
- **Kids Academy: [What is Energy?](#)** Energy is the ability to do something - in your child's case, it's his/her capacity to play over a certain period of time.
- [Movement of Objects](#) - SuperSTAAR - Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.
- [Hand2Mind - Make a Water Xylophone](#) to determine how the vibrations travel.
- [Science North - Sound Shield Design](#) - in this hands-on science and engineering lesson, Grade 4 students will apply the engineering design process to design and construct a sound shield. They will apply what they have learned about the properties of sound, how it travels through a medium, and how materials can modify sound. To assess their designs, they will use Micro:bit sound meters to measure sound levels with and without the shield. Students are encouraged to use clean items from the recycling to reduce their environmental impact. AND [Coding Sound Waves](#) - In this activity student will record sounds at different levels (low, medium and

## Resources Developed by School Divisions/Educational Institutions

[Edmonton Catholic Pacing Guides](#)

[Edmonton Catholic Curriculum Crates](#)

[Edmonton Catholic Schools: Academic Vocabulary: Kindergarten to Grade 3](#)

Edmonton Public [Science Snippets K-3](#)

Edmonton Public [Scope and Sequence](#)

[LearnAlberta Curriculum](#)

APRDC [New Curriculum Professional Learning Resources](#)

[Alberta Science Curriculum Teacher Resources \(CMASTE\)](#): Click on the Teaching Resources Tab at the top of The Home Page.

This website hosts resources developed to support teachers in implementing the [Alberta Science Curriculum](#) initially released in 2023. The resources were created with support from the Centre for Mathematics, Science, and Technology Education (CMASTE) and contributions from students in the Faculty of Education, Elementary Education B.Ed. program. We will be continuing to add resources to this site, so please check back regularly.

[SLEAKs, SPAMs and SWAGs - Sciences Resources Developed by Red Deer Public Schools:](#)

The purpose of this guide is to assist any kindergarten teacher in their instruction of the new science curriculum. Within this document, you will find links to external sites and resources, as well as internal resources that are organized by the coordinators of RDPSD. This is certainly a dynamic document in that it is always changing; if you have any suggestions for modifications, please do not hesitate to contact the RDPSD science coordinator. Contact [Nate Siler](#) if you have any questions.

Lesser Slave Watershed Council [Classroom Presentations](#)

[Lesser Slave Forest Education Society](#) (they are updating their programs to match the new curriculum)

Comox Valley School District #71 - [Science Resources](#). BC Ministry of Education

Government of Canada Science Resources:

[Activity Books:](#)

Science is all around us and can be discovered, explored and used in so many ways! This new Activity Book showcases the diversity of the world of science through activities in health, energy, environment, agriculture, meteorology, astronomy, the living world and much more!

[Canadian Science - History and Achievements](#)

Select from 67 different entries of the history and achievements of Canadians in Science.

[Resource links](#)



high) and code creatures to make those sounds when clicked on in Scratch. They will also learn to compare waveforms and observe and record the differences in their own sounds.

- *Let's Talk Science* - [Exploring Sound](#)
- *CK-12 First Grade Science* [Chapter 11 - How Do I Make Sound?](#)

### General Sites to Support a Variety of Concepts in Grade 1

- [Science Buddies](#) - a wealth of lessons, activities and investigations to do with your students. Enter your topic into the search bar.
- [Next Generation Science](#): *offers a variety of supports* - instruction and assessment, Planning and Communication.
- **Ontario Science Centre**: [Curriculum Resources](#) - Enter your topic into the search and refine what type of material you would like to preview.
- Instructional Planning and Teaching in Science - [IOWA Department of Education](#) - check the phenomena based links to [Sound](#)
- What Are Storylines? - [Next generation Science Storylines](#) - a good story line can lead to great Inquiry!
- [cK-12 - Free STEM teaching resources](#) - provides a set of online science textbooks as open educational resources. These are not aligned to NGSS but could be modified. See below for the recommended Chapter.
- **Backyard Science**: <https://www.ulnoowegeeducation.ca/programs/backyard-science/> A FREE online curriculum-connected and culturally connected educational resource.
- *Let's Talk Science* - a large variety of sources for STEM - search your topic and grade
- *PBS Learning Media* - [Science](#) - a large selection of science related resources. Review by subject, subtopic and grade.
- **Alberta Parks** - [Alberta Parks](#) - ABC [Nature Walk](#)
- **Hand2Mind Science Activities** - Lessons and Investigations for K-5 students Check

Select from pages of activities, maps, lesson plans, videos etc. to support students of all age levels in science education.

### Websites and Resources to Support Planning

**Inclusion** - Best Practices Meeting the Needs of [All Learners in Science](#)

**Differentiation**: Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.

**Primary Connections** (teacher guides, units of study and sample assessment rubrics based on Australian Science Curriculum but offers great links and activities to our curriculum)

*Look! Listen! provides students with hands-on opportunities to:*

- *investigate sources of light and sound*
- *explore how light and sound are produced and how light and sound travel*
- *increase understanding of the role of light and sound in our lives and our community*
- *explore why we have two eyes instead of one*

*Students apply their new learning by:*

- *conducting an investigation to collect data that will support their explanations of how having two eyes helps us see*

**Gizmos** (Teacher Login Required)

New Learn Alberta: **no Grade 2 match**

ExploreLearning Gizmos Site:

Request a Gizmos account: [alberta@explorelarning.com](mailto:alberta@explorelarning.com)

**Gizmos Literacy Connections**

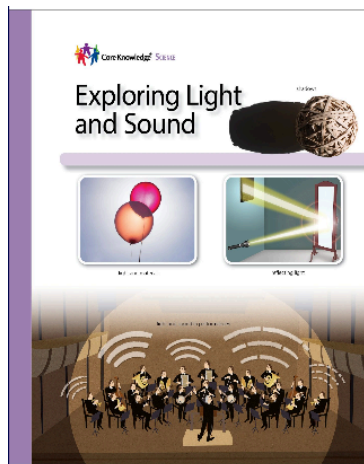


Resource: [Look! Listen Assessment resources](#)  
[E-Resources](#) (download, then open)  
[Equipment List](#)

OR

### Core Knowledge Unit 3: Exploring Light and Sound

In this unit, students investigate with light and sound to see how they can be used to communicate with an audience in a theater. Students will explore different light sources, mirrors, and shadows. Students will determine the relationship between vibrations and sound.

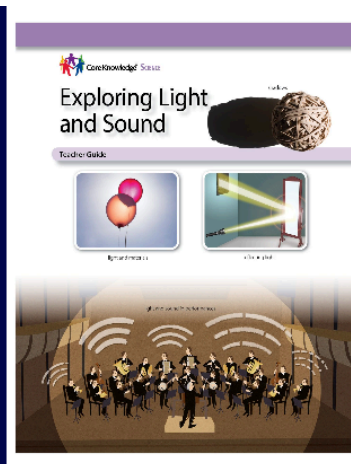


CKSci Unit 3: Exploring Light and Sound

#### STUDENT BOOK

The Student Books offer engagingly written and richly illustrated text on the topics specified for the unit. Each volume includes color photographs and illustrations and is intended to be

[Link](#)

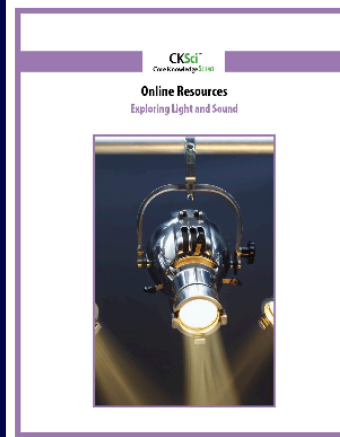


CKSci Unit 3: Exploring Light and Sound

#### TEACHER GUIDE

The Teacher Guide provides detailed lesson plans for each Student Book chapter, as well as activity page masters, assessments, and additional activities to reinforce the lesson

[Link](#)



CKSci Unit 3: Exploring Light and Sound

#### ONLINE RESOURCES

The Online Resources includes a Pacing Guide, Material Supply List, and other helpful information for comprehensive classroom activities.

[Link](#)

Click to jump!

KUSPs

[2E1.1](#)

[2E1.2](#)

[Literature Connections](#)

## KUSPs 2E1.2

### Prerequisite Knowledge

Students should be able to:

- describe the difference between light and sound in general terms
- Give examples of light sources.

### Student Language | Essential [Vocabulary & Concepts](#)

- Light

### Misconceptions

Students may believe that:

- surfaces that are not shiny do not reflect light
- only metals and water reflect light.
- everything reflects light but only if it is in the Sun.
- light reflects off things if the angle is correct.
- the hotter an object can get the more light it can reflect.
- shadows are always black
- a shadow is a reflection from the Sun

Source: National Science Teaching Association (NSTA). Common Misconceptions About Light

### I Know Statements

- I know that sources of light include the Sun, electricity, fire, & some plants and animals (bioluminescence).
- I know that light behaves in various ways, including travelling in a straight line from its source, bouncing off a surface (reflection), bending as it travels from one material to another (refraction) & splitting into colours (dispersion).
- I know that Light travels through objects that can be seen through (transparent).
- I know that the path of light is affected by mirrors, prisms, and water.
- I know that the path of sunlight can be affected in a variety of ways by natural objects.

### I Understand Statements

- I understand that behaviours of light affect its path.

### I Can Statements | Skills

- I can identify sources of light.
- I can examine how natural objects affect the path of sunlight.
- I can conduct an investigation to determine how the path of light can be affected.

## KUSP 2E1.2

Learner Outcome		2E1 Students investigate the behaviours of light and sound.		
Knowledge	Understanding	Skills & Procedures	Sample Activities & Resources <a href="#">What is Surface, Deep and Transfer</a>	Assessments (formative)
<p>Sources of light include</p> <ul style="list-style-type: none"> <li>• the Sun</li> <li>• electricity</li> <li>• fire</li> <li>• some plants and animals (bioluminescence)</li> </ul> <p>Light behaves in various ways, including</p> <ul style="list-style-type: none"> <li>• travelling in a straight line from its source</li> <li>• bouncing off a surface (reflection)</li> <li>• bending as it travels from one material to another (refraction)</li> <li>• splitting into colours (dispersion)</li> </ul> <p>Light travels through objects that can be seen through (transparent).</p> <p>The path of light is affected by mirrors, prisms, and water.</p> <p>The path of sunlight can be</p>		Identify sources of light.	<p><b>Sample Surface Level Activities</b></p> <ul style="list-style-type: none"> <li>• Light for Kids - Where does light come from? Youtube <a href="#">Video</a></li> <li>• What is Light? Science for Kids Youtube <a href="#">Video</a></li> <li>• RDPSD Gr 2 Energy <a href="#">Presentation</a> and <a href="#">Workbook</a></li> <li>• See "Light" of this website: <a href="#">DK Learning</a></li> <li>• Tour the school. Have students identify the different sources of light they encounter.</li> </ul> <hr/> <p><b>Local/Nearby Options for Experiential Learning Excursions</b></p> <ul style="list-style-type: none"> <li>• Visit optometrist office or invite them into the class</li> </ul> <hr/> <p><b>Other Resources</b></p> <ul style="list-style-type: none"> <li>•</li> </ul>	<p><b>Sample Assessment Questions</b></p> <ul style="list-style-type: none"> <li>• What is a source of light? Which is not a source of light? Television, Tree, Candle, Fireworks</li> <li>• What are the three ways light behaves? Explain them.</li> <li>• How do these objects affect the path of light? Mirror, Prism, Water.</li> </ul>



<p>affected in a variety of ways by natural objects, such as</p> <ul style="list-style-type: none"> <li>• leaves</li> <li>• trees</li> <li>• bodies of water</li> <li>• mountains</li> </ul>				
	<p>Behaviours of light affect its path.</p>	<p>Conduct an investigation to determine how the path of light can be affected.</p> <p>Examine how natural objects affect the path of sunlight.</p>	<p style="text-align: center;"><b>Sample Deep Level Activities</b></p> <ul style="list-style-type: none"> <li>• Propose this question to students: What is the relationship between natural objects, path, and light? <ul style="list-style-type: none"> <li>◦ Take students outside and have them record three examples that support their answer.</li> </ul> </li> <li>• Conduct an investigation to determine how the path of light can be affected. Using resources from the <a href="#">Manitoba Ministry of Education Science Guide</a> <ul style="list-style-type: none"> <li>◦ Constructing a Light Box p.4.24</li> <li>◦ Observing How Light Travels p. 4.24-4.26</li> <li>◦ Observing How Light Travels through Water p. 4.26</li> <li>◦ Observation Checklist: Light Investigation p.4.27</li> <li>◦ Investigation: Reflecting Light p. 4.28 - 4.29</li> <li>◦ Demonstration: Transparent, Opaque and Translucent Materials p.4.30 - 4.31</li> </ul> </li> <li>• Conduct an investigation to determine how the path of light can be affected. <ul style="list-style-type: none"> <li>◦ ECSB - Light Obstacle Course - <a href="#">Curriculum Crate</a></li> </ul> </li> </ul> <p style="text-align: center;"><b>Infusing Indigenous Knowledge</b></p> <p><b>Infusing Indigenous Knowledge into Curriculum (Grades 1-12) Website:</b>  <a href="#">Grade 2 Science:</a></p> <ul style="list-style-type: none"> <li>• Identify light at different times of the day (e.g., morning, dusk).</li> <li>• Compare differences in light during the seasons (e.g., sun rises early in summer and late in the fall).</li> <li>• Investigate how human activities differ in each season.</li> <li>• Explore how the following can provide sources of light: <ul style="list-style-type: none"> <li>◦ Oil from seals</li> <li>◦ Bear grease or moose fat</li> <li>◦ Northern lights</li> <li>◦ Fireflies</li> <li>◦ Old man beard from spruce trees</li> <li>◦ Sparks from hitting rocks together</li> </ul> </li> <li>• Identify shadows that affect behaviour and path of light (e.g., during day and night). Make shadows with hands and Body.</li> <li>• Reflect light using mirrors as a source of light.</li> <li>• Explore the path of sunlight in examples such as the following: <ul style="list-style-type: none"> <li>• Dense trees cast shadows (e.g., make it hard for snow to melt)</li> <li>• Height of trees in the mountains</li> </ul> </li> </ul>	<p style="text-align: center;"><b>Sample Assessment Questions</b></p> <ul style="list-style-type: none"> <li>• What is the effect when light interacts with an object that has smooth surface?</li> <li>• Describe the interaction of light passing through a glass of water.</li> <li>• What is the connection between <b>behaviour of light</b> and <b>pathway</b>?</li> </ul>

			<ul style="list-style-type: none"><li>• Direction of the door in a tipi (sun direction; wind direction)</li><li>• Make sundials to tell the time of day.</li></ul> <p>Additional Activities - Hands On Learning</p> <ul style="list-style-type: none"><li>• Ontario Science Centre - <a href="#">Making a Sun Dial</a> - As the Earth rotates, the Sun appears to move across the sky, marking the passage of a day. A sundial helps to measure the time and is made up of a vertical object or “gnomon” that casts the shadow, which in this case is our straw, and a flat surface called a dial. The length of shadow changes with the position of the Sun.</li></ul>	

# Resources

## Additional Websites and Resources to Support Learning

### Indigenous Related:

- The [Learning Circle](#): Classroom Activities on First Nations in Canada - Ages 4 to 7- **The Learning Circle** has been produced to help meet Canadian educators' growing need for elementary-level learning exercises on First Nations. It is the second in a series of four classroom guides on First Nations in Canada. See Unit 2 for Seasons.
- [Learning from the Land \(teacher information\)](#) - Although there is much diversity between First Nations, Métis, and Inuit, a deep and abiding connection to the land is common. Dr. Leroy Littlebear says that "The land is a sacred trust from the Creator. The land is the giver of life like a mother. The ecological aspect of Indigenous knowledge is all about the land. The land is a source of identity for Aboriginal People. CASS Resource.

### Specific to Grade 2 Energy - Light

- [Energy - Grade 2 - ARPD Video](#)
- **PBS:** [What is Light?](#) - how to conceptualize and describe light and the electromagnetic spectrum. [Light Beams](#) - Explore how light starts at a source and travels away from it in a straight beam in this media gallery. Heck out more resources at this site related to Light Also look at the Activity Sheets they have already created for Hands On Learning.
- [Motion: How Things Move](#) Next generation Science - includes the various pathways of movement.
- [Patterns of Movement](#) - STEM Science - In this activity, students demonstrate and describe how objects move in a straight line, zigzag, up and down, round and round, back and forth, and fast or slow.
- **Kids Academy:** [Light Sources](#) - learners embark on an intriguing exploration of the different sources of light in their environment.
- [Light](#) - SuperSTAAR - Several lesson, activities and videos related to the Grade 2 unit on Light.
- **Hand2Mind** - [Make a Shadow Story](#) - The change in shadow size and shape happens because the Earth rotates. The Earth's spinning causes the sun to be low in the sky in the morning and higher midday. Then it appears lower in the sky facing west later in the day. When we watch the "sun rise", it is the Earth spinning east toward the direction of the sun.
- **Let's Talk Science** - a large variety of sources for STEM - search your topic and grade You could use [Light and Plants](#) for this unit. OR [Light and Its Properties](#)
- **Teach Engineering** [Light Scavengers](#) - Students examine various materials to investigate how they interact with light. They use five characteristics—translucency, transparency, opaqueness, reflectivity and refractivity—to describe how light interacts with the objects. Or [Stations of Light](#) - Student groups rotate through four stations to examine light energy behavior: refraction, magnification, prisms and polarization. They see how a beam of light is refracted (bent) through various transparent mediums. OR [The Visual Spectrum](#) - Students make simple spectroscopes (prisms) to look at different light sources. The spectroscopes allow students to see differing spectral distributions of different light sources. Students also shine a light source through different materials.
- **Ontario Council for Technology Education OTCE** - [Sound and Light with a Purpose](#)
- **Science North** - [Angle of the Sun](#) - Students can experiment with how changing the angle of the light changes the amount of surface area that is exposed to the light.(Lesson plan and investigation) AND (need to adapt for Grade 2) [Types of Light Pt1](#) - This is the first of two lessons in which students use computational thinking and coding to explore the differences between light sources in their environment. Each lesson can be done independently or in sequence. The purpose of this lesson is to use the surrounding environment to help students discover the differences between natural and artificial light.and [Types of Light Pt.2](#) - This is lesson

## Resources Developed by School Divisions/Educational Institutions

[Edmonton Catholic Pacing Guides](#)

[Edmonton Catholic Curriculum Crates](#)

[Edmonton Catholic Schools](#): Academic Vocabulary: Kindergarten to Grade 3

Edmonton Public [Science Snippets K-3](#)

Edmonton Public [Scope and Sequence](#)

[LearnAlberta Curriculum](#)

APRDC [New Curriculum Professional Learning Resources](#)

[Alberta Science Curriculum Teacher Resources \(CMASTE\)](#): Click on the Teaching Resources Tab at the top of The Home Page.

This website hosts resources developed to support teachers in implementing the [Alberta Science Curriculum](#) initially released in 2023. The resources were created with support from the Centre for Mathematics, Science, and Technology Education (CMASTE) and contributions from students in the Faculty of Education, Elementary Education B.Ed. program. We will be continuing to add resources to this site, so please check back regularly.

[SLEAKs, SPAMs and SWAGs - Sciences Resources Developed by Red Deer Public Schools](#):

The purpose of this guide is to assist any kindergarten teacher in their instruction of the new science curriculum. Within this document, you will find links to external sites and resources, as well as internal resources that are organized by the coordinators of RDPSD. This is certainly a dynamic document in that it is always changing; if you have any suggestions for modifications, please do not hesitate to contact the RDPSD science coordinator. Contact [Nate Siler](#) if you have any questions.

Lesser Slave Watershed Council [Classroom Presentations](#)

[Lesser Slave Forest Education Society](#) (they are updating their programs to match the new curriculum)

Comox Valley School District #71 - [Science Resources](#). BC Ministry of Education

Government of Canada Science Resources:

[Activity Books](#):

Science is all around us and can be discovered, explored and used in so many ways! This new Activity Book showcases the diversity of the world of science through activities in health, energy, environment, agriculture, meteorology, astronomy, the living world and much more!

[Canadian Science - History and Achievements](#)

Select from 67 different entries of the history and achievements of Canadians in Science.

[Resource links](#)

Select from pages of activities, maps, lesson plans, videos etc. to support students of all age levels in science education.

two of two where students will explore the differences between light sources we see all around us. Each lesson can be done independently or in sequence. The purpose of this lesson is to provide students with the opportunity to show their understanding of the differences between natural and artificial sources of light by creating a sorting game using Scratch.

- **CK-12 First Grade Science** Chapter 2 - [How Do I See?](#)

### General Sites to Support a Variety of Concepts in Grade 2

- **Science Buddies** - a wealth of lessons, activities and investigations to do with your students. Enter your topic into the search bar.
- **Next Generation Science: offers a variety of supports** - instruction and assessment, Planning and Communication.
- **Ontario Science Centre: Curriculum Resources** - Enter your topic into the search and refine what type of material you would like to preview.
- Instructional Planning and Teaching in Science - [IOWA Department of Education](#) - check the phenomena based links to [Sound](#)
- What Are Storylines? - [Next generation Science Storylines](#) - a good story line can lead to great Inquiry!
- **ck-12 - Free STEM teaching resources** - provides a set of online science textbooks as open educational resources. These are not aligned to NGSS but could be modified. See below for the recommended Chapter.
- **Backyard Science:** <https://www.ulnoowegeeducation.ca/programs/backyard-science/> A FREE online curriculum-connected and culturally connected educational resource.
- **PBS Learning Media - Science** - a large selection of science related resources. Review by subject, subtopic and grade.
- **Alberta Parks - Alberta Parks** - ABC [Nature Walk](#)
- **Hand2Mind Science Activities** - Lessons and Investigations for K-5 students Check

### Websites and Resources to Support Planning

**Inclusion** - Best Practices Meeting the Needs of [All Learners in Science](#)

**Differentiation:** Preview vocabulary and pre teach to students. Use various forms of media to present vocabulary including simplified explanations, visuals in the form of diagrams to label and connect concepts.

**Gizmos** (Teacher Login Required)

New Learn Alberta: **no Grade 2 match**

ExploreLearning Gizmos Site:

Request a Gizmos account: [alberta@explorellearning.com](mailto:alberta@explorellearning.com)

**Primary Connections** (teacher guides, units of study and sample assessment rubrics based on Australian Science Curriculum but offers great links and activities to our curriculum)

*Look! Listen! provides students with hands-on opportunities to:*

- *investigate sources of light and sound*
- *explore how light and sound are produced and how light and sound travel*
- *increase understanding of the role of light and sound in our lives and our community*
- *explore why we have two eyes instead of one*

*Students apply their new learning by:*

- *conducting an investigation to collect data that will support their explanations of how having two eyes helps us see*

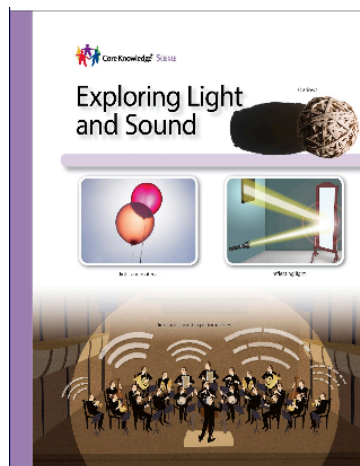


Resource: [Look! Listen Assessment resources](#)  
[E-Resources](#) (download, then open)  
[Equipment List](#)

OR

### **Core Knowledge** Unit 3: Exploring Light and Sound

In this unit, students investigate with light and sound to see how they can be used to communicate with an audience in a theater. Students will explore different light sources, mirrors, and shadows. Students will determine the relationship between vibrations and sound.

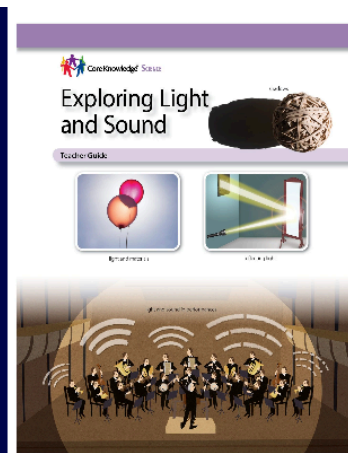


CKSci Unit 3: Exploring Light and Sound

#### STUDENT BOOK

The Student Books offer engagingly written and richly illustrated text on the topics specified for the unit. Each volume includes color photographs and illustrations and is intended to be

[Link](#)

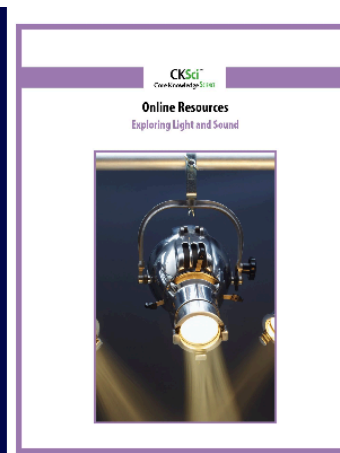


CKSci Unit 3: Exploring Light and Sound

#### TEACHER GUIDE

The Teacher Guide provides detailed lesson plans for each Student Book chapter, as well as activity page masters, assessments, and additional activities to reinforce the lesson.

[Link](#)



CKSci Unit 3: Exploring Light and Sound

#### ONLINE RESOURCES

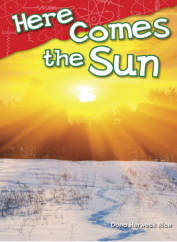
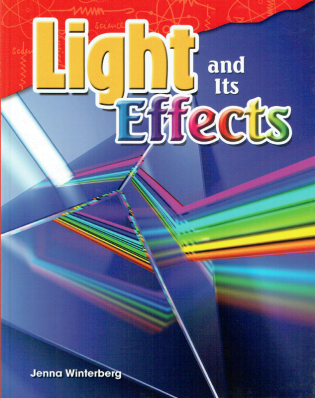
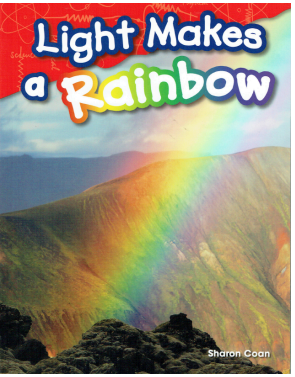
The Online Resources includes a Pacing Guide, Material Supply List, and other helpful information for comprehensive classroom activities.

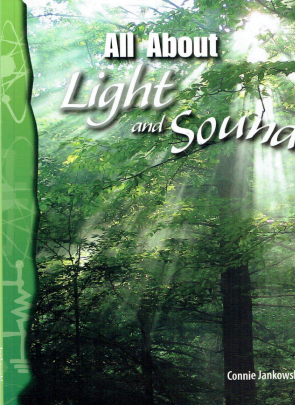
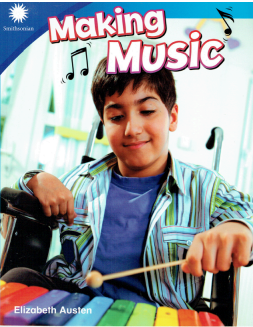
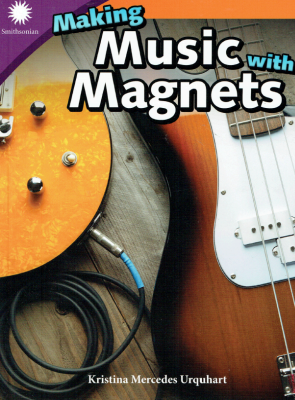
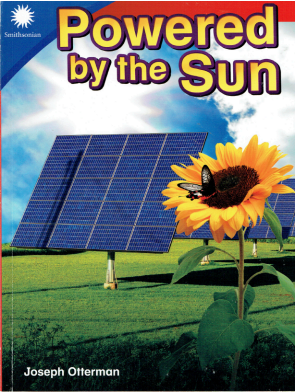
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# Literature Connections

KUSPs	2M1.1	2M1.2	2M1.3	2M1.4	2M1.5		
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Title & Author	Format (Picture Book, Novel, Non-fiction, other)	Publisher & ISBN	Book & Numbered Outcome
<p><b><i>Here Comes the Sun</i> by Dona Herweck Rice</b></p> <p>The sun is essential for human life. This book introduces students to the concept of the sun and discusses its importance. With images that are easy to identify and clear, simple sentence structures, this science reader simplifies scientific concepts for young students as they improve their reading skills. A fun and easy science experiment and Your Turn! activity provide more in-depth opportunities for additional learning. Nonfiction text features include a glossary and an index.</p>	Picture Book, Non-Fiction	Teacher Created Materials  Available through Pearson  10-1480745294 13- 978-1480745292	  2 E1.2
<p><b><i>Light and its Effects</i> by Jenna Winterberg</b></p> <p>This high-interest nonfiction reader will help students gain science content knowledge while building their literacy skills and reading comprehension. This appropriately levelled text features hands-on, simple science experiments and full-colour images and graphics. Fourth grade students will learn all about light and its various uses through this engaging text that supports STEM education and is aligned to the Next Generation Science Standards.</p>	Picture Book, Non-Fiction	Shell Educational Publishing  Available through Pearson,Canada  10-1480746851 13- 978-1480746855	  2E1.2
<p><b><i>Light Makes a Rainbow</i> by Sharon Coan</b></p> <p>We have all seen a rainbow in the sky. But what makes a rainbow? Learn how light and water make a rainbow! With easy-to-read text and detailed, vivid images, this science reader teaches students important scientific subjects and vocabulary terms like prism, energy, and light waves. Aligned to state and national standards, the book contains nonfiction text features like an index, a glossary, captions, and bold font to keep students connected to the text. A hands-on science experiment helps students apply what they have learned and develops critical thinking skills.</p>	Picture Book, Non-Fiction	Shell Educational Publishing  Available through Pearson,Canada  10-1480745669 13-978-1480745667	  2E1.2ade Teachers

<p><b>All About Light and Sound by Connie Jankowski</b></p> <p>Light and sound are two of the most important ways to understand the world around us. The sun is Earth's main source of energy and light. Light bounces off objects and travels to our eyes. Our eyes and brain work together to translate that light into what we see while our ears pick up sound vibrations and translate them into meaningful messages.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing</p> <p>Available through Pearson,Canada</p> <p>10-0743905792 13-978-0743905794</p>	 <p>2E1.2</p>
<p><b>Making Music by Elizabeth Austin</b></p> <p>How do the levers, hammers, and strings of a piano work together to make music? How do the size and shape of a trumpet's bell affect its sound? Find the answers to these questions--and more--with this STEAM book that will ignite a curiosity about STEAM topics through real-world examples. Created in collaboration with the Smithsonian Institution, it features a hands-on STEAM challenge that is perfect for makerspaces and that guides students step-by-step through the engineering design process. Make STEAM career connections with career advice from actual Smithsonian employees working in STEAM fields. This book builds young readers' early childhood literacy skills and is ideal for 1st grade students or children ages 5-7.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing</p> <p>Available through Pearson,Canada</p> <p>10-1493866494 13-978-1493866496</p>	 <p>2E1.1</p>
<p><b>Making Music With Magnets by Kristina Mercedes Urquhart</b></p> <p>Electromagnets have played a powerful role in music. Without them, we would not have electric guitars, and without electric guitars, we would not have some of the greatest songs from music history. The electric guitar was born from new technology, but how will technology change music in the future? Learn the answer to this question with this fascinating Informational Text that examines the influence of technology on music! Created in collaboration with the Smithsonian Institution, this book builds reading skills while engaging students' curiosity about STEAM topics through real-world examples. Packed with factoids and informative sidebars, this book features a hands-on STEAM challenge that is perfect for use in a makerspace and teaches students every step of the engineering design process. Make STEAM career connections with career advice from actual Smithsonian employees working in STEAM fields. Discover engineering innovations that solve real-world problems with content that touches on all aspects of STEAM: Science, Technology, Engineering, the Arts, and Math!</p>	<p>Picture Book, Non-Fiction</p>	<p>Teacher Created Materials</p> <p>Available through Pearson,Canada</p> <p>10-149386713X 13-978-1493867134</p>	 <p>2E1.1</p>
<p><b>Powered by the Sun by Joseph Otterman</b></p> <p>Learn how scientists channel energy from the sun to power awesome innovations! Created in collaboration with the Smithsonian Institution, this STEAM book will ignite a curiosity about STEAM topics through real-world examples. It features a hands-on STEAM challenge that is perfect for makerspaces and that guides students step-by-step through the engineering design process. Make STEAM career connections with career advice from actual Smithsonian employees working in STEAM fields. Introduce early science topics to young readers with this STEAM book that is ideal for 1st grade students or ages 5-7.</p>	<p>Picture Book, Non-Fiction</p>	<p>Shell Educational Publishing</p> <p>Available through Pearson,Canada</p> <p>10-1493866583 13-978-14938665883</p>	 <p>2E1.2</p>

