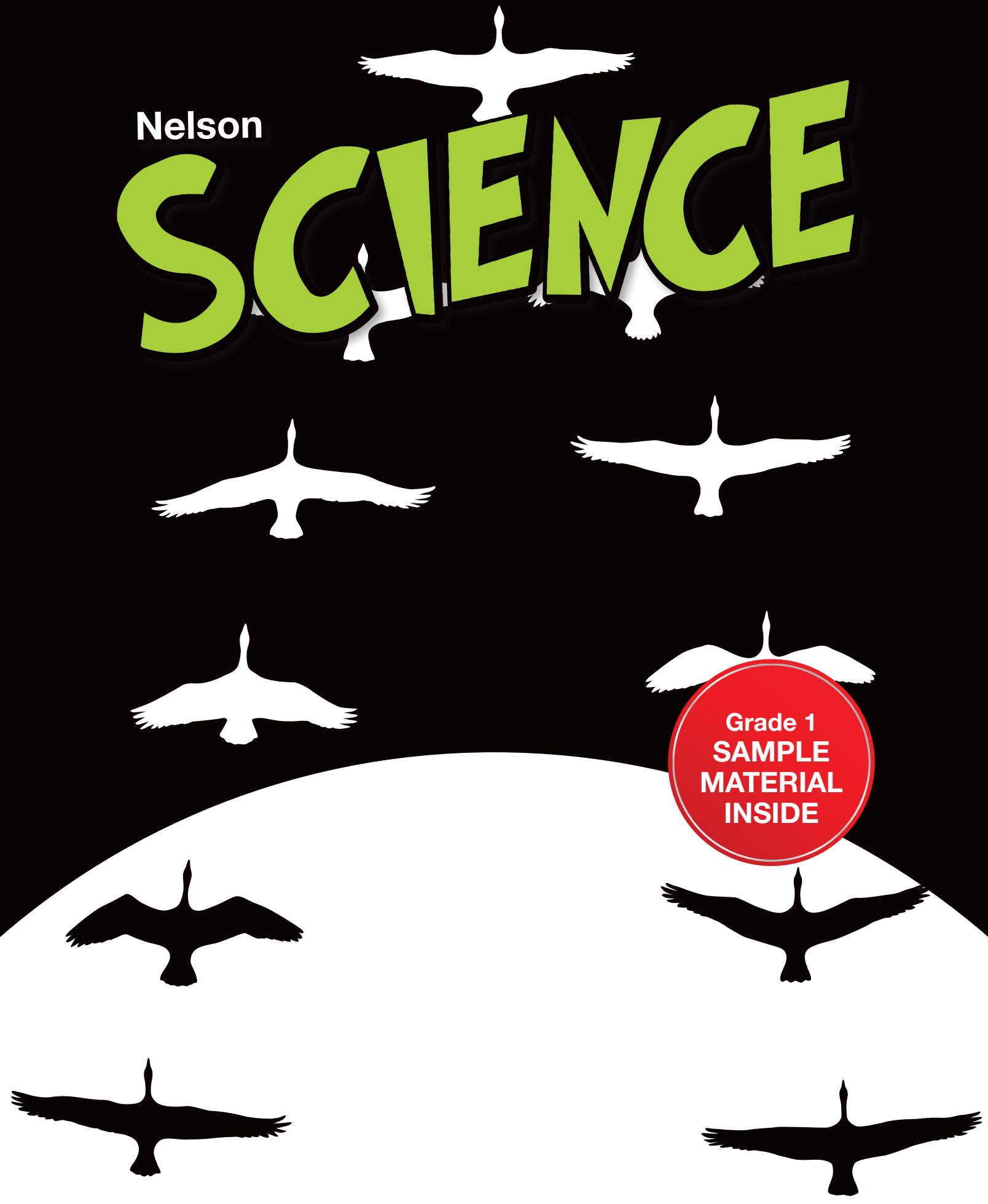
Nelson

SCIENCE



Grade 1
SAMPLE
MATERIAL
INSIDE

About Nelson Science

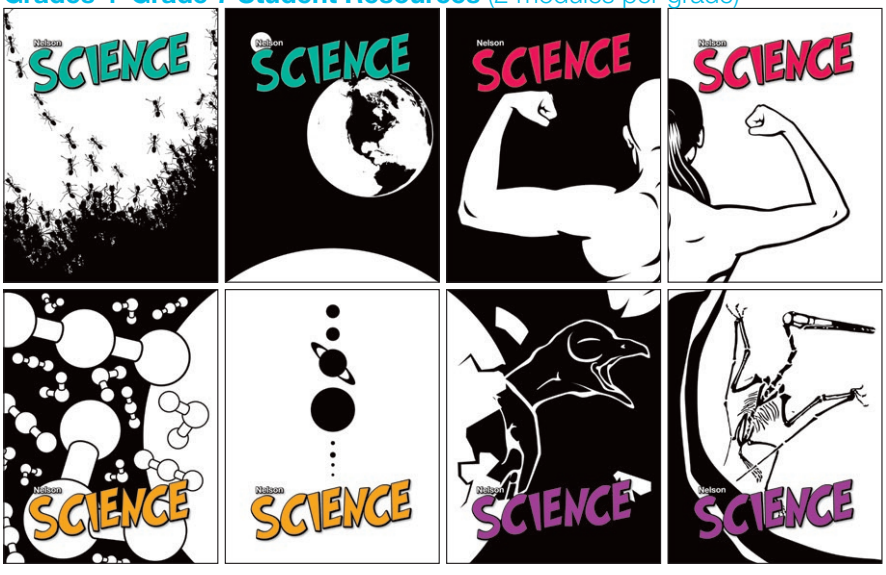
Developed by an experienced team of BC educators, *Nelson Science* is a comprehensive series built from the ground up to fully align with the new BC Science curriculum. Student resources feature activities designed to unleash students' innate curiosity. Infused with First Peoples knowledge and perspectives, and grounded in student-driven scientific inquiry, these resources open inquiry pathways that allow students to deepen their understanding of Big Ideas, develop Core and Curricular Competencies, and build place-based and content knowledge.

Key Features

- Focused on the doing of science—explorations and investigations are designed to develop the skills, processes, and habits of mind of scientific inquiry
- First Peoples scientific knowledge and perspectives are woven into activities through authentic contexts designed to support learning from First Peoples
- Design-focused activities allow students and teachers to cover all *Learning Standards* from the Applied Design, Skills, and Technologies (ADST) curriculum
- A suite of custom-developed, modifiable assessment tools, provide support for formative assessment of core and curricular competencies, as well as content knowledge

Kindergarten–Grade 3 Teacher's Resources

Grades 4–Grade 7 Student Resources (2 modules per grade)



Nelson SCIENCE

Resource Component Overview

For Students

Kindergarten–Grade 3

Activity Cards

- 9 double-sided, laminated Activity Cards featuring a unique activity on each side (total of 18 activities) to address all 4 strands: Biology, Chemistry, Physics, Earth/Space Science
- 8 copies of each Activity Card (total of 72 cards)
- Packaged in a durable cardboard box

Grades 4–7

Student Resource

- Flexible modular format—2 print modules per grade
- Each module contains 2 strands:
  - Biology and Chemistry
  - Physics and Earth/Space Science
- Online access to the Science Skills Toolkit

Online Student Centre (sold separately)*

- Each Online Student Centre provides:
  - 1 eBook containing 2 strands (includes audio read-aloud for struggling readers)
  - Science Skills Toolkit to support curricular competencies

***Contact your Sales Representative for more information.**

For Teachers

Kindergarten–Grade 3

Teacher's Resource
(includes Online Teaching Centre)

- Print Teacher's Resource with facilitation strategies and assessment support

Teacher Cards

- Double-sided, laminated cards to support place-based activities

Online Teaching Centre
(included with Teacher's Resource)

- Teacher's Resource eBook
- Image bank containing art and photos from the Activity Cards in JPG format
- Science Skills Toolkit with teaching notes to support curricular competencies
- Modifiable Blackline Masters (includes assessment tools)
- Interactive Whiteboard lessons for all 4 strands
- Videos with teaching notes
- Cross-curricular Connections with teaching notes
- Weblinks
- RSS feeds

Grades 4–7

Teacher's Resource
(includes Online Teaching Centre)

- Flexible modular format—2 print Teacher's Resource modules per grade
- Each module contains 2 strands:
  - Biology and Chemistry
  - Physics and Earth/Space Science

Online Teaching Centre
(included with Teacher's Resource)

- Teacher's Resource eBook containing 2 strands
- Image bank containing art and photos from the Student Resource in JPG format
- Science Skills Toolkit with teaching notes to support curricular competencies
- Modifiable Blackline Masters (includes assessment tools)
- Animations with teaching notes
- Videos with teaching notes
- Literature Connections with teaching notes
- Weblinks
- RSS feeds

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Teacher's Resource

Inquiring into...

Developing the Big Idea and Unifying Concepts identifies and explains the big idea and the unifying concepts that are addressed in the unit.

Multi-Year Classrooms highlights areas of potential combined instruction based on the content and big idea of the unit.

Using an Opening Provocation provides a suggested activity that teachers can use to begin the unit to engage students and elicit their natural questions about the conceptual content of the unit.

Inquiring into Light and Sound

You Will Need

- flashlights
- glow sticks
- mirrors

Resources Available in the Online Teaching Centre

Family Letter
Documenting Learning: Provocation: Exploring light
Weblinks

Cross-Curricular Considerations

The unifying concept of *cause and effect* in Science and the thinking skill of *cause and consequence* in Social Studies can be mutually reinforced in student learning.

In this unit, students will use the skills, processes, and habits of mind of scientific inquiry to explore light and sound. They will explore the sources of light and sound, as well as the properties of light and sound and how to change them. They will be able to construct their own knowledge of light and sound through hands-on activities and opportunities to design inquiries based on their own questions. If this is the first unit of the year, consider sending home **Family Letter**.

Developing the Big Idea and Unifying Concepts

The Big Idea for this unit is **light and sound can be produced and their properties can be changed**. Throughout this unit, students will explore the sources and properties of light and sound. They will develop their understanding of the unifying concept of **cause and effect** as they investigate how to change the properties of light and sound.

Multi-Year Classrooms

In Kindergarten, students learn about the motion of objects. In Grade 1, students move on to learning about light and sound. In Grade 2, students return to the study of forces that was started in Kindergarten and learn how forces influence the motion of objects.

Using an Opening Provocation

The activity invites students to **demonstrate curiosity** about light. It also encourages students in a naturalistic way to **ask questions about familiar objects and events** that can be investigated throughout the unit.

Science Background

Light is all around us. Its presence allows us to make use of our sense of vision. Light (through the process of photosynthesis) is actually responsible for life on Earth. But what exactly is light?

Light is simply a form of energy that is visible to the human eye. It travels at the extraordinary speed of 300 000 km/s in a vacuum and, unlike sound, does not need a medium through which to travel. Light waves have different frequencies, which we perceive as different colours. A combination of colours from across the visible spectrum is perceived as white light. A variety of physical and chemical processes can produce light. When light strikes an object, it is transmitted (light passes through the object), absorbed (light is converted to some other form of energy, usually thermal), or reflected, or any combination of the three.

(continued)

Light and Sound

This section provides teachers with a general overview of the unit. This section also notes any scientific descriptions and explanations that have recently been improved as new evidence became available.

Students may not realize that there is light coming from any object they see. While only a small number of objects in our surroundings typically produce light, all objects reflect at least some of the light that strikes their surface. When we see an object, we are actually seeing the light it produces or reflects. Objects that appear black are reflecting very little light toward our eyes. Black is essentially the absence of light.

Observing and Supporting Learning suggests possible teaching strategies for engaging students in this unit.

Observing and Supporting Learning

- As students work on the Provocation activity, consider documenting evidence of learning using **Documenting Learning: Provocation: Exploring light**.
- To engage students' interest in light, darken the classroom and give them small flashlights, glow sticks, and mirrors to play with. Listen for student questions that can be turned into inquiry activities throughout the unit.

Assessment Tool

Formative Assessment	
Collecting Information	**Using Information**
Consider taking notes and/or photos (if possible) to document the curiosity and wonder you see as student explore light in a darkened room.	Consider giving students the photos to include in their science logs or portfolios and providing descriptive feedback to the whole class on their curiosity, for example, *You tried a lot of different things with the flashlights and mirror. I could tell you were really curious about how light reflects. You also seemed very curious about shadows.*
Listen for questions or statements that can be turned into questions. Record and use these for further student-driven inquiry opportunities throughout the unit.	Provide whole-class feedback on the questions you heard, such as, *Here are some of the questions I heard you asking. Did I miss any?*

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Teacher's Resource

Exploration

Curricular and Core Competencies identifies the curricular competencies (scientific skills and processes and habits of mind) that students will be using to build their science knowledge and any core competencies that they will have significant opportunities to develop.

The *Focus Question* identifies a key question that is derived from the learning standards for content knowledge.

Learning from First Peoples links authentic First Peoples perspectives and scientific knowledge about the natural world to the skills and concepts in a given activity.

What are some sources of sound?

You Will Need

per student/group:
- a device that will record audio

Resources Available in the Online Teaching Centre

Documenting Learning: What are some sources of sound?
Two-Column Chart
Scientific Inquiry Scale
Documenting Communication: Profiles
Documenting Communication: Facets
Scientific Inquiry Toolkit (observe; record; sort and classify; evaluate; communicate observations, ideas, and findings; reflect on place)
Weblinks

Using This Exploration

Curricular and Core Competencies: In these activities, students will have an opportunity to **demonstrate curiosity and a sense of wonder about the world** as they explore sources of sound and ways to change sounds. They will examine the sources of sound on the Activity Card and in their classroom and **sort and classify them using a provided table** as either natural or artificial (human-manufactured) sources of sound. They will learn about volume and pitch and **sort and classify** sounds based on volume and pitch. In the place-based activity, students will have an opportunity to **experience and interpret the local environment** as they go outdoors and **observe objects and events in the familiar contexts** of the local environment to **make and record observations** of sounds, from both natural and artificial sources. They will **compare their observations with those of others**. They will have an opportunity to **express and reflect on personal experiences of place**. They will recognize **First Peoples knowledge** about the sounds of living things that share the land and **communicate their observations and ideas using oral language or drawing**.

Students will develop the core competency of **Communication (facet: connect and engage with others)** as they work with classmates to classify sounds.

Focus Questions: What are some sources of sound? What are some properties of sound?

Big Idea and Unifying Concepts: As students sort and classify sources of sound as natural or artificial and classify sounds by volume and pitch, they will be learning the Big Idea that **light and sound can be produced and their properties can be changed**.

Learning from First Peoples: First Peoples have a deep understanding of sounds of nature. Different tools or strategies were used over many centuries to make animal calls. Through listening to the various animals, First Peoples would create or imitate the sounds using a variety of techniques. For example, First Peoples would mimic the sound of a fawn by placing a piece of grass between their thumbs and blowing. Tightening and loosening the grass that is between your thumbs can change the sound. Another example that was used by many First Peoples is rolling up birch bark and blowing through it to imitate sounds from a moose bull.

First Peoples also demonstrate their knowledge of manipulation of pitch and volume of sounds in their practice of making and playing drums. First Peoples tighten or loosen animal hide over wood frames to control the pitch. Drummers have other tactics for controlling pitch, including pouring water in the drum.

Learning from the Land: Students will learn from the land as they explore natural sounds in their local environment.

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Place-based activities provide opportunities to do science outside the classroom and are identified with a tree icon.

Science Background

Sound is a form of energy that is produced by vibrating objects and is detectable by the human ear. The original vibrating object, say a loudspeaker, sets up a series of vibrations in the air between the source and our ear. The air particles continuously bump into neighbouring air particles in a cascading motion that transmits energy from the original vibrating material to our ear.

Although we associate sound mainly with the vibration of air particles, sound can actually travel through any physical material. This means that sound can travel through wood, steel, and water.

Sounds vary in pitch (frequency) and volume (loudness). Any action that causes a material to vibrate produces a sound, but whether or not we can hear the sound depends on its frequency and volume. Sounds also vary in timbre, or tone. These terms refer to the quality of the sound. No sound is a perfect single frequency but rather a complex mixture of frequencies.

Humans and many other mammals and birds produce sounds using vocal cords. The cords vibrate as air is forced between them. Different frequencies are produced by changing the tension of the vocal cords. Animals may use other body parts to generate sounds and communicate with each other: crickets rub their wings together; some fish make sounds with their teeth; rattlesnakes use a modified tail; beavers splash their tails; and ruffed grouse, while standing, beat the air with their wings to make low-frequency drumming sounds. One of the loudest animals in the world is the tiny pistol shrimp. It can produce extremely loud sounds by snapping one of its claws closed.

Thunder is perhaps the most familiar naturally produced loud sound. Thunder is produced by the sudden superheating of air by a lightning bolt. This causes the air to rapidly expand and then almost as quickly cool and contract under the pressure of the surrounding air. This movement produces very loud, low-frequency vibrations—thunder.

Possible Misconception

Students may not think that sound can travel through liquids or solids. Note that you can still hear if your head is underwater; you can hear a pencil tapping on a table if your ear is pressed against the table; loud sounds can be heard through windows and walls—all evidence that sound can travel through liquids and solids.

Science Background provides a detailed overview of the science concepts covered in a given activity and, where applicable, addresses possible misconceptions.

Observing and Supporting Learning

Whole Class

- Consider using **Documenting Learning: What are some sources of sound?** to document your observations of student learning as they respond to the images and do the activity in this Exploration.

Assessment Tool

- Show students the Activity Card. Ask them to identify the different sources of sounds shown in the photos. Ask, *What other things make sounds?*

Observing and Supporting Learning suggests possible teaching and classroom management strategies for engaging students in this exploration.

Teacher's Resource

Exploration (continued)

Literature Connections, opportunities to integrate science concepts and skills while developing literacy skills, are presented in the margin.

Formative Assessment supports teachers with assessment strategies for observing students, adjusting instruction, and providing descriptive feedback.

Blackline Master

Literature Connections

The Listening Walk by Paul Showers

Ask students questions such as, *What can we learn about listening from the girl in this book?*

- Ask students to think about whether the sources of the sounds are natural or artificial (caused by something manufactured by humans). Have them sort and classify the sources of sounds from the Activity Card as well as other sounds they have thought of in a table. Students can use **Two-Column Chart** and add the headings "Natural" and "Artificial."
- To introduce the concept of volume, ask students to practise making soft sounds and loud sounds with their voices. Ask, *How do soft sounds and loud sounds feel different to you when you make them? What about when you hear them?*
- To introduce the idea of pitch, ask students to practise making high-pitched sounds and low-pitched sounds with their voices. Ask, *How do low-pitched sounds and high-pitched sounds feel different to you when you make them? What about when you hear them?*
- As a class, listen to a variety of recordings of natural and artificial sources of sounds (such as airplanes, cars, birds, other animals, whistles, and instruments). Have students consider which sounds are louder and which sounds are softer, and which sounds are higher and which are lower in pitch.
- Ask students to sort and classify sounds using a table drawn on a whiteboard, such as the one below, and represent each sound they hear that falls into each category with a quick drawing or word.

Loud	High-pitched
Soft	Low-pitched

Formative Assessment

Collecting Information	Using Information
Do a quick check for understanding using a traffic light strategy and a prompt such as, *How well do you understand the difference between natural and artificial sources of sound?* Green means "Go on, I understand," yellow means "Caution, I'm not sure about this," and red means "Stop, I don't understand."	If you get some yellow and red responses, adjust instruction by using the terminology *sources manufactured by humans* instead of *artificial sources*, and then check if students can distinguish.
Observe the extent to which students connect and engage with classmates to sort and classify sounds by source, volume, and pitch.	Provide descriptive feedback using the language of the **Communication Competency Profiles**, for example, *You can talk and listen to people. You can participate in conversations to learn. You can listen and respond to others.*
Observe the extent to which students can sort and classify sounds by volume and pitch using provided tables.	If students have difficulty sorting and classifying the sounds in a table, consider adjusting instruction by encouraging them to mimic the sounds with their voices to decide whether they are loud or soft and high-pitched or low-pitched.

Teacher Card: What are some sources of sound?

Goals

Place-Based Experience

- Before going outside, discuss appropriate behaviour in the natural environment. Having students consider respect for nature in this activity supports the **habits of mind** associated with science as well as their development as **scientifically literate** citizens.
- Consider asking students to acknowledge the traditional territory of the First Peoples on whose land they are working and learning.

- Take the class outside to listen to their environment.
- Have students sit somewhere to listen and focus. Discuss the importance of being quiet to listen to all the different sounds. Remind them to listen for both natural and artificial sounds. They could record their observations with words, sketches, or audio recordings.
- Before going back inside, encourage students to express and reflect on their experiences of place.

Cross-Curricular Considerations

As students observe for natural and artificial sources of sound in the local environment, they will also be addressing the Social Studies content learning standard *natural and human-made features of the local environment.*

Formative Assessment

Collecting Information	Using Information
Observe the extent to which students experience and interpret the local environment to make and record observations about sounds.	If students have difficulty making observations about the sounds, consider adjusting instruction by suggesting they close their eyes to focus on their sense of hearing as they make observations about sound.
Listen for how students express and reflect on their personal experiences of place. Ask questions to clarify and extend their thinking about place, for example, *How did the sounds you heard affect your experience of the natural environment?*	Provide descriptive feedback on students' expressions and reflections on place, for example, *I can tell you noticed a lot more about the land today by listening so carefully.*

Small Groups

- When students return to the classroom, ask them to work in pairs or small groups to compare their observations with one another. Have them reflect on whether everyone heard the same things.
- Ask students to add the sounds they heard outside to the charts they made earlier.
- Explain that in some First Peoples communities, learning to produce animal calls is an important part of living on the land. Consider inviting a local First Peoples Knowledge Keeper, Elder, or community member who is knowledgeable about animal calls to visit the class and share his or her knowledge.
- Encourage students to apply First Peoples learning to their own contexts. Ask questions such as, *What can First Peoples teach us about why sounds in our environment are important?*

Formative Assessment

Collecting Information	Using Information
Ask questions to extend and clarify student thinking about how they can evaluate their investigation by comparing their observations with those of other students, for example, *Why do you think some classmates observed sounds you did not?*	Provide descriptive feedback on students' evaluation of their investigation, for example, *You noticed that some students found some sounds you did not, so you wondered if they listened more carefully. I heard you say you thought students who closed their eyes made more observations.*
Observe the extent to which students recognize that First Peoples knowledge of animal sounds represents knowledge of the land.	Consider having someone who is skilled at making local animal sounds demonstrate, and allow students to attempt the same sounds themselves. They will generally find it is quite difficult.

Identifying Inquiry Opportunities

- If students are curious about sounds in different settings, consider exploring sounds through other place-based experiences, such as in a forest, at a park in the city, by a pond, or by the ocean.

Identifying Inquiry Opportunities scaffolds concrete suggestions for additional or alternative scientific inquiries based on students' own questions.

Teacher's Resource

Conduct an Inquiry!

You Will Need is a list of materials teachers will need for the activity. *Resources Available in the Online Teaching Centre* is a list of resources in the Online Teaching Centre that can be used to support the exploration, such as Blackline Masters, Assessment Tools, and the Science Skills Toolkit.

Big Ideas and Unifying Concepts identifies how the doing and knowing of science can roll up toward the big idea and goals of the science curriculum.

Conduct an Inquiry!
How can we make and change sounds?

You Will Need

per student/group:
- a variety of natural and human-made materials (e.g., wooden blocks, plastic blocks, spoons, plastic containers, sticks, rocks)
- access to surfaces such as pavement, fences, and tree trunks
- a device that can record audio

Resources Available in the Online Teaching Centre

Documenting Learning: How can we make and change sounds?
Scientific Inquiry Scale
Documenting Critical Thinking: Profiles
Documenting Critical Thinking: Facets
Scientific Inquiry Toolkit (observe; question; predict; use materials and tools safely; record; identify patterns; interpret results; evaluate; identify applications; generate new ideas and questions; communicate observations, ideas, and findings)
Weblinks

Using This Inquiry

Curricular and Core Competencies: In this inquiry, students will have an opportunity to **demonstrate curiosity and a sense of wonder about the world** as they investigate how they can make and change sounds. They will **observe objects** in order to **ask questions** and **make simple predictions**. They will **safely manipulate materials to test their ideas** and **make and record observations**. They will **compare their observations with their predictions through discussion** and **identify simple patterns and connections**. They will evaluate their inquiries as they **consider some environmental consequences of their actions** and **compare their observations with those of others**. They will **generate and introduce new and refined ideas when problem solving** as they **transfer and apply their learning** to everyday problems. They will **communicate their observations and ideas**.

Students will develop the core competency of **Critical Thinking (facet: question and investigate)** as they investigate making sounds and changing the properties of sounds and apply their learning to make the softest sounds they can.

Focus Question: How can sound be produced and the properties of sound be changed?

Big Idea and Unifying Concepts: In this inquiry, students will be exploring the Big Idea that **light and sound can be produced and their properties can be changed** by making their own sounds and then changing the properties of those sounds. Identifying patterns in how they can change the properties of the sounds they produce will deepen their understanding of the unifying concept of **cause and effect**.

Science Background

In general, low-frequency vibrations are produced by longer/larger objects, while high frequencies are produced by the vibration of shorter/smaller objects. In addition, objects that are hard or under tension produce higher-frequency sounds than softer low-tension objects. Striking a piece of wood produces a sound of lower pitch than striking the same-size piece of steel.

Consider a guitar string: the higher the tension, the higher the frequency, and the shorter the string, the higher the frequency (the effective length of the string is shortened by pressing it against a fret). Similarly, a relatively soft large-diameter drum produces low-pitched sounds, while a hard, low-diameter cymbal produces a high-pitched sound.

The volume (loudness) of the sound depends on the energy of each individual vibration rather than the frequency of the vibration.

(continued)

So striking an object with greater force increases the volume of the sound but generally does not alter its pitch.

Smartphone apps are available for measuring both sound volume and sound frequency. Although it is not necessary for students to quantify either volume or pitch in the inquiry, it might be of value if they could use an app for comparison purposes.

Possible Misconceptions

Students may think that hitting an object harder changes its pitch. When you hit an object harder, you are primarily changing the loudness or volume of the sound, not its pitch.

Observing and Supporting Learning

Whole Class

- This inquiry is an opportunity for students to develop **procedural knowledge** in Science as they use all the stages of scientific inquiry to investigate shadows.
- Consider using **Documenting Learning: How can you make and change sounds?** to document your observations of students' scientific inquiry skills and processes as they conduct this inquiry.
- Observe students as they work, and highlight relevant sections of the **Scientific Inquiry Scale**.
- If you plan to observe with a core competency focus, consider using **Documenting Critical Thinking: Profiles** (or **Facets**).
- Show students the Activity Card. Ask questions such as, *What sounds can you make with your feet? hands? mouth? How can you make a high-pitched sound? How can you make a low-pitched sound? Can you make the same sound loudly and quietly? What other ways can you change the sound you are making?*

Goals

Assessment Tool

Assessment Tool

Assessment Tool

Custom-developed, modifiable assessment tools support formative assessment of core and curricular competencies, as well as content knowledge.

Small Groups

- Tell students that they will be conducting an inquiry into how to make sounds and change those sounds using different objects and surfaces outside.
- Take students outside. Consider making sure the outdoor space is large enough that groups of students can be in different areas to help them hear primarily the sounds their group is making, and not the sounds of the other groups. Choose a location where disturbance of wildlife will be minimal.
- Before students begin their inquiry, ask them to discuss ways that they can be respectful of their classmates, the materials, and the natural environment when making different sounds.

Teacher's Resource

Conduct an Inquiry! (continued)

Colour-coded icons, shown at point-of-use, act as identifiers for coverage of curricular goals, and core and curricular competencies.

Critical Thinking

- For Question and Predict, provide students with a variety of human-made objects, such as wooden blocks, plastic blocks, spoons, and plastic containers, and encourage students to choose materials and objects they can find around them, such as sticks, rocks, pavement, fences, and tree trunks, with which they could make sounds. Ask students to think about how they could use these materials to produce different sounds. Encourage students to ask their own questions about changing sounds, such as, What object hit on what surface would make the loudest sound? What object hit on what surface would make the highest-pitched sound? lowest-pitched sound? How can I change the sound I make with the same object and surface?
- Have students make predictions based on their inquiry questions.

Formative Assessment	
Collecting Information	**Using Information**
Observe the extent to which students can use their observations of the objects provided to generate questions about making sounds and changing the properties of sounds.	If students have difficulty thinking of questions, consider adjusting instruction by encouraging them to think about sounds they have made outside before and how they might be able to change those sounds.
Observe the extent to which students can make predictions.	Provide descriptive feedback using the language of the **Scientific Inquiry Scale**, for example, *You can make simple predictions about familiar objects and events.*

- For Plan and Do, students may want to record their sounds to help them determine how the sound changes.

Formative Assessment	
Collecting Information	**Using Information**
Observe the extent to which students can make and record observations about the sounds they made and how they changed them.	If students have difficulty making and recording observations, consider adjusting instruction by suggesting they make audio recordings of their sounds so they can compare them. If available, students may also want to use a smartphone app that can measure the loudness (volume) and pitch (or frequency) of the sounds they are making to help them compare.
Observe the extent to which students manipulate materials they've chosen safely and respectfully, taking into consideration the environment and their classmates, as well as other people nearby.	If students are not using a tool or material safely or respectfully, stop them and ask them how their actions might be affecting their own safety, classmates, or other living things. Ask them to demonstrate how to proceed safely and respectfully.

Critical Thinking

- Back inside, for Analyze, ask students to compare their observations with their predictions by discussing with their group members. If some students find out their predictions were wrong, say, *In science it is not a problem if your prediction turns out to be wrong. Sometimes we learn more when our predictions are wrong.* It is important that students learn that this is the **nature of science**.

Goals

- Encourage students to identify patterns and connections in their observations.
- For Evaluate, ask students to consider some environmental consequences of their actions. These will largely involve the effects on other living things of the noise they made.
- For Apply, ask students to develop sound effects to be used during the reading of a story. If students have thoroughly explored loud sounds in this inquiry, consider providing books that require quiet sound effects. What is the softest sound they can make that will work as a sound effect?
- For Communicate, ask groups to briefly present their observations, including demonstrations, to the class.

▲ Critical Thinking

Formative Assessment

Collecting Information	Using Information
Observe the extent to which students can compare their observations with their predictions.	Provide descriptive feedback, for example, *You knew your prediction was correct because your observation supported it. You realized your prediction was wrong after you made observations. That is why, in science, we always test our predictions.*
Observe the extent to which students identify simple patterns in how they were able to change the properties of the sound they made.	Provide descriptive feedback that identifies the pattern, for example, *You observed that striking things harder made louder sounds. You observed that using a thinner blade of grass made a higher-pitched sound.*
Ask questions to clarify and extend students' thinking about the environmental consequences of their actions, for example, *What did you need to be careful of when hitting natural materials, such as tree trunks? What might your actions have caused if you were not careful? Do you think you disturbed any animals with your sounds? Why or why not?*	If students did not act thoughtfully outside, ask them to identify what they could have done to be more respectful of the land and community.
As students generate new or refined ideas to create sound effects for a story, observe the extent to which they transfer and apply their learning about producing sounds and changing the properties of sound.	Provide descriptive feedback using the language of the **Scientific Inquiry Scale**, for example, *You can transfer and apply your learning to new situations.*
Observe the extent to which students are thinking critically as they do their inquiry.	Provide descriptive feedback using the language of the **Critical Thinking Competency Profiles**, for example, *You can explore materials and actions. You can ask questions, make predictions, and use your senses to gather information. You can ask questions and consider options.*

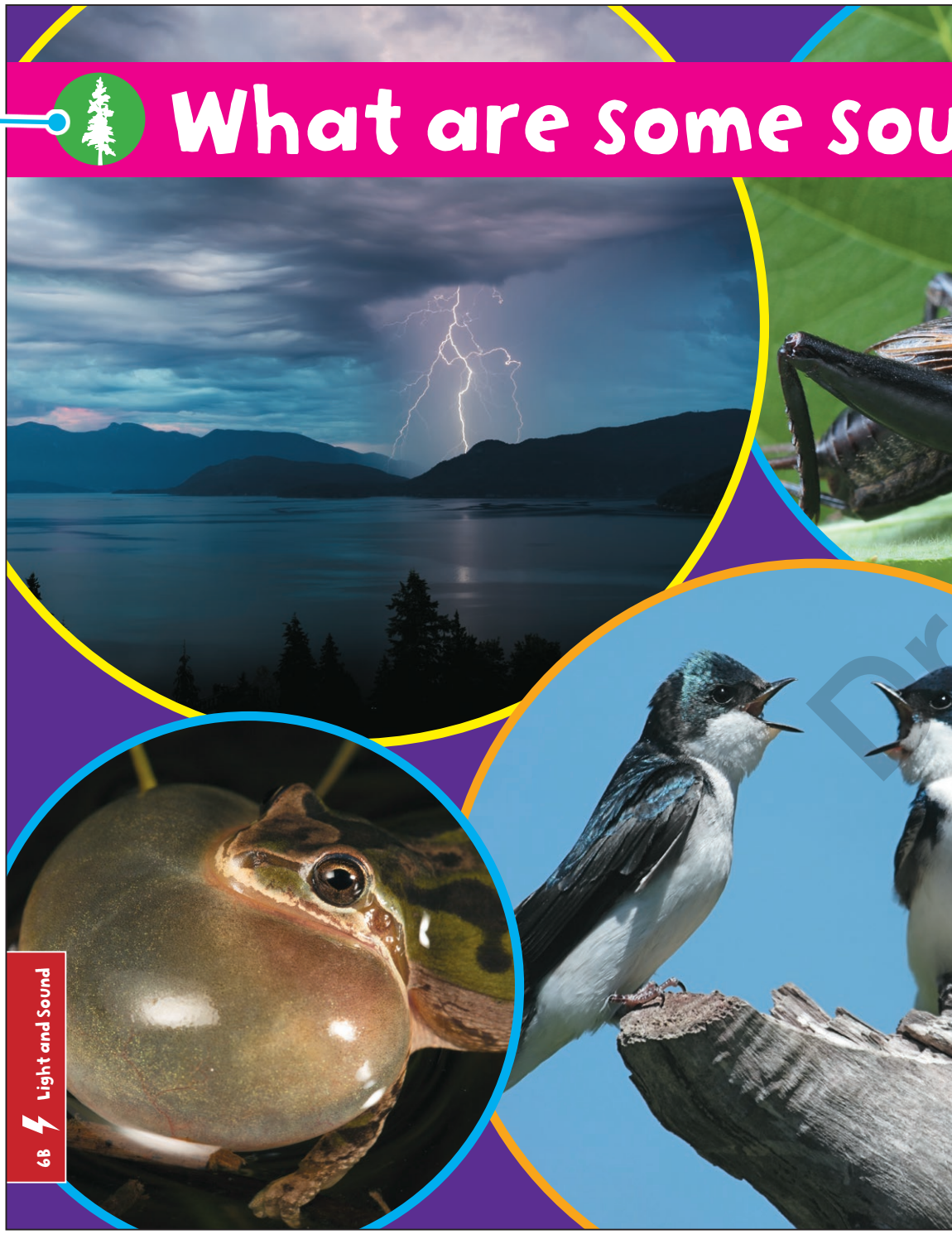
Identifying Inquiry Opportunities

Students could investigate how sounds with different properties can be made on musical instruments.

Activity Card

Exploration

Place-based activities provide opportunities to do science outside the classroom and are identified with a tree icon.



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Explorations present content in an engaging visual format. Each Activity Card is supported in the Teacher's Resource by strategies that support the associated learning standards.

Activity Card

Conduct an Inquiry!

The *Scientific Inquiry Toolkit*, available in the Online Teaching Centre, supports the development of the procedural knowledge of scientific inquiry.

d change sounds?

Apply

Evaluate

Communicate

Conduct an Inquiry! uses the headings for scientific inquiry from the BC curriculum as indicators for the stages of inquiry.

Nelson SCIENCE

Activity Card

Design and Make!

Design and make a mu

7B Light and Sound

Design and Make! activities support implementation of the ADST curriculum and allow students to develop their design thinking in relation to science topics. These open-ended design activities invite students to come up with their own design ideas and choose one to act on.

usical instrument

Make

Share

Nelson

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Order Information

Kindergarten	
Classroom Set (Includes Teacher's Resource and Activity Cards)	9780176799700
Nelson Science Kindergarten Little Book Single Copy Set	9780176814915
Grade 1	
Classroom Set (Includes Teacher's Resource and Activity Cards)	9780176799717
Nelson Science 1 Little Book Single Copy Set	9780176814922
Grade 2	
Classroom Set (Includes Teacher's Resource and Activity Cards)	9780176799724
Nelson Science 2 Little Book Single Copy Set	9780176814939
Grade 3	
Classroom Set (Includes Teacher's Resource and Activity Cards)	9780176799731
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