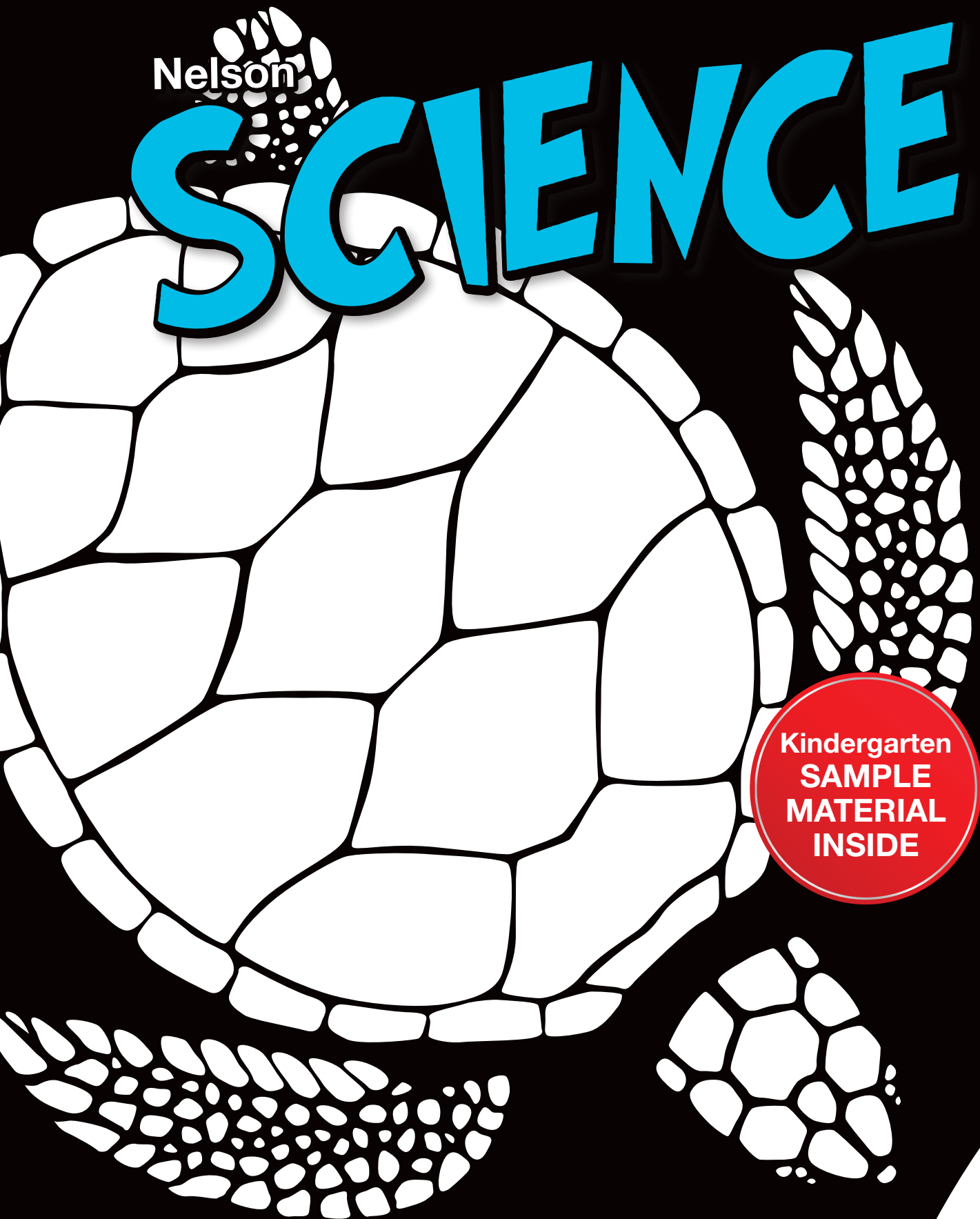
Nelson

SCIENCE



Kindergarten
SAMPLE
MATERIAL
INSIDE

About Nelson Science

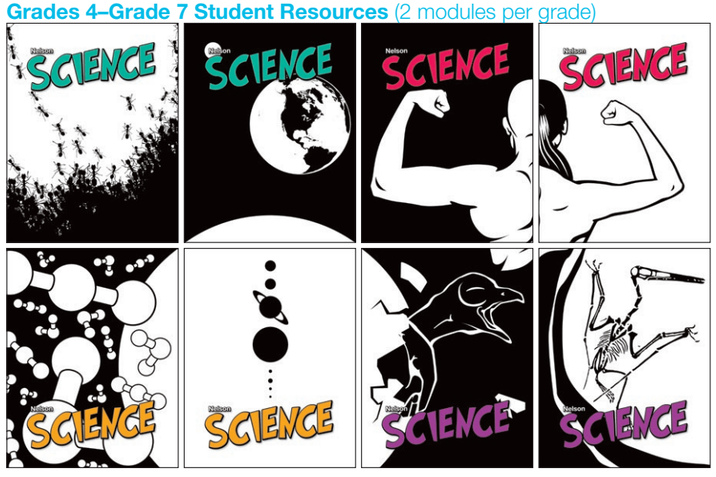
Developed by an experienced team of BC educators, *Nelson Science* is a comprehensive series built from the ground up to fully align with the new BC Science curriculum. Student resources feature activities designed to unleash students' innate curiosity. Infused with First Peoples knowledge and perspectives, 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)



Resource Component Overview

For Students

Kindergarten–Grade 3	Grades 4–7
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	**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	Grades 4–7
Teacher's Resource (includes Online Teaching Centre) ■ Print Teacher's Resource with facilitation strategies and assessment support **Teacher Cards** ■ 5 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 ■ Literature Connections with teaching notes ■ Weblinks ■ RSS feeds	**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

Teacher's Resource

Inquiring into...

Inquiring into Pushes and Pulls

In this unit, students are introduced to forces using the simple language of pushes and pulls. Children entering Kindergarten will likely have already experimented with pushing and pulling while playing with toys, and this prior knowledge will be extended as students investigate the effects of pushes and pulls, and the effects of the properties of objects, for example, the size, shape, and materials, on movement. Through hands-on activities, students will construct their own knowledge about the properties that affect the movement of objects.

Developing the Big Idea and Unifying Concepts

The Big Idea for the unit is "The motion of objects depends on their properties." The unifying concept for the unit is **cause and effect**. Studying pushes and pulls gives students a clear sense of the relationship between cause and effect. They will be able to see that a force (a push or a pull) is required to make objects move, and that they can vary these forces to make objects move differently. Students will further explore cause-and-effect relationships as they consider how the size, shape, and materials of objects affect their movement.

Learning from First Peoples: First Peoples understand that learning is experiential and place a high value on connectedness to place. By learning about pushes and pulls through hands-on activities with natural materials from their local environment, students can learn through experience and develop a sense of place. They will pay attention to what kinds of objects are in their environment, and how they can move.

As students take care not to disturb the natural environment when they are working outdoors, they will come to appreciate that learning involves recognizing the consequences of one's actions.

Multi-Year Classrooms

- In Kindergarten, students will learn about the motion of objects. In Grade 1, students will learn about light and sound. Students won't revisit the topic of forces until Grade 2.

Using an Opening Provocation

- Students will race toy cars on various race courses and surfaces. This activity will help students access their natural prior knowledge about pushing and pulling and will get them to start thinking about how different forces affect movement in different ways.

Observing and Supporting Learning

- Set up two or more straight race courses for the toy cars. Set up another couple of race courses that have at least one curve. Consider setting up courses outside on different surfaces, such as dirt, grass, or pavement.
- Have students push or pull their cars through the courses. Students may notice that they can push their cars on the straight courses, but they may need to pull their cars along the curved courses to make sure they stay on the track. They may also notice that their cars move differently on different surfaces.
- Listen for and record students' naturalistic questions, or statements that could be turned into questions, so students can investigate them in inquiries throughout the unit.

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.

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

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.

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.

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

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.

Types of movement

You Will Need

- a bucket or other container (for collecting objects outside to test)
- (optional) hula hoops

Online Teaching Centre Resources

Documenting Learning: Types of movement
Documenting Critical Thinking: Profiles
Documenting Critical Thinking: Facets
Documenting Communication: Profiles
Documenting Communication: Facets
Scientific Inquiry Scale K–3
Scientific Inquiry Toolkit (observe, question, use materials and tools safely, observe, sort and classify, communicate)

Critical Thinking ▲
Communication ▲

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

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

Using This Activity

Curricular and Core Competencies: As students select natural objects in their local outdoor environment, they have an opportunity to demonstrate curiosity and a sense of wonder about the world, observe objects and events in familiar contexts, and ask simple questions. As they conduct an initial investigation into some of the ways objects can move (e.g., bounce, roll, slide, and glide), they will practise safely manipulating materials, making exploratory observations using their senses, representing their observations and ideas by sorting and classifying them on the activity card or making a hula hoop Venn diagram, discussing their observations, and sharing their observations and ideas orally.

In this activity, students will develop their skills in the **question and investigate** facet of the **Critical Thinking** core competency as they explore how the natural objects they collected can move. They will also develop their skills in the **explain/recount facet** and the **reflect facet** of the **Communication** core competency as they share their observations and ideas orally.

Focus Question: How do pushes and pulls affect movement?

Big Idea and Unifying Concepts: The Big Idea is "The motion of objects depends on their properties." As students investigate how objects move, they will also begin to understand that a force (push or pull) is required to make things move. This begins to develop the unifying concept of **cause and effect**.

Learning from First Peoples: As keen observers of the natural world, First Peoples learned how objects in nature move, for example, that feathers glide, and used that knowledge to develop technologies. Some First Peoples groups used feathers at the ends of arrows to help the arrows glide through the air (providing balance and trajectory).

Science Background

A force is a push or a pull that affects the motion of an object. This activity will build on students' prior experience with pushing and pulling objects to make them move. Students will be investigating four different types of movement: bouncing, rolling, sliding, and gliding.

Bouncing means that an object regains some of its initial height after hitting a surface. Rolling means that an object is turning over and over again as it moves along a surface. Sliding means that an object moves across a surface without leaving it (it does not bounce), or rotates on the surface (it does not roll). Gliding means that the object slows or moves sideways (horizontally) through the air as it gradually descends (e.g., a paper airplane in flight, a parachutist coming down to the ground, and a falling leaf or balloon).

Possible Misconceptions

A common misconception is that there are no forces acting on stationary objects. There is a widespread belief that an object would

(continued)

not be stationary if a force was actually acting on it. In fact, the gravitational force (or gravity) is acting on all objects, including stationary objects, at all times on the surface of the Earth.

Observing and Supporting Learning

Whole Class or Circle Time

- Show students the activity card and have them look at the pictures. Ask if they can name the objects shown. Ask, Have you ever seen these objects, or played with them? If so, how did they move?
- Have an initial discussion about each type of movement on the activity card. Demonstrate, or have a student demonstrate, how an object can bounce [roll, slide, or glide]. Use objects easily found in the classroom. Ask, Can someone describe bouncing [rolling, sliding, or gliding]? (e.g., bouncing means an object comes back up after hitting a surface; rolling means an object spins around (turns) as it moves across a surface; sliding means an object moves smoothly across a surface; gliding means an object moves through the air without falling straight down)
- Consider using **Documenting Learning: Types of movement** to document student learning in the curricular competencies as you observe students working.

Assessment Tool

Place-Based Experience

- Tell students they will be going outside to find some natural objects from the land that bounce, slide, roll, and glide.
- Invite students to list some ways they should care for the land while they are outdoors collecting materials. Ask students for examples of objects they should not collect (living things), and objects that would be fine to collect (fallen twigs, pine cones, rocks).
- Take the class outside. Have students take a quiet moment to observe and connect with nature in their environment. Prompt students to quietly think about what they hear, see, and smell.
- Have students look for natural objects that they think will bounce, roll, slide, or glide. Encourage students to gather objects of various shapes, sizes, and materials. If students do not find natural objects that bounce, they have still learned more about that form of movement by trying.

Formative Assessment

Collecting Information	Using Information
As students search for natural objects, observe for evidence of curiosity and a sense of wonder.	Provide descriptive feedback for students, such as, "I can see you are really curious about how this object can move."
Observe for students' observation skills.	Provide descriptive feedback for students, such as, "You found something I hadn't noticed."

Literature Connections

The Runaway Pumpkin by Kevin Lewis

Ask questions such as, How did the pumpkin start rolling? Why do you think it rolled so easily?

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

To help facilitate place-based outdoor learning experiences, a set of Teacher Cards is included.

Teacher's Resource

Exploration (continued)

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

- Have students work in small groups to investigate how each of the objects they collected can move.
- Allow students to explore ways to test how their object can move. For example, drop them to see if they bounce, drop them on an inclined surface to see if they roll, push them on a flat or inclined surface to see if they slide, or drop or throw them to see if they glide. Remind students to work safely.
- Students may notice that some objects move in more than one way; for example, a rock can roll and slide.
- As students work, ask them if they're pushing or pulling the object to make it move.

Formative Assessment

Collecting Information	Using Information
Observe for safety issues.	If a student is working unsafely or in a way that interferes with the investigations of other students, ask the student to demonstrate a safe way of investigating how their object moves. If they cannot, demonstrate a safe method; then have the student demonstrate it for you.
Observe whether students are coming up with appropriate ways to investigate whether their objects will bounce, roll, slide, or glide.	If students are having difficulty finding a way to test for one type of movement, provide additional instruction by asking questions about familiar objects, such as, What would you have to do to show that a skate slides better than a sneaker? What would you have to do to show that a rubber ball bounces better than a rock?
Observe whether students are considering that they need to act on the object to make it move.	If students are not providing a force (push or pull) to make their object move, provide additional instruction by demonstrating what happens when you just place their object on the floor. Then ask them how they could make it move.
Observe whether students are testing each object only for one way of movement or for multiple ways.	If students are testing for one way, choose one of their objects and ask them if they could test it another way. If students have difficulty understanding that objects can move in more than one way because of the objects they have selected, have objects on hand that easily move in two or more ways, such as a round rock.

- Have each small group discuss their observations and sort and classify their objects by how they move, using the activity card as a chart. Alternatively, four hula hoops can be laid out and labelled with each type of movement. Students can place objects in the appropriate hula hoop after they find out how it moves. This also allows for the possibility of a Venn diagram with overlapping hula hoops.

Whole Class

- Have the class do a gallery walk to look at how the objects were sorted. Have students share their observations and ideas with classmates.
- Consider taking photos or recording students' classifications and oral explanations so students can add these to their portfolio.

Formative Assessment

Collecting Information	Using Information
As students discuss their observations, observe and listen for evidence that students understand that pushes and pulls can cause objects to move in different ways.	If students have difficulty understanding that dropping something is a pull, provide additional instruction by giving a very simple explanation of gravity.
Listen for evidence that students understand **cause** (push or pull) and effect (movement).	If you are not sure that students can identify cause and effect, provide additional instruction by having the class join you in a call and response as they demonstrate each movement, for example, The cause is I pushed it, the effect is it rolled.
Observe the extent to which students **Critical Thinking** as they question and investigate the movement of their objects.	Provide descriptive feedback for students, such as, "You can explore materials and actions. You can ask questions and use your senses to gather information. You can tell or show something about your thinking."
Observe how effectively students represent their observations and ideas as they sort the objects on the chart or in the hula hoops.	Provide descriptive feedback for students, such as, "You can show your thinking on the chart."
Observe for students' development in the **Communications** competency as they explain/recount and reflect on how they sorted and classified their objects by the way(s) they could move.	Provide descriptive feedback for students, such as, "You can answer questions about how your objects moved. You can tell something you learned."

Unifying Concepts

- Consider highlighting relevant "I can" statements on the **Scientific Inquiry Scale K–3** based on what you observed students were able to do during this activity. Assessment Tool
- Consider using **Documenting Critical Thinking/Communication: Profiles** or **Documenting Critical Thinking/Communication: Facets** as you observe students working. If you see examples of students demonstrating growth in either core competency, ask the students if they would like to document this activity as an example. Assessment Tool
- Ask students to make generalizations about the properties of objects that moved in each way to get them thinking about the effects of size, shape, and materials on movement. Ask questions such as, Did you observe anything similar about your objects that moved the same way? Was there anything similar about all the objects that rolled? Did you find objects that moved in more than one way? Were you surprised about any of your objects? Do not be concerned if students have some difficulty doing this. "How does it move?" will help them further develop their understanding of the effects of these properties on movement.

Identifying Inquiry Opportunities

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

- Provide opportunities for students to investigate one of more of the questions you heard them ask as they conducted this inquiry. It may be necessary for you to provide students with a procedure for the inquiry. For example, students may wonder if there are any objects that move well in many different ways. Challenge students to find an object that moves well in at least three different ways and then demonstrate the movement of the object for the class.

Teacher's Resource

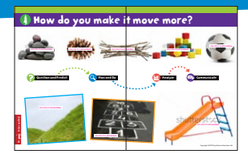
Conduct an Inquiry!

You Will Need is a list of materials teachers will need for the activity. *Online Teaching Centre Resources* 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.

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

How do you make it move more?



You Will Need

- objects of various shapes and sizes, such as balls, pine cones, rocks, sticks, wooden blocks, feathers

Online Teaching Centre Resources

Documenting Learning: How do you make it move more?
Documenting Critical Thinking: Profiles
Documenting Critical Thinking: Facets
Documenting Communication: Profiles
Documenting Communication: Facets
Scientific Inquiry Scale K–3
Scientific Inquiry Toolkit (observe, question, use materials and tools safely, observe, interpret results, communicate)

Using This Activity

Curricular and Core Competencies: In this activity, students will experiment with using different pushes and pulls (their own pulls and gravity) to move objects that are difference sizes and shapes, and are made of different materials, over surfaces that are different sizes (e.g., longer), different shapes (e.g., steeper slopes), or made of different materials (pavement versus metal or plastic) to come up with a combination that results in moving an object more in some way they choose, for example, more quickly, more slowly, farther, in a more controlled way, more safely.

As they experiment with pushes and pulls, objects, and surfaces, they will have opportunities to observe objects and events in familiar contexts, ask simple questions, safely manipulate materials, and discuss their observations.

Students will develop their skills in the **question and investigate** facet of the **Critical Thinking** core competency as they explore the effects of pushes and pulls and interpret evidence from their inquiry. They will also develop their skills in the **collaborate facet** and the **explain/recount and reflect** facet of the **Communication** core competency as they work with classmates to find ways to use pushes and pulls to move objects in different ways.

Focus Question: How can you use different pushes and pulls and the properties of objects and surfaces to change the movement of an object?

Big Idea and Unifying Concepts: The Big Idea is "The motion of objects depends on their properties." As students share their results and identify how their choices about the pushes and pulls they used, and the size, shape, and materials of the objects and surfaces they chose, resulted in their object moving more the way they wanted it to, they will develop their understanding of the Big Idea. Students will work with the unifying concept of **cause and effect** as they examine how changing pushes or pulls affects movement.

Learning from First Peoples: Historically, First Peoples understood how to effectively push and pull objects across different surfaces. Some First Peoples groups invented the toboggan to pull heavy objects across the snow. Other First Peoples groups invented the travois, which was used to help carry heavy loads across the prairies when on horseback. Coastal First Peoples groups developed a system for hauling large logs up from the beach to build their Big Houses.

Science Background

Although students are not required to understand friction in Kindergarten, as they move objects on different surfaces in this activity, students will see friction at work.
Surface friction is caused by the tiny bumps and cracks in an object getting stuck in the tiny bumps and cracks of the surface it is moving on, so the amount of friction depends on the area of contact. This is one reason why, in general, rolling objects travel farther than sliding objects—they have less area in contact with the surface at any given time.

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Possible Misconceptions
A fairly common misconception is the idea that friction is always bad because it hinders motion. In reality, friction is actually a major and often necessary component in the use of many objects. A yo-yo, for example, will not work without friction. Friction is what allows you to hold a basketball or to impart spin to a baseball with your fingers. Friction between your running shoes and the concrete allows you to move your body forward on the sidewalk. Friction between tires and asphalt prevents a car from sliding sideways as it goes around a curve in the road.

Observing and Supporting Learning

- This activity is best done outside where there is room to experiment with large surfaces. Pre-select an area outside where there are surfaces of different sizes (e.g., length), different materials, and different shapes (such as flat pavement, sloped pavement, sand, playground mulch, a grassy hill, or playground slides) that objects can be moved over.

Whole Class or Circle Time

- Show students the activity card. Ask them what they think they might be doing in this activity. Explain that they will be experimenting with using different pushes and pulls, and objects and surfaces of different sizes, shapes and materials, to make different objects move more—more quickly, more slowly, farther, in a more controlled way, more safely, etc.
- Consider using **Documenting Learning: Types of movement** to document student learning in the curricular competencies as you observe students working.

Place-Based Experience

- Take the class outside. Have students take a quiet moment to observe and connect with nature in their environment. Prompt students to quietly think about what they hear, see, and smell.
- Provide students with a variety of objects, including the natural objects students have collected in previous activities (e.g., balls, pine cones, rocks, sticks, wooden blocks, feathers).
- Start at one of the pre-selected surfaces. Ask student volunteers to try moving objects of different sizes, shapes, and materials on that surface using different pushes and pulls.

Literature Connections

Newton and Me by Lynne Mayer and Sherry Rogers
Ask questions such as, What did Newton notice about how objects move? What did he notice about pushing and pulling?

Assessment Tool

9A Pushes and Pulls

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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.

Unifying Concepts

Formative Assessment	
Collecting Information	**Using Information**
Ask students questions using the terminology of properties to clarify and extend their understanding of the properties of the objects they are moving, for example, What size is your object? How does its size affect how it moves? What is its shape? How does its shape affect how it moves? What is it made of? How does this material affect how it moves?	If students can identify which properties of the object affected its movement, provide descriptive feedback, such as, "You understand the effect of the shape of an object on its movement." If students incorrectly identify a property that affected movement, for example, they think the ball rolled fast down the slide because it was big, design a quick inquiry students can do to correct their misconception. For example, have them try to roll a small ball and a larger ball down the slide at the same time.
Observe whether students understand how their actions result in movement of the objects (**cause and effect**).	If students do not recognize that their initial push or pull affects the movement of the object, provide additional instruction by modelling that the objects do not start moving until a force is applied or removed (for example, a push preventing a ball from rolling down a slide).

- Organize students into groups. Tell them that they can choose different objects and different surfaces to investigate. They will push and pull the objects in different ways to see if they can make the objects move more quickly, more slowly, farther, in a more controlled way, more safely, etc. Allow students lots of time to experiment with the objects and surfaces that they have chosen and to make new choices if they wish. Let students experiment without guidance, unless there are safety issues.

Formative Assessment	
Collecting Information	**Using Information**
Observe whether students are working safely.	If a student is experimenting in an unsafe manner or in a way that interferes with the experiments of other students, ask the student to demonstrate a safe way of testing how well their object moves. If they cannot, demonstrate a safe method; then have the student demonstrate it for you.
Observe students' observation skills.	Provide descriptive feedback for students when you see good observation skills, such as, "You noticed something about how that object can move that I hadn't noticed."
As students work together to experiment with different pushes and pulls, and objects and materials with different properties, listen to their discussions and observe for **Communication** competency collaboration skills.	Provide descriptive feedback for students using language from the **Communication** competency profiles, such as, "You can be part of a group. You can plan and complete activities with other students. You can work with others. You do your share."
Listen for students' questions.	Record any student questions that might be beyond the scope of the present inquiry but might form the basis of an additional inquiry later.

- Have students demonstrate how they made an object move more to classmates, either to the whole class or to another small group. Have students identify the pushes or pulls they used, and the properties of the objects and materials they used, to make their object move more in the way they wanted it to, for example, more quickly, more slowly, farther, more safely, or in a more controlled way. Consider asking questions such as, What push or pull did you use? What properties did your object have that made it move more like you wanted it to? What properties did your surface have that made your object move more like you wanted it to?
- Consider recording students' demonstrations and oral explanations for their portfolios, or for use in parent-teacher interviews or student-led conferences.

Formative Assessment	
Collecting Information	**Using Information**
As students explain their results, observe whether they can identify the properties that affected the movement of their object. If they cannot, try asking questions to clarify their thinking, for example, Did the [size, shape, or material] of the object make it move more like you wanted it to? Did the [size, shape, or material] of the surface you used make your object move more like you wanted it to?	To provide students with descriptive feedback on their understanding of the effect of size, shape, and materials on movement, consider summarizing each presentation using scientific language, for example, "You used a puck made of rubber to bounce on a flat surface made of hard asphalt to make the movement of the puck more controlled for a game of hopscotch."
As students demonstrate and explain their results, listen for evidence of **Critical Thinking**.	Provide descriptive feedback for students using language from the **Critical Thinking** profiles, such as, "You explored materials and how they moved. You asked questions and used your senses to gather information. You explored with your purpose in mind and used what you learned."
As students present their results, observe for demonstrations of the **Communication** competency.	Provide descriptive feedback for students using language from the **Communication** profiles, such as, "You can share information about your results. You can answer questions about your results. You listen and respond to others."

- Consider highlighting relevant "I can" statements on the **Scientific Inquiry Scale K–3** to record individual student progress.
- Consider using **Documenting Critical Thinking/Communication: Profiles** or **Documenting Critical Thinking/Communication: Facets** as you observe students working. If you see examples of students demonstrating growth in either core competency, ask the students if they would like to document this activity as an example.

Assessment Tool

Assessment Tool

Identifying Inquiry Opportunities

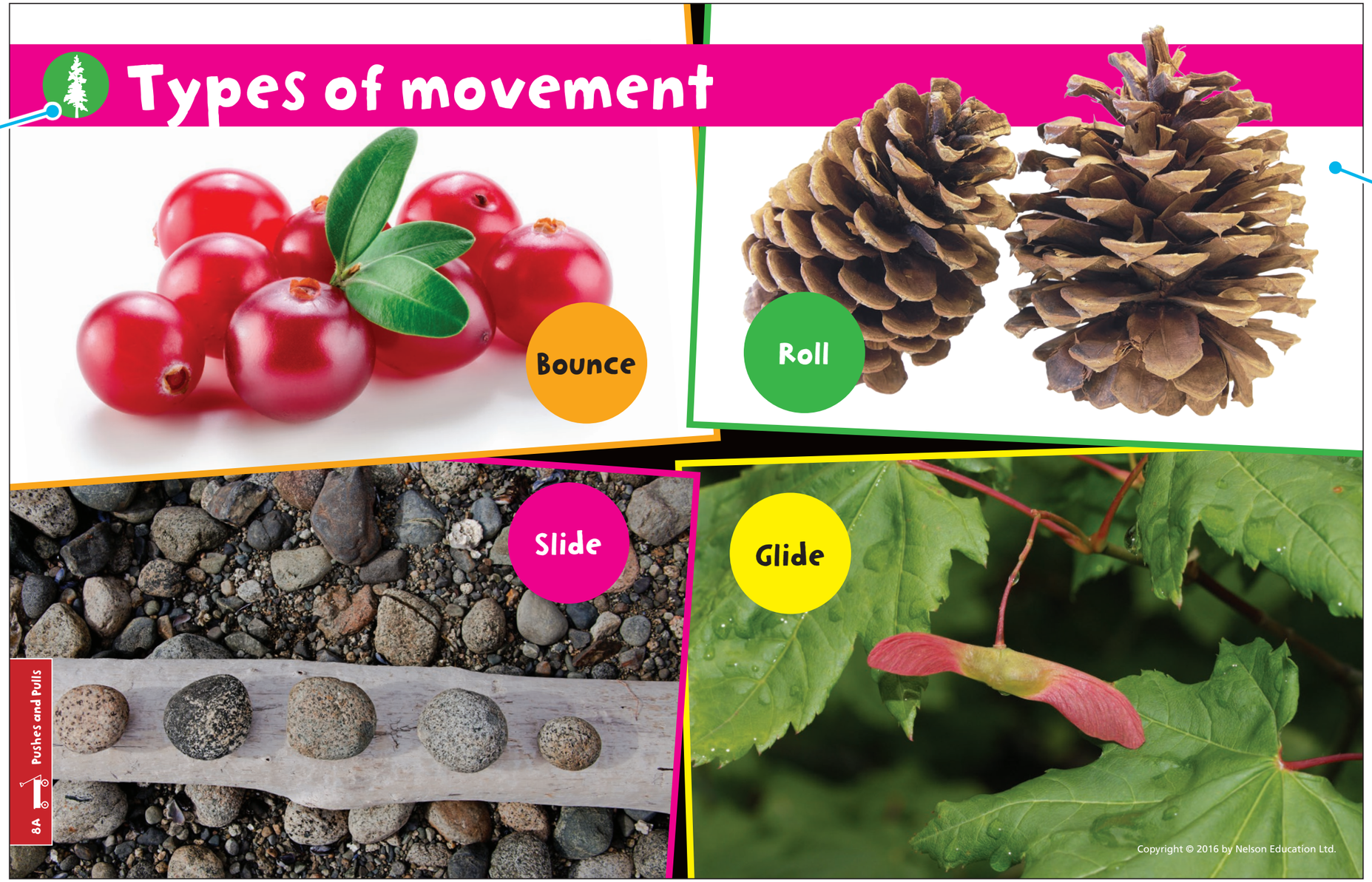
- Encourage students to make up and set out challenges for each other. For example, students could challenge another group to move a round object up a hill by pulling, or stop a round object from rolling down a hill by pushing.
- If students want to further explore different objects and surfaces, consider doing a similar inquiry in the gym, using gym equipment for objects and surfaces. Alternatively, students could do an inquiry on the effects of pushes and pulls on a smaller scale in the classroom, using common classroom objects (such as pencils, erasers, rulers, marbles, beads) and surfaces (such as wooden blocks for ramps, tables, carpets).

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

Activity Card

Exploration

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



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 activities associated with *Conduct an Inquiry!* activity cards are full inquiries. Students set their own specific question and decide how they will plan and conduct their investigation.

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

How do you make it move more?





Question and Predict → Plan and Do → Analyze → Communicate


9A Pushes and Pulls

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

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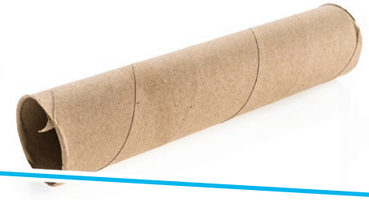
Activity Card

Design and Make!

There is one *Design and Make!* activity in each unit that supports implementation of the ADST curriculum and allows 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.

Design a toy you can push or pull



Make

Share

The *Design Toolkit*, available in the Online Teaching Centre provides additional support for the skills and processes of design.

Design and Make! activities use the headings for the design process from the BC Applied Design, Skills, and Technologies (ADST) curriculum and prompt students through the stages.

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Order Information

Kindergarten	
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