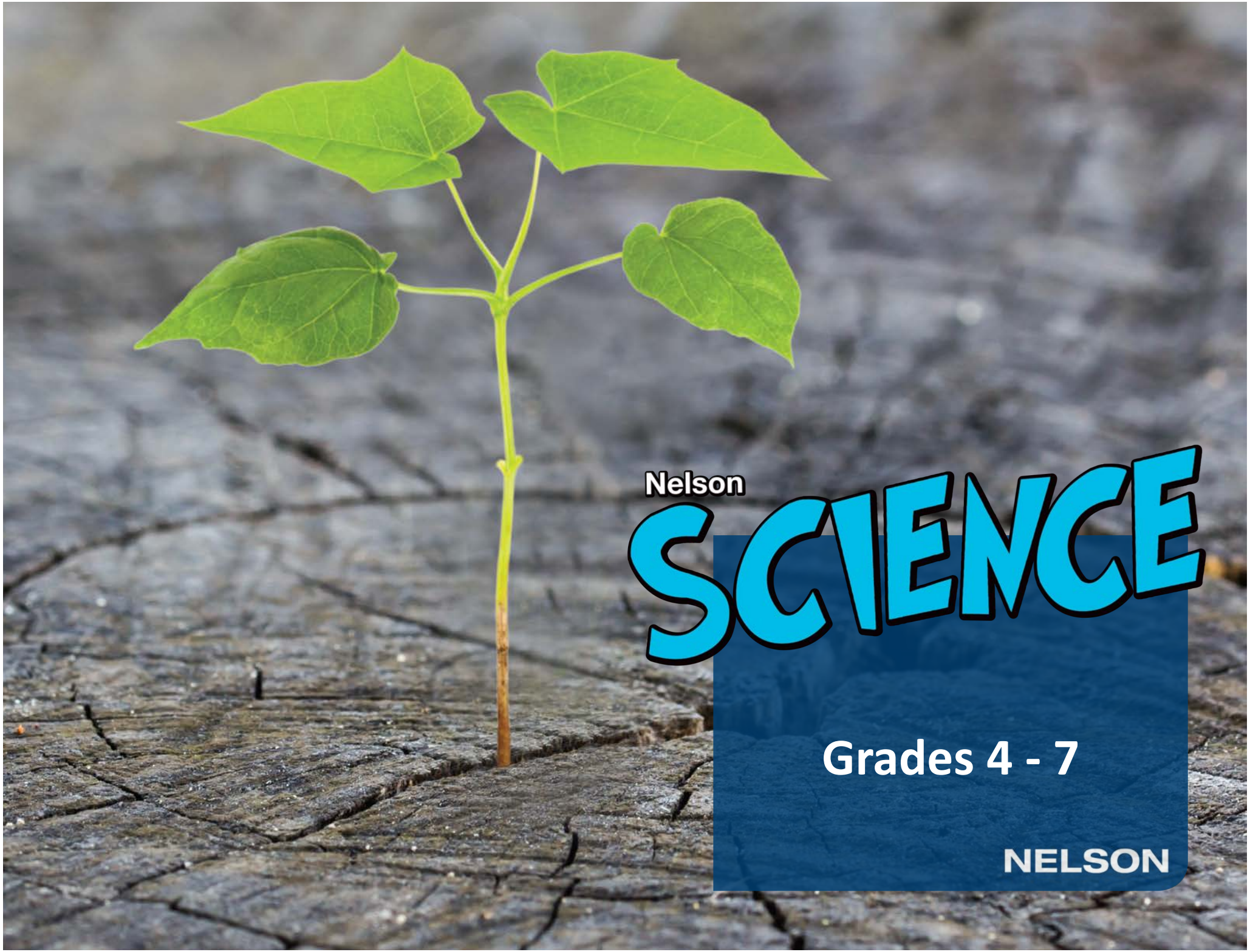

Nelson
SCIENCE
Grades 4 - 7
NELSON

Agenda

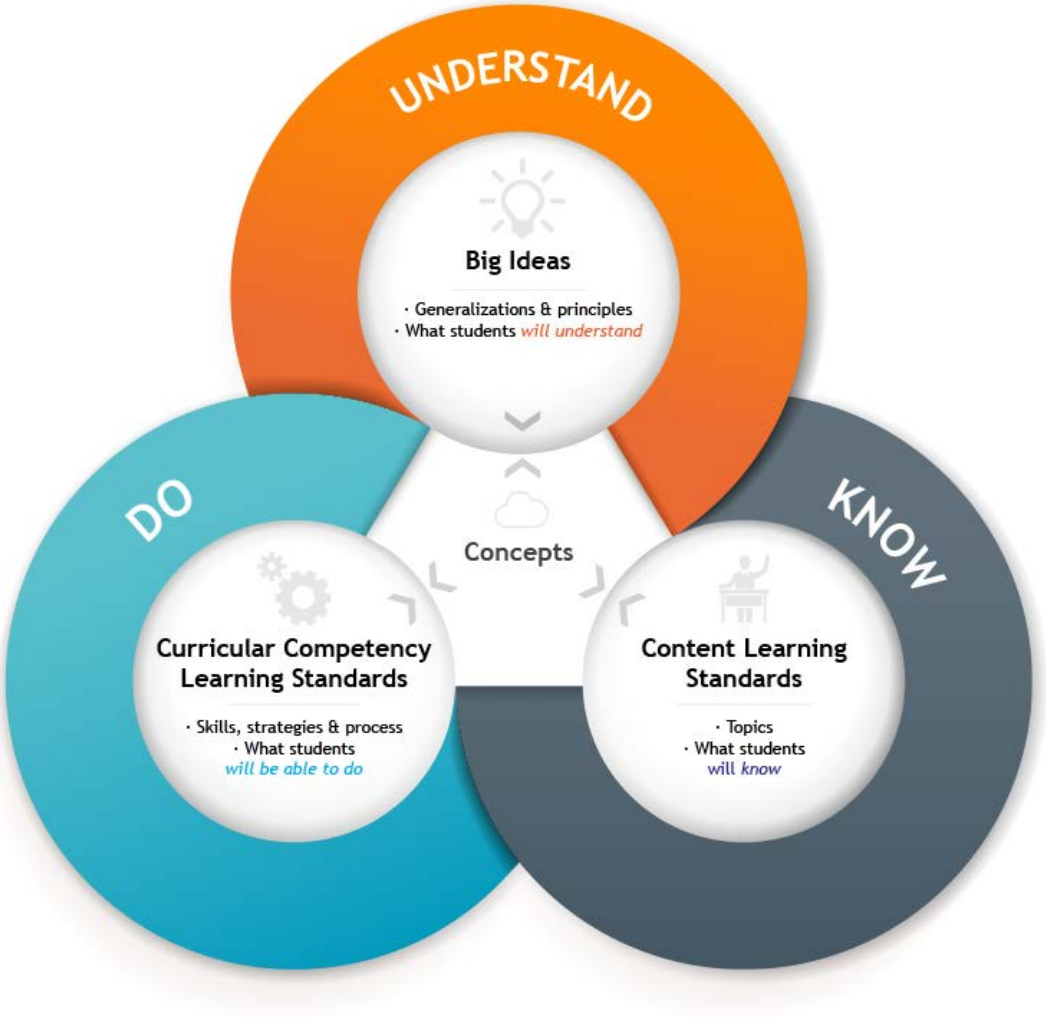
1. **The New BC Science Curriculum**
   > What's changed
2. **Foundations of the New BC Science Curriculum**
3. **Unpacking Nelson Science 4-7**
4. **Observing and Supporting Learning with Nelson Science 4-7**
5. **The Complete Nelson BC Resource Suite**
6. **Questions**

The New BC Science Curriculum

- What's changed?

NELSON

KDU – Curriculum Model



“Know” - The New Content Learning Standards

80% of curriculum topics from the 2005 curriculum have been moved, modified, or removed

84% of curriculum topics in the 2016 curriculum are new to the grade or have been modified

"Do" - Increase Emphasis

In 2005:

23% of the learning standards were about skills and processes

In 2016:

71% of the learning standards are about skills and processes

Understanding

- Basic content knowledge is essential to support the ‘doing of science’

- Deeper learning is achieved when students have a starting point for scientific inquiry and it’s connected to the real world and supported by a foundation of content knowledge

Foundations of the New BC Science Curriculum

NELSON

New elements of the curriculum:

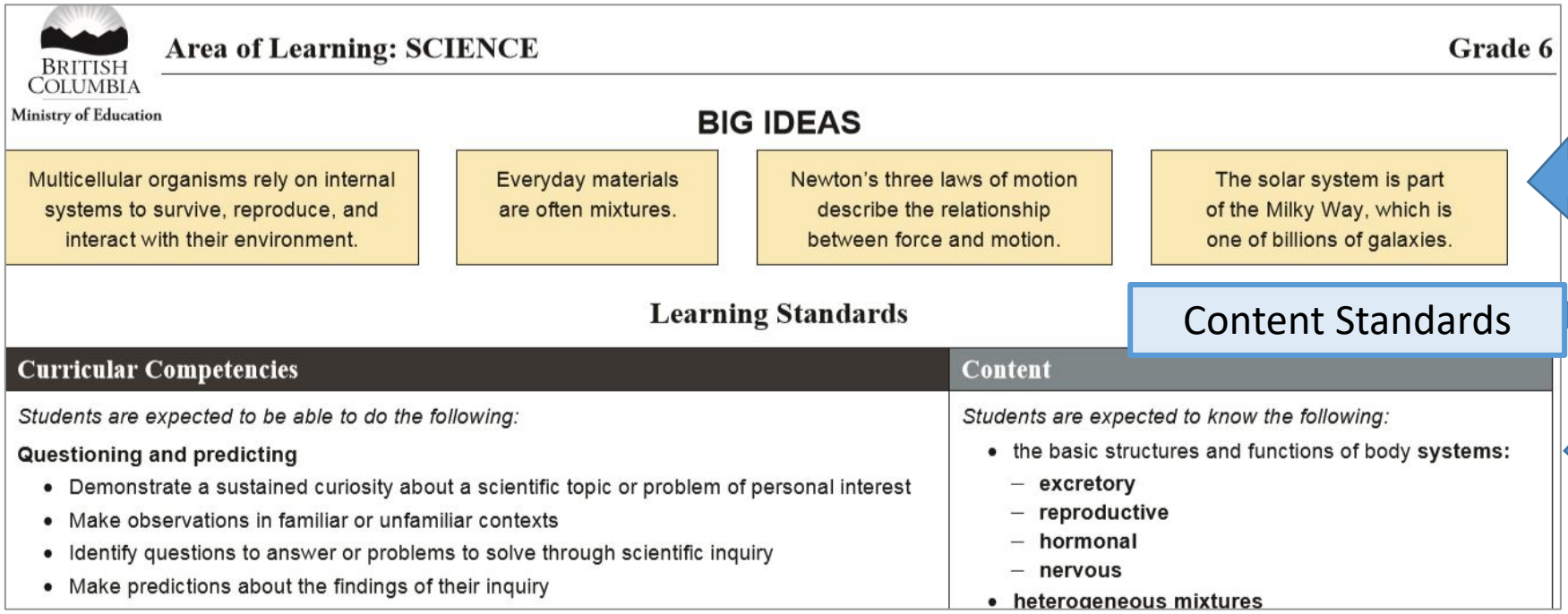
- Big Ideas
- Curricular Competencies
- Core Competencies
- First Peoples Knowledge, Perspectives, and Ways of Knowing
- Placed-based Learning

What is a Big Idea

- Represents what students will come to understand
- Reflects the ‘Understand’ of KDU framework
- Covers 4 big ideas at each grade – one from biology, chemistry, physics, and earth/space
- Big Ideas are understood through Content Standards

Big Idea – Navigating Curriculum Document

Big Ideas



BRITISH COLUMBIA
Ministry of Education

Area of Learning: SCIENCE — **Grade 6**

BIG IDEAS

Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment.	Everyday materials are often mixtures.	Newton's three laws of motion describe the relationship between force and motion.	The solar system is part of the Milky Way, which is one of billions of galaxies.

Learning Standards

Content Standards

Curricular Competencies	Content
Students are expected to be able to do the following: **Questioning and predicting** • Demonstrate a sustained curiosity about a scientific topic or problem of personal interest • Make observations in familiar or unfamiliar contexts • Identify questions to answer or problems to solve through scientific inquiry • Make predictions about the findings of their inquiry	*Students are expected to know the following:* • the basic structures and functions of body **systems:** – **excretory** – **reproductive** – **hormonal** – **nervous** • **heterogeneous mixtures**

Example of Big Ideas & Content Standards

Big Idea for Grade 1 Biology is:

'*Living things have features and behaviours that help them survive in their environment*'

There are four Content Standards for the biology unit:

1. classification of living and non-living things
2. names of local plants and animals
3. structural features of living things in the local environment
4. behaviour features of living things in the local environment

Unifying Concepts – Why are they tied to the Big Ideas

- Larger ideas that span across all branches of science – biology, chemistry, physic, earth/space

10 Unifying Concepts:

Patterns	Form and Function
Cycles	Cause and Effect
System	Change
Evolution	Energy and Matter
Sustainability	Interconnectedness

Curricular Competencies

- The science skills, process, and attitudes
- Curricular competencies same from grade to grade but they evolve and deepen through the grades

Six Science Curricular Competencies K-9:

1. Questioning Predicting
2. Planning and Conducting
3. Processing and Analyzing
4. Evaluating
5. Applying and Innovating
6. Communicating

Curricular Competency Example

Questioning & Predicting

K/1	Grade 6/7
Demonstrate curiosity & sense of wonder about the world	Demonstrate sustained curiosity about scientific topic/problem of personal interest
Observe objects and events in familiar contexts	Make observations in familiar or unfamiliar contexts
Ask questions about familiar objects and events	Identify questions to answer or problems to solve through scientific inquiry
Make simple predictions about familiar objects and events	Make predictions about the findings of their inquiry

What are Core Competencies

- Overarching skills that apply to all subject areas
- Embedded into the curricular competencies

Core Competencies are:

- Communication
- Creative Thinking
- Critical Thinking
- Positive Personal & Cultural Identity
- Personal Awareness & Responsibility
- Social Responsibility

Nelson Science 4 Physics and Earth/Space Student Resource, page 19

First Peoples Knowledge, Perspectives, and Ways of Knowing

Authentically woven into the narrative of applicable activities

Place-based Learning

Nelson Science K Activity Card 8A Pushes and Pulls

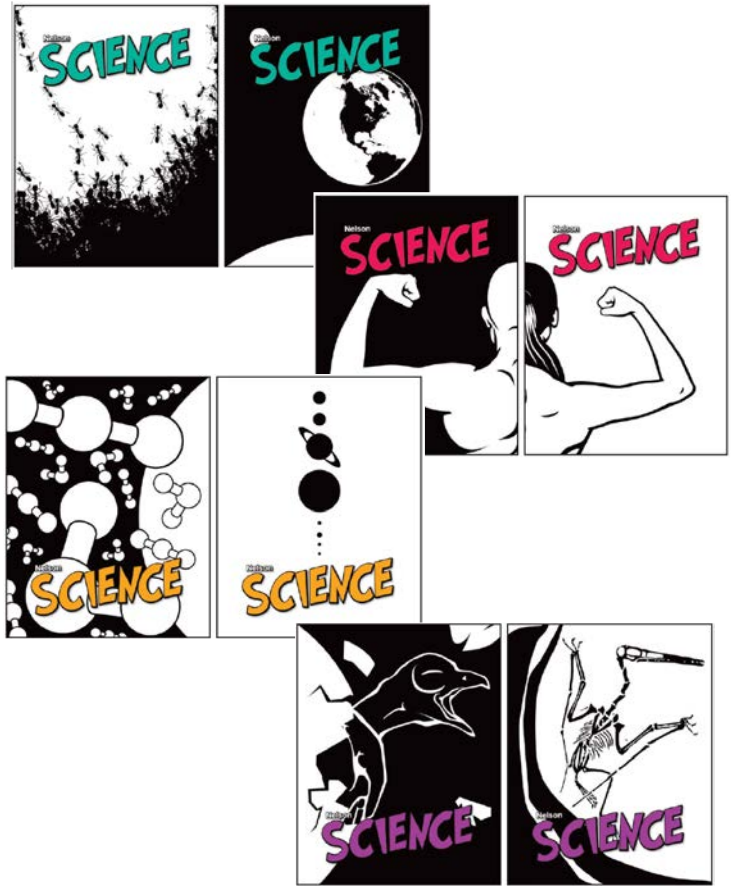
- Is about students seeing themselves in the science – what's important to them, what's relevant in their community
- Place-based approach to science often experiential and involves teaching *in* the local natural environment
- Fosters personal connections, is student-centred and interdisciplinary

Unpacking *Nelson Science 4-7*

NELSON

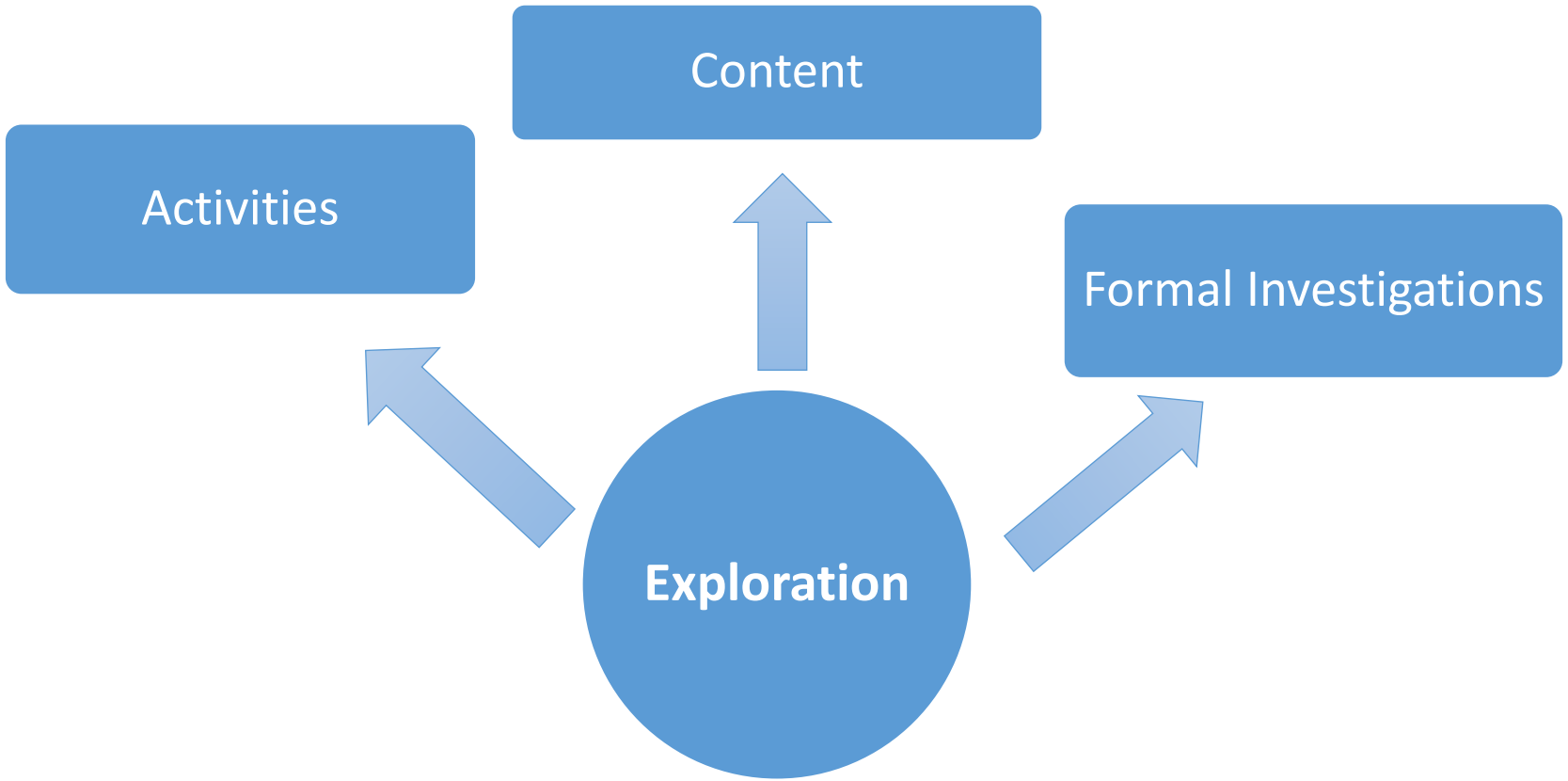
For Students

Student Modules and Online Science Skills Toolkit

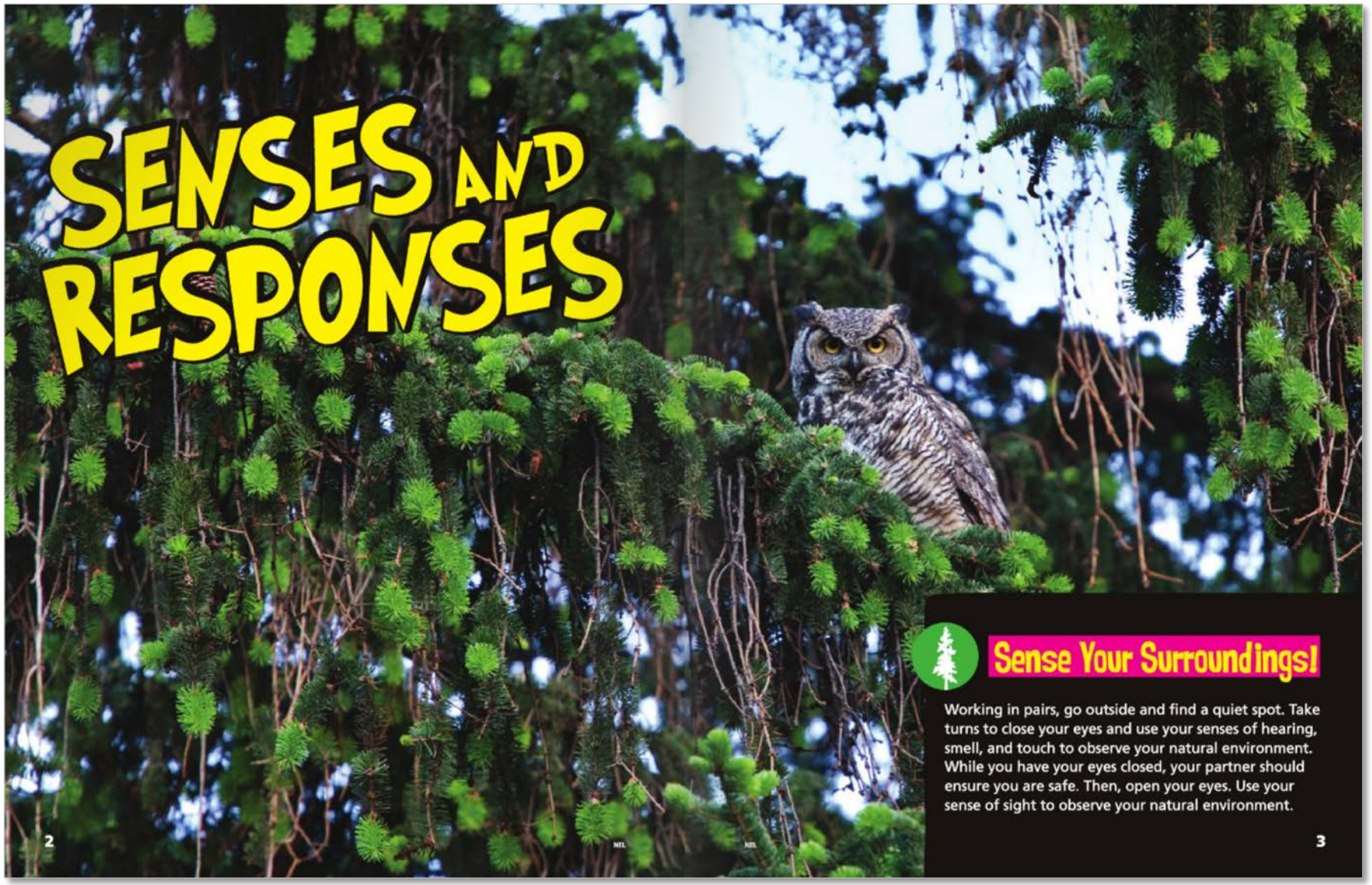


Online Student Centre

What will you find in a Unit?

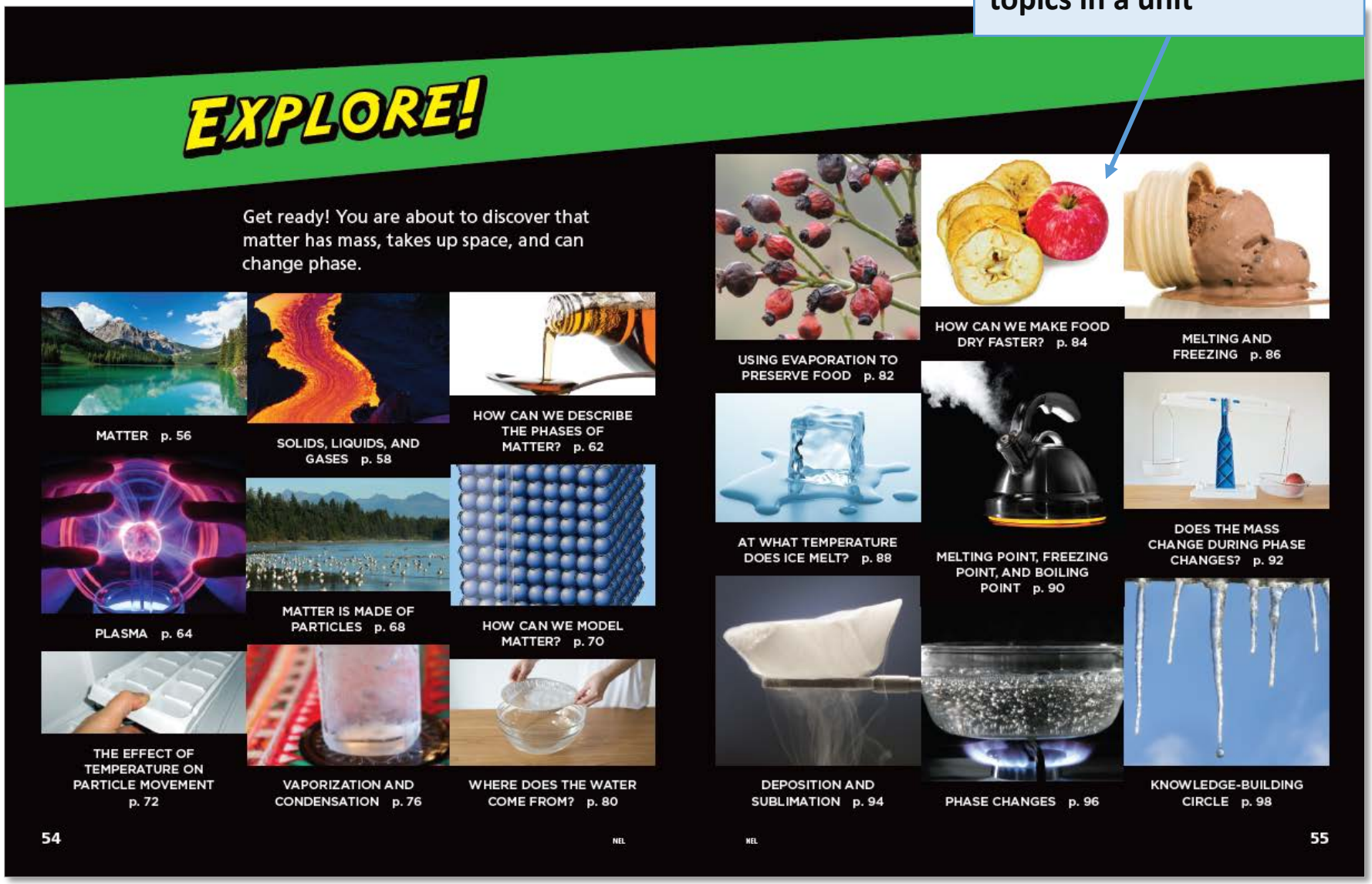


Unit Opening

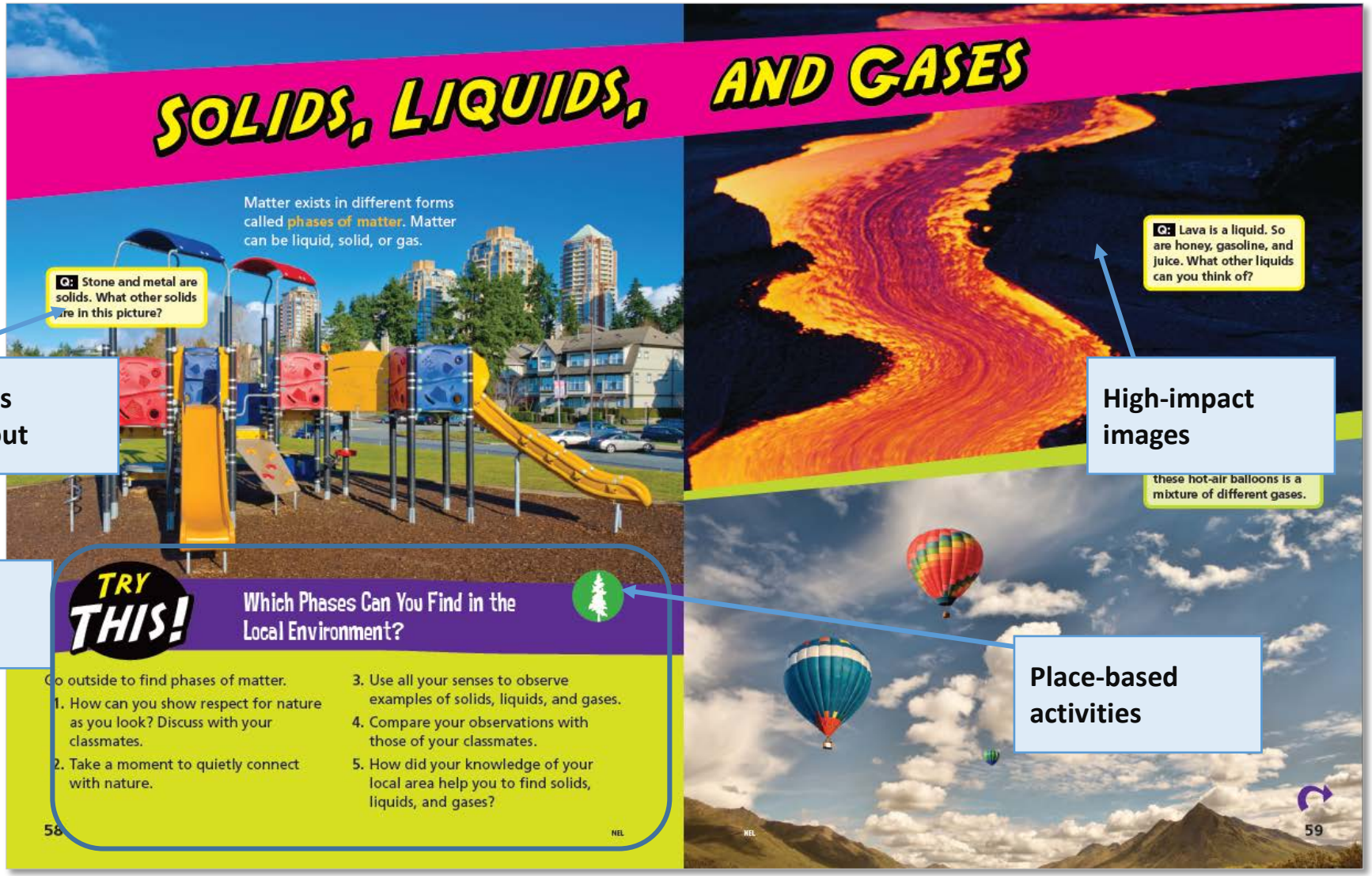


Explore!

Visual overview of the topics in a unit



Explorations



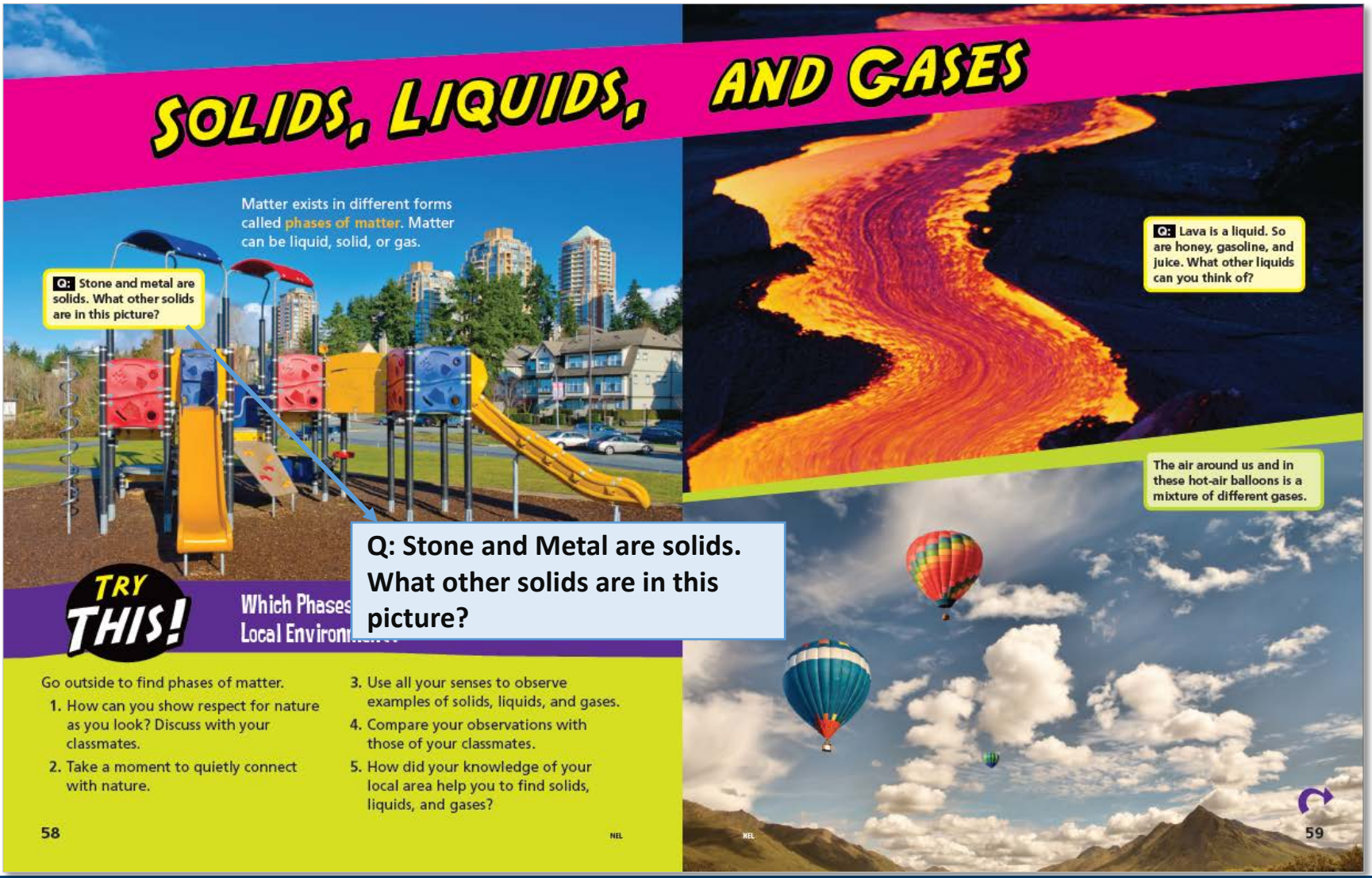
Questions throughout

High-impact images

Try This! activities

Place-based activities

Q: Questions – How to use



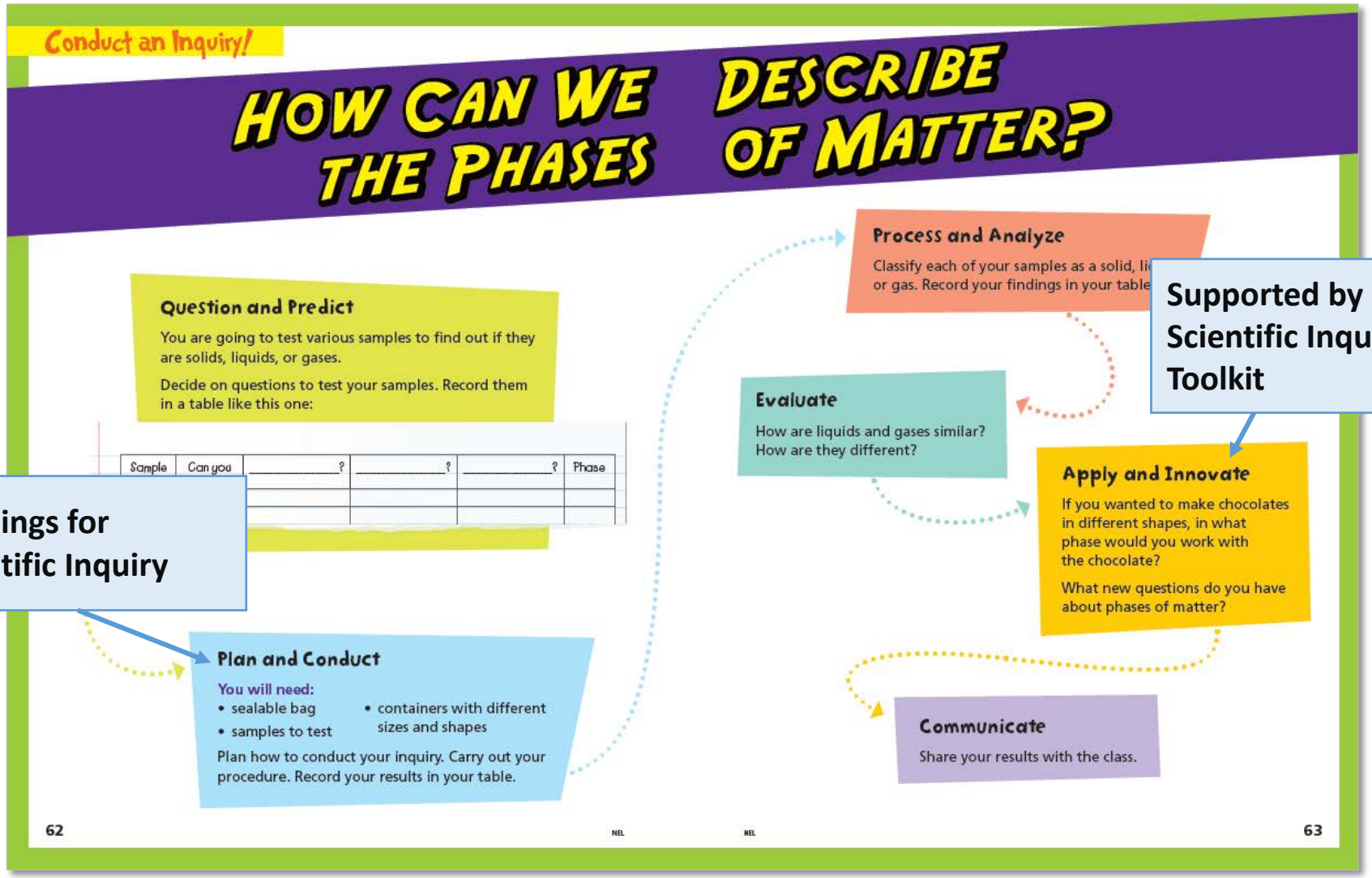
3 Key Types of Activities

1. **Try This**
2. **Conduct an Inquiry**
3. **Design and Make**

- They support development of scientific inquiry skills and the curricular competencies
- All are supported by the

Science Skills Toolkit

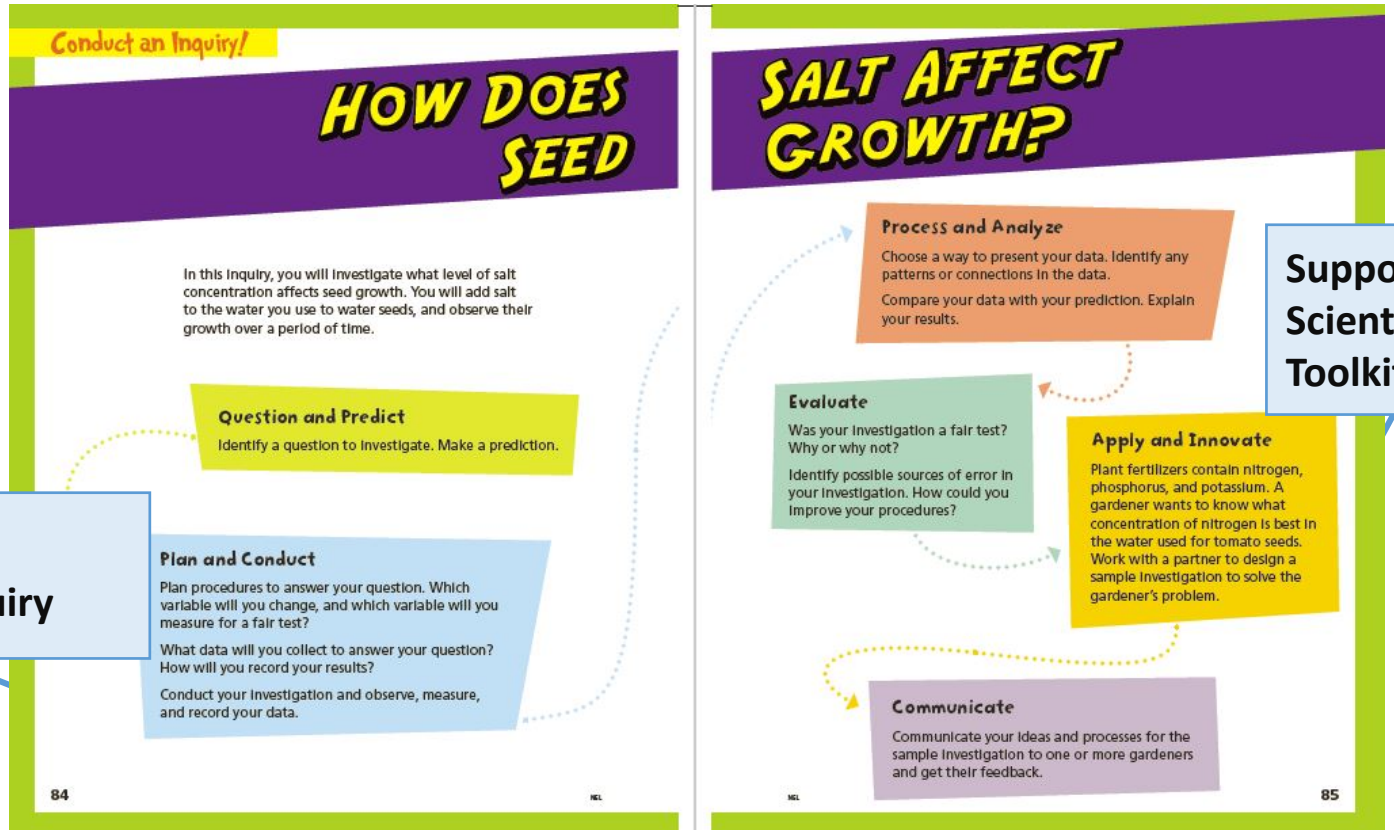
Navigating a Conduct an Inquiry!



Supported by Scientific Inquiry Toolkit

Headings for Scientific Inquiry

Handling Open Inquiry Questions



Headings for Scientific Inquiry

Supported by Scientific Inquiry Toolkit

Design and Make!

Design and Make!

How Can Rube Goldberg We Make a Machine?

You will design and make a Rube Goldberg machine. Do research to find out about Rube Goldberg machines.

Understand the Context

Gather information from people who might play with or watch your machine. What features would they like to see?

Define

Your machine should use at least two forms of energy and three energy transformations. Choose some features. These are your objectives. Identify constraints such as cost or materials.

Ideate

Come up with ideas for energy transformations. Add to others' ideas.

Will your ideas meet your objectives? Will you be able to do them?

Choose the ideas you will use.

Prototype

What tools and materials will you need?

Sketch your design. Label energy inputs and outputs.

Make a first version of the machine.

Make changes to tools, materials, and plans as needed. Record any changes.

Test

Test your machine. Gather feedback from others.

Make changes and test again until you are satisfied.

Make

Make the final version of the machine. Include your changes.

Share

Decide who will play with or watch your machine.

Describe your design process. Did your design meet the objectives?

Reflect on your design thinking and how well you worked as a group.

What new design issues can you identify?

14

15

Headings from ADST Curriculum

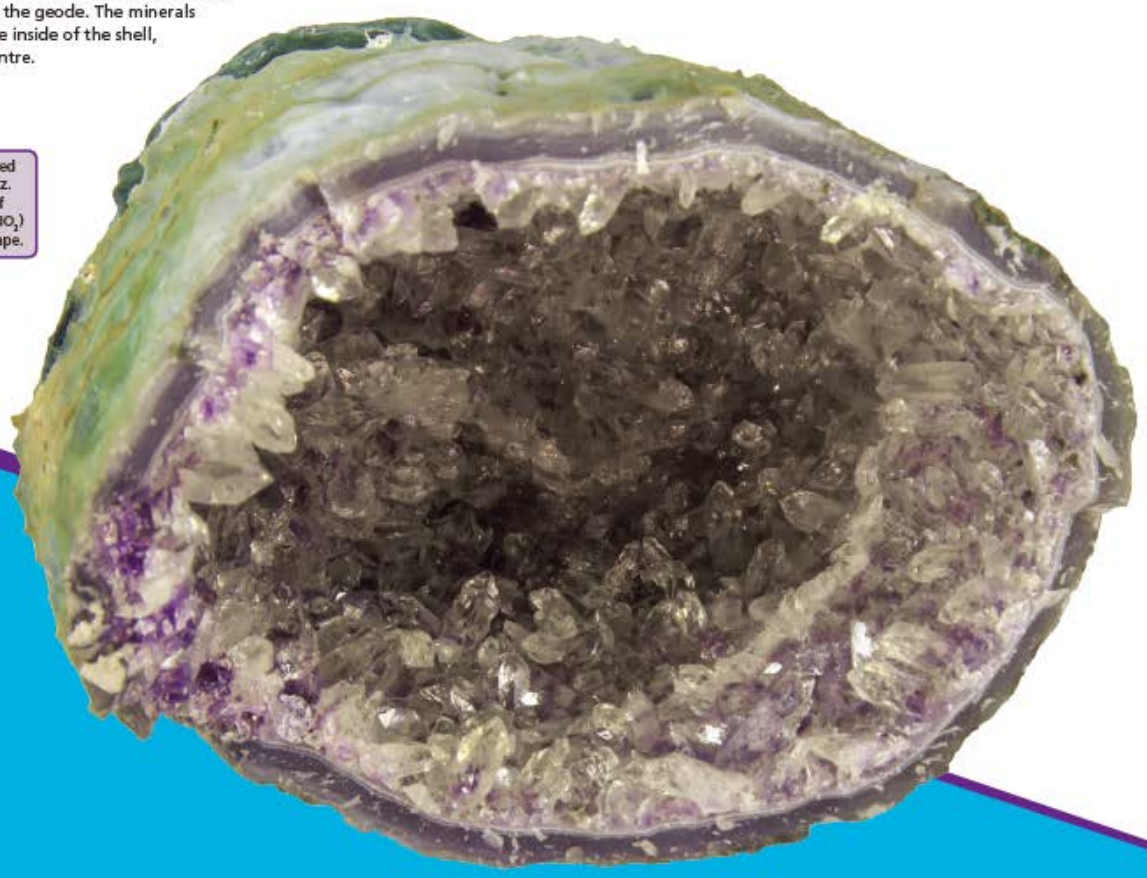
Design toolkit available online

Let's Do an *Exploration*

Exploration *Try This*

Crystals often exist inside geodes. Geodes form in the hollow spaces inside certain rocks. Slowly, over time, dissolved minerals seep into the hollow space and harden into an outer shell, creating the geode. The minerals continue to form on the inside of the shell, growing toward the centre.

The most common dissolved mineral in geodes is quartz. The crystalline structure of the molecules in quartz (SiO_2) gives the crystals their shape.



88

TRY THIS!

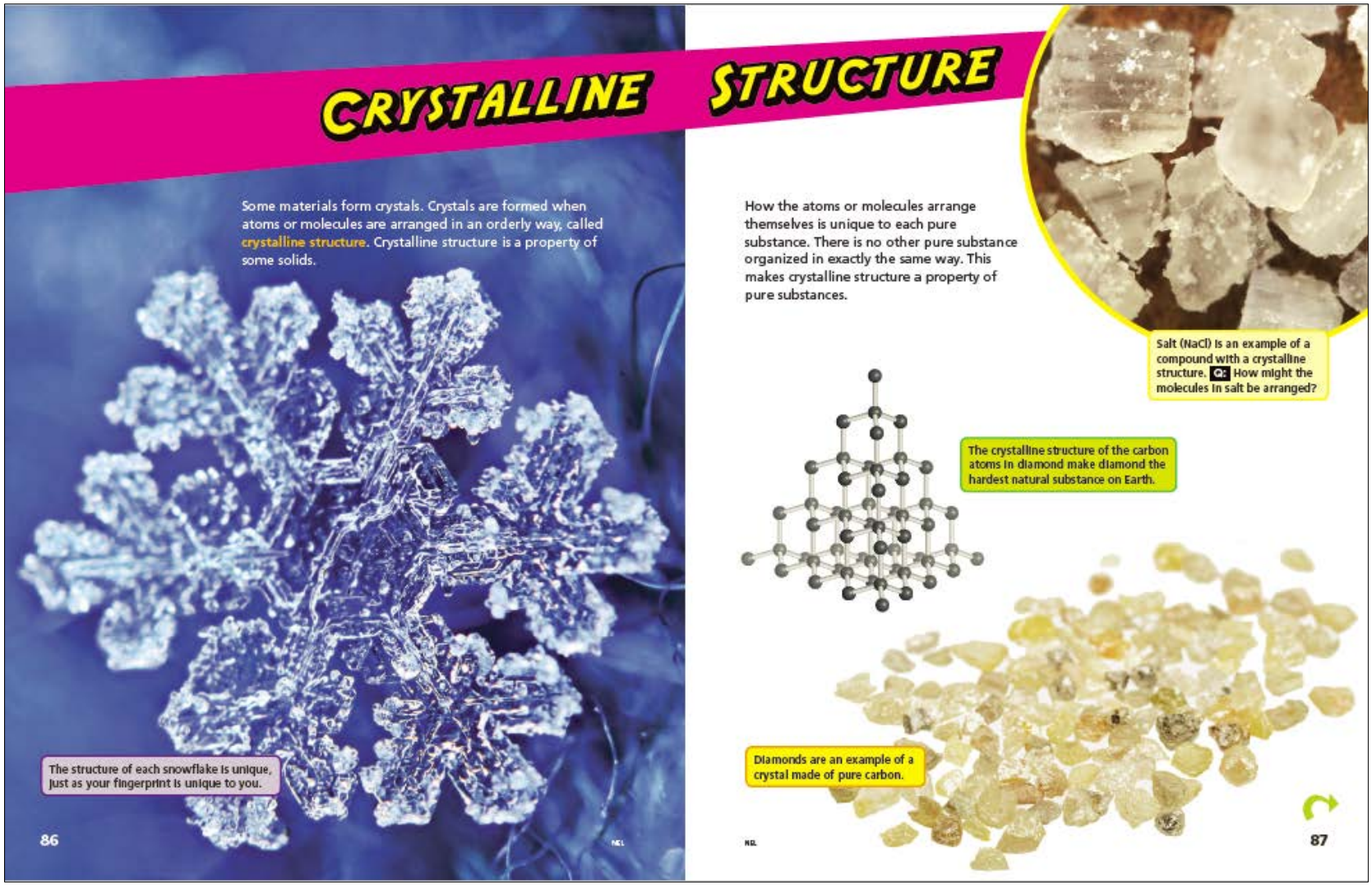
What Are Properties of Crystals?

You will need: crystal samples such salt, Epsom salts, MSG, sugar, kosher salt, quartz; black construction paper; masking tape; pen; magnifying lens

1. Place a small amount of each sample on separate pieces of construction paper.
2. Label each sample using the masking tape and a pen.
3. Use a magnifying lens to carefully observe each sample. Record your observations in a table.
4. What properties do the samples have in common? How do they differ?
5. What conclusion can you draw about crystalline structure?

89

Exploration *Try This*



Conduct an Inquiry

Conduct an Inquiry!

Is Water Always a Pure Substance?

Distilled water is a pure substance.

You will be given two samples of water, one of which is distilled water.

Question and Predict

Observe the two samples. Can you tell whether both samples are pure water? Develop a testable question.

Plan and Conduct

Plan an investigation to answer your question. Consider how you will control variables to make it a fair test. Make a list of tools and equipment you will need. Have your teacher check your plan for safety.

Conduct your inquiry. Work safely. Observe, measure, and record your data.

Process and Analyze

Use your scientific understanding of pure substances and the evidence from your investigation to draw a conclusion.

Evaluate

Did you get the evidence you needed to answer your question? Did you adequately control variables? Were there possible sources of error in your investigation? How could you improve your procedures?

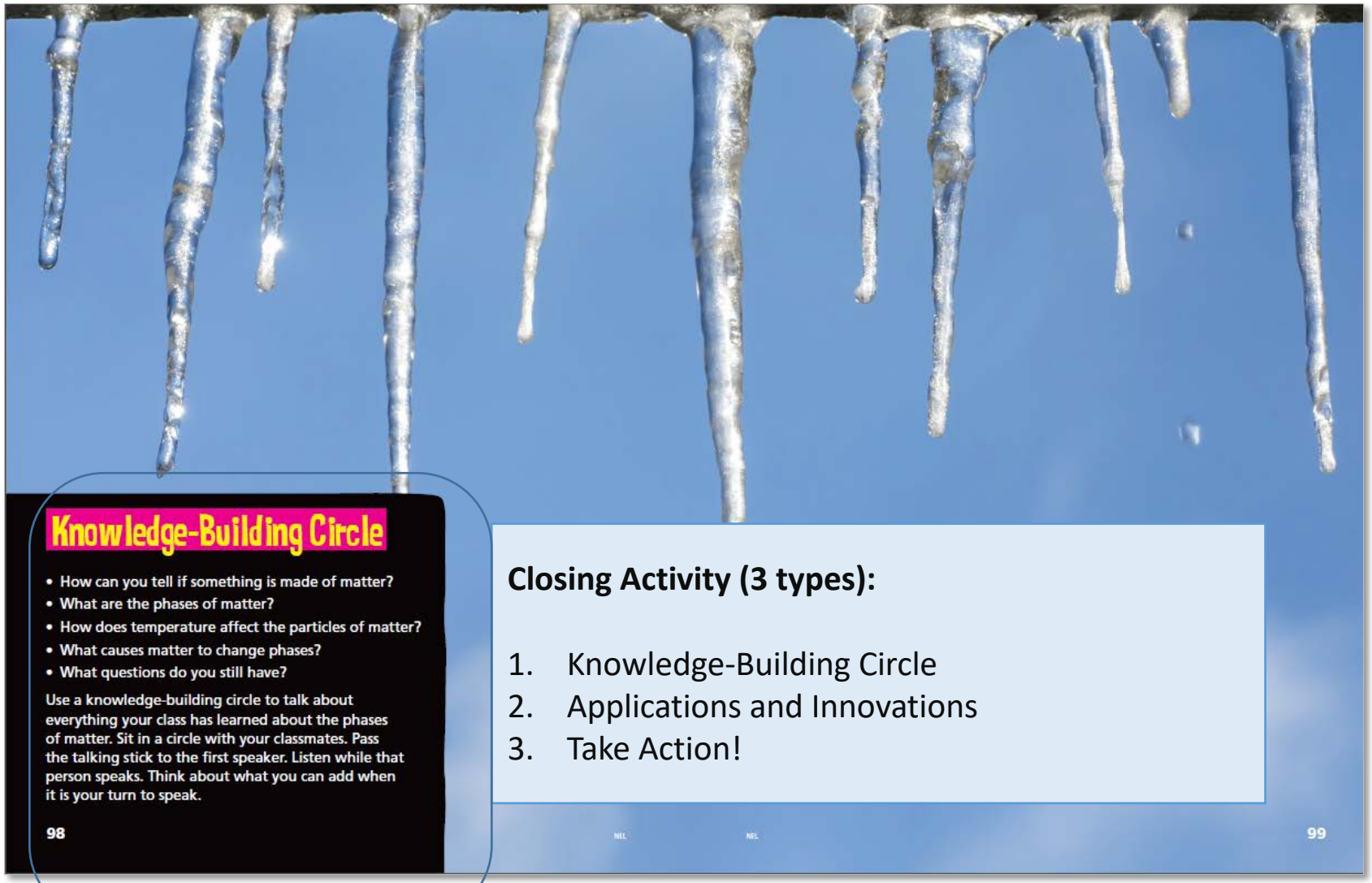
Apply and Innovate

When might it be important to know you were using pure water?

Communicate

Communicate your ideas and findings using scientific language.

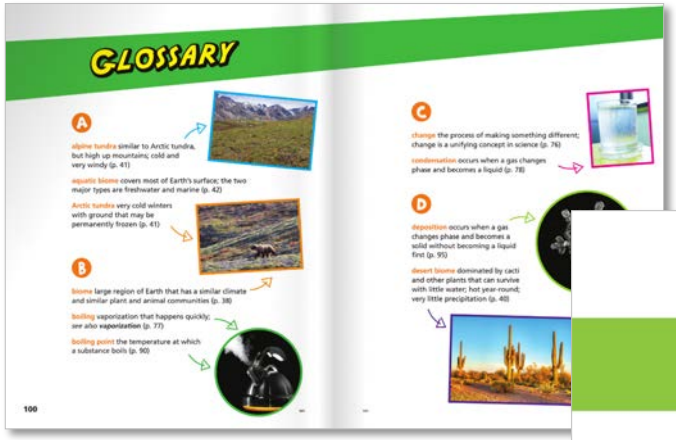
Unit Closing Activity

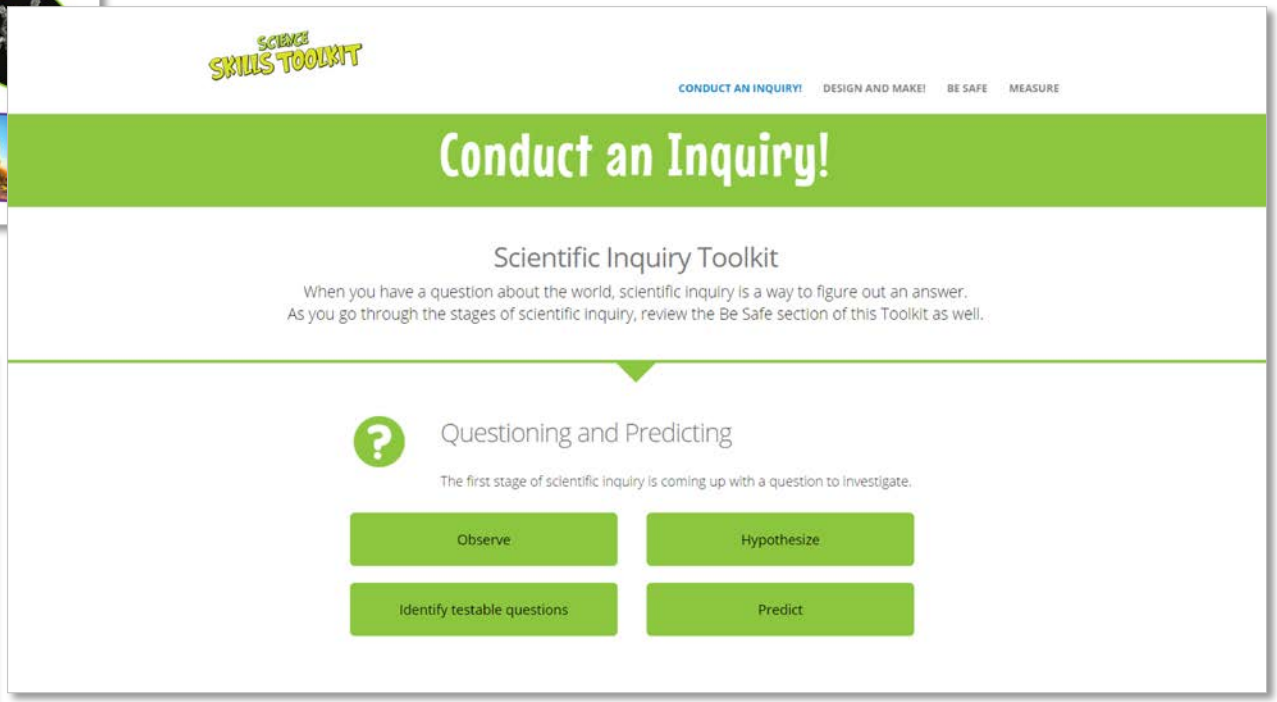


Closing Activity (3 types):

1. Knowledge-Building Circle
2. Applications and Innovations
3. Take Action!

Tools to Support the Student





Online Student Centre

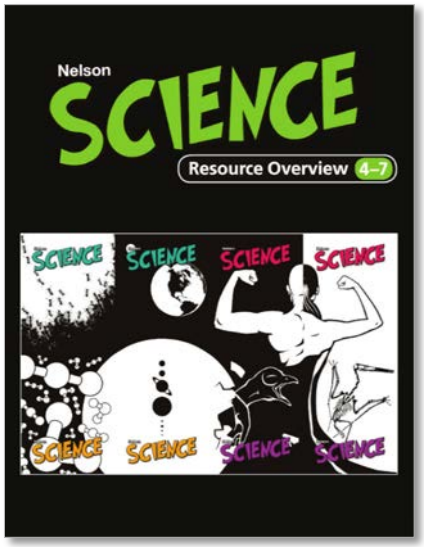
Includes:

- Student Resource eBook with narration
- Science Skills Toolkit

For Teachers

Teacher's Resources

Resource Overview



Online Teaching Centre

Unit Overview

General Unit Overview

Developing the Big Ideas and Unifying Concepts

Multi-Year Classroom

Using this Provocation

Learning from First Peoples

Inquiring into Phases of Matter

You Will Need

to make the Goo:
- cornstarch
- room-temperature water (2:1 ratio of cornstarch to water)
- bowl
- measuring cup
- spoon

In this unit, students will use the skills, processes, and habits of mind of scientific inquiry to explore phases of matter and the effect of temperature on particle movement. If this is the first unit of the school year, you may wish to distribute **Family Letter**.

Developing the Big Idea and Unifying Concepts

The Big Idea for this unit is **Matter has mass, takes up space, and can change phase**. As students investigate different phases of matter, they develop an understanding of what matter is and how it behaves, and how its behaviour relates to temperature and to the particles of matter.

The unifying concepts for this unit are **matter and energy** and **change**. Students have previously learned about matter in the context of the properties of familiar materials (K and 1), physical and chemical ways of changing materials (2), and atoms as the building blocks of matter (3), and about energy in the context of the needs of living things and thermal energy (3). In this unit, students will focus mostly on the properties of matter but will deal with energy as they learn about the effect of temperature on particle movement. Students have previously explored the unifying concept of change in the context of seasonal changes (K), physical and chemical changes, and life cycles (2), and changes to the local environment caused by erosion and deposition (3). In this unit, students explore phase changes.

The photograph in the background of the unit opener shows melting icicles.

Multi-Year Classrooms

The content in this unit builds on the Grade 3 Big Idea that all matter is made of particles and, to a lesser extent, on the Grade 3 Big Idea that thermal energy can be transferred. In Grade 3, students learn about atoms, the basic building blocks of matter. Now they will learn how the organization of these particles determines the phase of matter, and how particles behave when heated and cooled. In Grade 5, they will build on their understanding of solids, liquids, and gases as they learn about solutions and solubility.

Using This Provocation

The goal of Play with Goo! is to engage students in a fun, hands-on activity that allows them to **demonstrate curiosity about the natural world** as they **observe** a non-Newtonion fluid, and encourages them in a naturalistic way to **identify questions that can be investigated scientifically**. Sustained curiosity is one of the **habits of mind** associated with science.

STUDENT RESOURCE PAGES 52–55

Learning from First Peoples: Traditional ways of learning often occur through direct observation and experience of the natural world and other people. Giving students the opportunity to form their own conclusions through hands-on exploration and observation, without providing a "correct" answer, is consistent with First Peoples ways of knowing.

Science Background

Goo (a cornstarch and water mixture) is a non-Newtonian fluid—a fluid that does not follow the model of how fluids flow that was developed by Isaac Newton. Ketchup is another example of a non-Newtonian fluid.

Goo's strange behaviour is due to the strand-like shape of cornstarch particles. Cornstarch does not dissolve in water. If you put pressure on the Goo mixture, such as by punching it, the long particles be causing the mixture to become hard like a solid. However the mixture slowly, the cornstarch particles slip past each becoming tangled, and the mixture has the properties of

Quicksand behaves much the same way: If you move o escape, the mixture hardens and you become stuck. You to escape if you move through it slowly or try to distribu lying down.

Observing and Supporting Learning

- Give students plenty of time to explore the Goo, and let them be messy. Consider doing the activity outside to avoid cleanup. Goo is non-toxic and biodegradable. Indoors, consider placing newspapers on student desks and avoiding carpeted areas, although Goo is easily vacuumed out of carpets after it has completely dried.
- As students work on the Provocation activity, consider documenting evidence of learning using **Documenting Learning: Play with Goo!** Assessment Tool
- Consider taking photos to document the curiosity and wonder you see as students play with Goo.
- Listen for questions, or statements that can be turned into questions. Record and use these for further student-driven inquiry opportunities throughout the unit.

Exploration Topic Support

Solids, Liquids, and Gases

You Will Need

per student or group:

Documenting Learning: Solids, Liquids, and Gases
Documenting Social Responsibility: Facets
Documenting Social Responsibility: Profiles
Self-Assessment: Social Responsibility: Facets
Self-Assessment: Social Responsibility:

Using This Exploration

Curricular and Core Competencies: As students **experience and interpret the local environment** during an outdoor "phase hunt," they have opportunities to **consider ethical responsibilities when deciding how to conduct** the activity. Students will also be developing the core competency of **Social Responsibility (facet: contributing to community and caring for the environment)**. They **make observations about living and non-living things in the local environment**, and **sort and classify data using a provided table**. Students are asked to **express and reflect on their personal or shared experiences of place** by identifying how their knowledge of the local area helped them do this activity.

Focus Question: What are the properties of solids, liquids, and gases?

Big Idea and Unifying Concepts: This Exploration helps students construct their concept of **matter and energy** by intr properties of three phases of matter.

Learning from First Peoples: The Try This! activity helps students to develop a sense of place. Students ar how they can show respect for nature as they look for matter outdoors to help them recognize the impact of the environment.

Science Background

Solids, liquids, and gases are the three main phases of matter, also known as "states" of matter. (Plasma is a phase of matter that will be introduced in another Exploration; other phases exist but are beyond the scope of this course.)

Solids have fixed shape and volume and are not compressible. Some solids, such as sponges and bread, contain air pockets, which make them readily compressible, but under extreme conditions all solids are compressible. Non-compressibility can be used as a defining property under normal conditions.

Liquids have variable shape and fixed volume and are not compressible. The particles in a liquid generally have less energy than those in a gas; as a result, the particles in a liquid are close enough together that molecular forces prevent compression.

Gases have variable shape and variable volume and are readily compressible. For example, a helium tank contains enough gas to inflate many balloons, which would have a total volume that far exceeds that of the tank. The helium gas inside the tank in the photograph in the Student Resource is compressed into a volume of a few litres but would expand to occupy several hundred litres if released.

(continued)

STUDENT RESOURCE PAGES 58–61

Note that the Goo produced in the opening activity is not an example of a different phase; instead, it shows what can happen when you mix two phases together. Most of the solids, liquids, and gases that we encounter on a regular basis are not pure substances. Rather, they are mixtures. Lava, for example, contains a variety of substances, including molten or liquid rock, suspended solids, and gases.

Possible Misconceptions

Students may still believe that air is not made of matter because we can't see it. Remind them that matter takes up space and has mass, and that the Try This! activity showed that air takes up space.

Students may have more items on their solids list in the Try This! activity, but that does not mean that most matter on Earth is in a solid phase. Two-thirds of Earth's surface (and their own bodies) is water.

Note that it is a common misconception that clouds are a gas—they are actually made up of ice crystals and/or droplets of liquid water. Clarify for students that air, including the air in the hot-air balloons shown on Student Resource page 59, is made up of gases, but not the clouds.

Learning from the Land

The Try This! is a **place-based** activity that uses the land to teach students about phases of matter. The activity adds to their existing knowledge and sense of place.

Observing and Supporting Learning

- Invite students to read the text and answer the questions on Student Resource pages 58 and 59.
- Consider using **Documenting Learning: Solids, Liquids, and Gases** to document your observations of student learning as students respond to the images and text and do the hands-on activity.

Assessment Tool

SAMPLE RESPONSES

C: Stone and metal are solids. What other solids are in this picture?
R: Cement, grass, glass, and plastic are also solids.
C: Lava is a liquid. So are honey, gasoline, and juice. What other liquids can you think of?
R: Milk and tea are liquids. Lakes and rivers and oceans contain liquid water. Rain is a liquid. Our bodies produce liquids such as sweat, saliva, and urine.

Curricular and Core Competencies

Focus Question

Big Ideas and Unifying Concepts

Scientific Background

Learning from the Land

Exploration Support Cont'd

***Try This!* activity**

Blackline Master

- Have students complete the Try This! activity. Consider printing **Which Phases Can We Find in the Local Environment?**, which is a copy of the procedure. You may wish to distribute clipboards and copies of **Three-Column Chart** for recording examples.
- 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.**

TRY THIS! **Which Phases Can We Find in the Local Environment?**

Purpose

This activity provides an opportunity for **place-based learning.** Students will demonstrate their current understanding of solids, liquids, and gases.

A Note about Safety

- Familiarize yourself with any poisonous plants or animals in your area, and remind students to be cautious about touching plants and animals.
- Be aware of student allergies.

Notes

- Consider having students discuss the question in Step 1 in the classroom before going outside.
- Have students add their charts to their science logs or portfolios to document their learning.
- If students are developing field guides to their local place, have them add their charts and some reflections on their experience of the land in their outdoor activity today.

Sample Responses

Student examples will vary depending on the season, weather, and place. Students may list examples they can see directly and ones that they know are there (e.g., water inside plants and animals, gasoline inside vehicles).

1. I can show respect for nature by putting things back where I found them and by not stepping on things that might get hurt by my feet.
3. I think that people, trees, and animals all have liquid inside them even though they look solid, and cars have gasoline inside them.
5. I knew where there was a small stream, so that helped me find a liquid.

Formative Assessment

Collecting Information	Using Information
As students take a moment to quietly connect with nature, observe the extent to which they seem to be able to do this in a mindful manner.	If some students are having difficulty taking a moment to connect with nature, consider prompting them as follows: *Start your minute of silence by taking a deep breath. Stand still and pay attention to how you feel inside your body. Take another deep breath. Look around and notice your surroundings.*
As students work outdoors, observe the extent to which they show respect for nature.	Provide students with descriptive feedback on the extent to which they are considering their ethical responsibilities as they work in nature; for example, *I see you are trying not to step on those plants.*
Observe for whether students are finding examples of all three phases of matter.	If students are having difficulty finding examples of liquids or gases, provide support by suggesting that they think of places where there might be liquids and gases that they cannot see.

Formative Assessment

Collecting Information	Using Information
Look at students' lists to see if they were able to sort and classify their examples of solids, liquids, and gases accurately.	If students have some errors on their lists, have them examine the material on Student Resource pages 60 and 61 on the properties of each of the phases and then revisit and correct their charts.
As students work outside, and later when they answer the last question, listen for evidence that they were using place-based knowledge and interpreting the local environment to find phases.	Provide students using place-based knowledge with descriptive feedback; for example, *I can tell you know something about the local environment. I heard you using what you know about this place to find examples of phases.*

Formative Assessment

- Some students may wish to document this activity as an example of their **Social Responsibility** competency in Science, and complete a self-assessment using **Self-Assessment: Social Responsibility: Facets** (or **Prompts**).
- After the Try This! activity, consider having students complete **Place-Based Reflection** or **Field Guide Entry**.
- Students will likely have longer lists of solids and liquids, and this can lead to the misconception that more of the matter on Earth is solid than liquid. Ask, *What do you think is the most common phase of matter on Earth? What about the oceans? Let's look at a map of the world to compare land and water.*
- Consider having students collaborate on a class chart of examples of different phases of matter that they saw outside. Encourage students to consider whether each example keeps its shape and volume and whether it can be compressed. Model the use of this terminology when discussing phases with students.
- Invite students to discuss how they experience the phases of matter in their own bodies. For example:
  - gases: breathing air, burping, passing gas
  - liquids: blood, drinking water, passing water
  - solids: bones, solid waste

  Ask questions such as the following: *Why is it important for our bodies to be made partly of solids?* (bones/structure) *Why do you think we have so much liquid in our bodies?* (liquids flow; nutrients dissolve in liquids and can be transported more easily)

Social Responsibility

Assessment Tool

Blackline Master

Identifying Inquiry Opportunities

- Listen for and record students' questions and areas of interest along the walk. In particular, listen for observations that students could turn into testable questions. Students may have questions relating to changes of phase, or determining the phase of substances that don't fit neatly into one of the three phases. Consider having students plan and conduct inquiries to answer these questions at appropriate times within the unit.

Formative Assessment

Identifying Inquiry Opportunities

Unit Closing Activity

Knowledge-Building Circle

You Will Need

per class (optional):
- talking stick
- video camera

Using This Closing Activity

Curricular and Core Competencies: As students participate in a knowledge-building circle to examine and improve ideas, identify any misconceptions or confusion, and elevate the understanding of the group as a whole, they will be developing their **Communication** competency (**facets: connect and engage with others** and **explain/recount and reflect**).

Big Idea and Unifying Concepts: Students have an opportunity to demonstrate their understanding of the Big Idea: **Matter has mass, takes up space, and can change phase**, and of the unifying concepts of **matter and energy** and **change**.

Learning from First Peoples: Knowledge-building circles are based on sharing, relationships, and memories. Consider connecting with local First Peoples to find out how knowledge-building circles are similar to and different from cultural talking circles, and what the protocols are for talking circles.

Observing and Supporting Learning

- Students come together in a circle to pose questions, and to revisit, refine, and consolidate their ideas about phases of matter. The activity serves to identify shared problems and gaps in understanding and to advance the understanding beyond the level of the most knowledgeable individual.
- Teachers may wish to use a talking stick or other strategy to help students take turns speaking.
- A knowledge-building circle is intended to be a non-hierarchical way of sharing and building group knowledge, so it should not be led by the teacher. Consider reinforcing this by participating in the knowledge-building circle on an equal footing with students rather than simply watching and listening. For example, you could share something you learned about matter that you did not know before, or a question you still have.
- Similarly, if you actively assess student learning during the knowledge-building circle, you will be setting yourself outside the circle. Consider video-recording the knowledge-buildng circle so that both you and students can use excerpts as evidence of learning later to communicate learning to parents in parent–teacher interviews or student-led conferences.

- Consider using a talking stick to encourage good listening. The person holding the stick speaks and everyone else listens attentively. If someone else wants to speak, the stick is passed to that person. If necessary, pass the talking stick around the circle to encourage each person to speak. Students can say "pass" when the talking stick comes to them. When students become more comfortable with this protocol, they can just raise their hands for the stick.
- The typical structure of a knowledge-building circle is as follows:
  1. Everyone sits in a circle at the same level, including the teacher.
  2. Students participate in active listening—they give the person talking (holding the talking stick) their full attention.
  3. Students raise their hand once another student has finished speaking.
  4. The student who finishes speaking passes the talking stick to someone with a raised hand.
- If necessary, take a few minutes before starting to practise the kind of dialogue that takes place during a knowledge-building circle. Possible stems for students to use include the following:
  - I would like to add to what you said …
  - I agree with …
  - Something that I have tried is …
  - I have a matching idea … or I have a tag idea …
  - I have a different idea …
  - I need to understand …
  - Another idea I had …
- The first time the class participates in a knowledge-building circle, record these stems in a prominent place for students to refer to.

Identifying Inquiry Opportunities

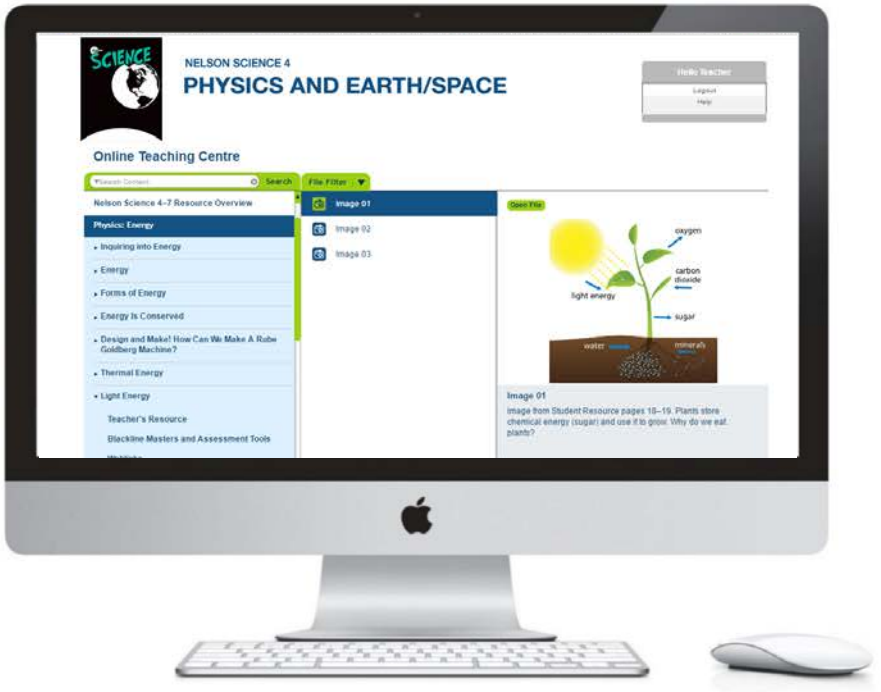
Consider providing time for students to plan and conduct inquiries to answer questions that remained at the end of the knowledge-building circle.

Observing and Supporting Learning

Online Teaching Centre

Includes:

- Teacher's Resource eBook
- Modifiable Blackline Masters and Assessment Tools
- Videos and Animations
- Literature Connections
- Weblinks
- RSS Feeds
- Image Bank
- Science Skills Toolkit



Assessment
Observing and Supporting Learning

NELSON

Overview

- Research-based approach to assessment
- Supports both formative and summative assessment
- Emphasis on day-to-day formative assessment

Formative Assessment at Point-of-Use

Formative Assessment	
Collecting Information	**Using Information**
Observe the extent to which students can evaluate whether their investigations were fair tests.	If students have difficulty getting started, adjust instruction by having them discuss the questions in the Evaluating Procedures section of the **Scientific Inquiry Toolkit**.
Observe the extent to which students can identify possible sources of error.	Provide descriptive feedback. For example, *You noticed that a possible source of error is your own reaction time when using the stopwatch.*
Observe the extent to which students can suggest improvements to their investigation methods.	Provide descriptive feedback. For example, *I noticed that you have suggested videotaping the experiments so that you can time the reaction more accurately.*
As students determine whether they were able to collect evidence to answer their question, observe the extent to which they demonstrate an understanding and appreciation of evidence.	Provide descriptive feedback. For example, *You can identify the evidence you collected that allowed you to answer your question. You realize that you did not collect enough evidence, or the kind of evidence that you needed to answer your question.*

Scientific Inquiry Scale K–3

	Meets expectations for Kindergarten	Meets expectations for Grades 1–2	Meets expectations for Grades 3–4
Questioning and predicting • observe • question • predict	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can ask simple questions about familiar objects and events.	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can ask questions about familiar objects and events. • I can make simple predictions about familiar objects and events.	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can identify questions about familiar objects and events that can be investigated scientifically. • I can make predictions based on prior knowledge.
Planning and conducting • suggest procedures • use materials and tools safely • observe • measure • record	• I can make exploratory observations using my senses. • I can safely manipulate materials. • I can make simple measurements using non-standard units.	• I can make and record observations. • I can safely manipulate materials to test ideas and predictions. • I can make and record simple measurements using informal or non-standard methods.	• I can suggest ways to plan and conduct an inquiry to find answers to my questions. • I consider ethical responsibilities when deciding how to conduct an experiment. • I can safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate. • I can make observations about living and non-living things in the local environment. • I can collect simple data.

(*continued*)

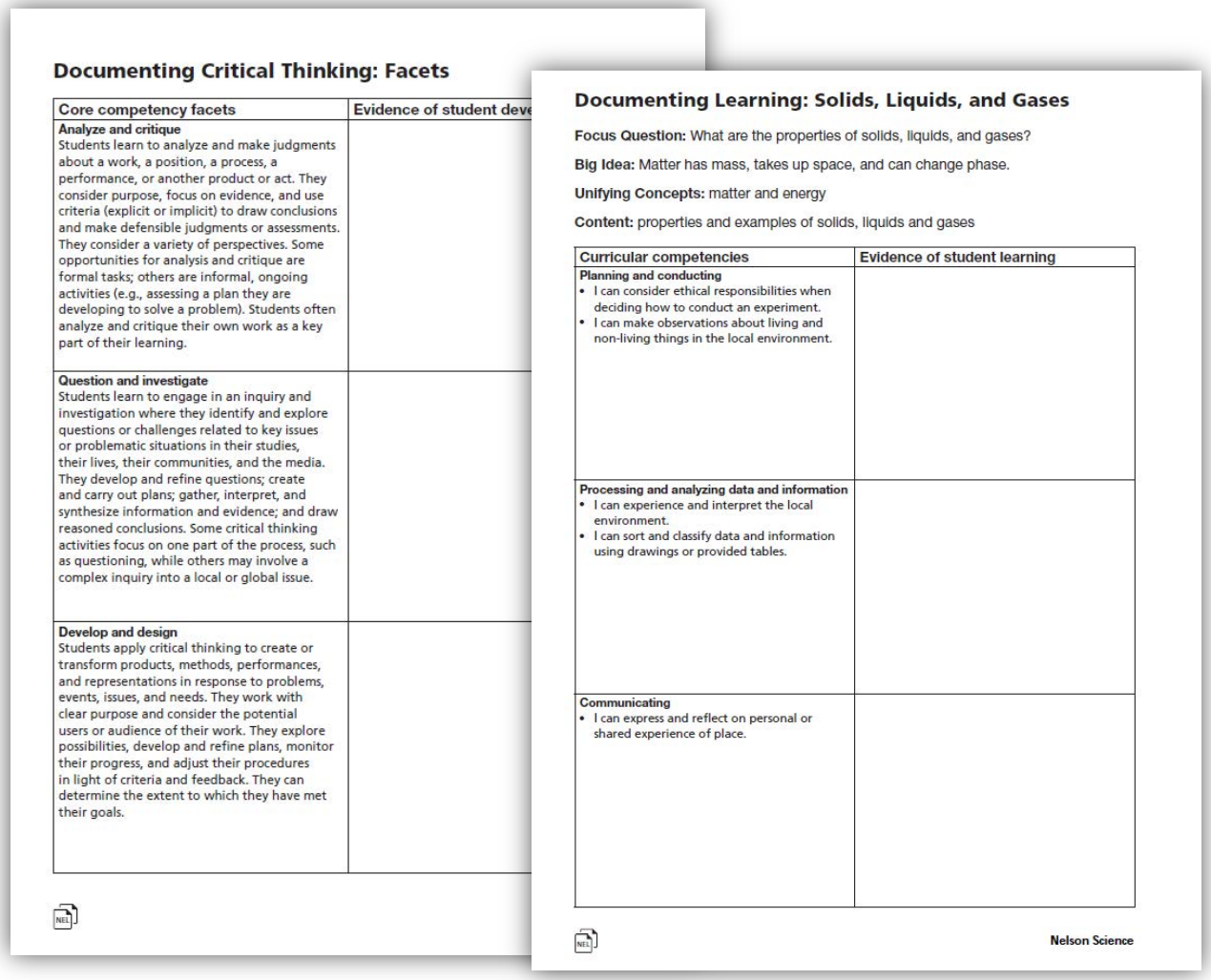
Scientific Inquiry Scale K–3

	Meets expectations for Kindergarten	Meets expectations for Grades 1–2	Meets expectations for Grades 3–4
Questioning and predicting • observe • question • predict	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can ask simple questions about familiar objects and events.	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can ask questions about familiar objects and events. • I can make simple predictions about familiar objects and events.	• I demonstrate curiosity and a sense of wonder about the world. • I can observe objects and events in familiar contexts. • I can identify questions about familiar objects and events that can be investigated scientifically. • I can make predictions based on prior knowledge.
Planning and conducting • suggest procedures • use materials and tools safely • observe • measure • record	• I can make exploratory observations using my senses. • I can safely manipulate materials. • I can make simple measurements using non-standard units.	• I can make and record observations. • I can safely manipulate materials to test ideas and predictions. • I can make and record simple measurements using informal or non-standard methods.	• I can suggest ways to plan and conduct an inquiry to find answers to my questions. • I consider ethical responsibilities when deciding how to conduct an experiment. • I can safely use appropriate tools to make observations and measurements, using formal measurements and digital technology as appropriate. • I can make observations about living and non-living things in the local environment. • I can collect simple data.

(*continued*)

Tools for Documenting Student Learning

BLMs, templates and tools to support documenting student learning



Documenting Critical Thinking: Facets

Core competency facets	Evidence of student deve
Analyze and critique Students learn to analyze and make judgments about a work, a position, a process, a performance, or another product or act. They consider purpose, focus on evidence, and use criteria (explicit or implicit) to draw conclusions and make defensible judgments or assessments. They consider a variety of perspectives. Some opportunities for analysis and critique are formal tasks; others are informal, ongoing activities (e.g., assessing a plan they are developing to solve a problem). Students often analyze and critique their own work as a key part of their learning.	
Question and investigate Students learn to engage in an inquiry and investigation where they identify and explore questions or challenges related to key issues or problematic situations in their studies, their lives, their communities, and the media. They develop and refine questions; create and carry out plans; gather, interpret, and synthesize information and evidence; and draw reasoned conclusions. Some critical thinking activities focus on one part of the process, such as questioning, while others may involve a complex inquiry into a local or global issue.	
Develop and design Students apply critical thinking to create or transform products, methods, performances, and representations in response to problems, events, issues, and needs. They work with clear purpose and consider the potential users or audience of their work. They explore possibilities, develop and refine plans, monitor their progress, and adjust their procedures in light of criteria and feedback. They can determine the extent to which they have met their goals.	

Documenting Learning: Solids, Liquids, and Gases

Focus Question: What are the properties of solids, liquids, and gases?

Big Idea: Matter has mass, takes up space, and can change phase.

Unifying Concepts: matter and energy

Content: properties and examples of solids, liquids and gases

Curricular competencies	Evidence of student learning
Planning and conducting • I can consider ethical responsibilities when deciding how to conduct an experiment. • I can make observations about living and non-living things in the local environment.	
Processing and analyzing data and information • I can experience and interpret the local environment. • I can sort and classify data and information using drawings or provided tables.	
Communicating • I can express and reflect on personal or shared experience of place.	

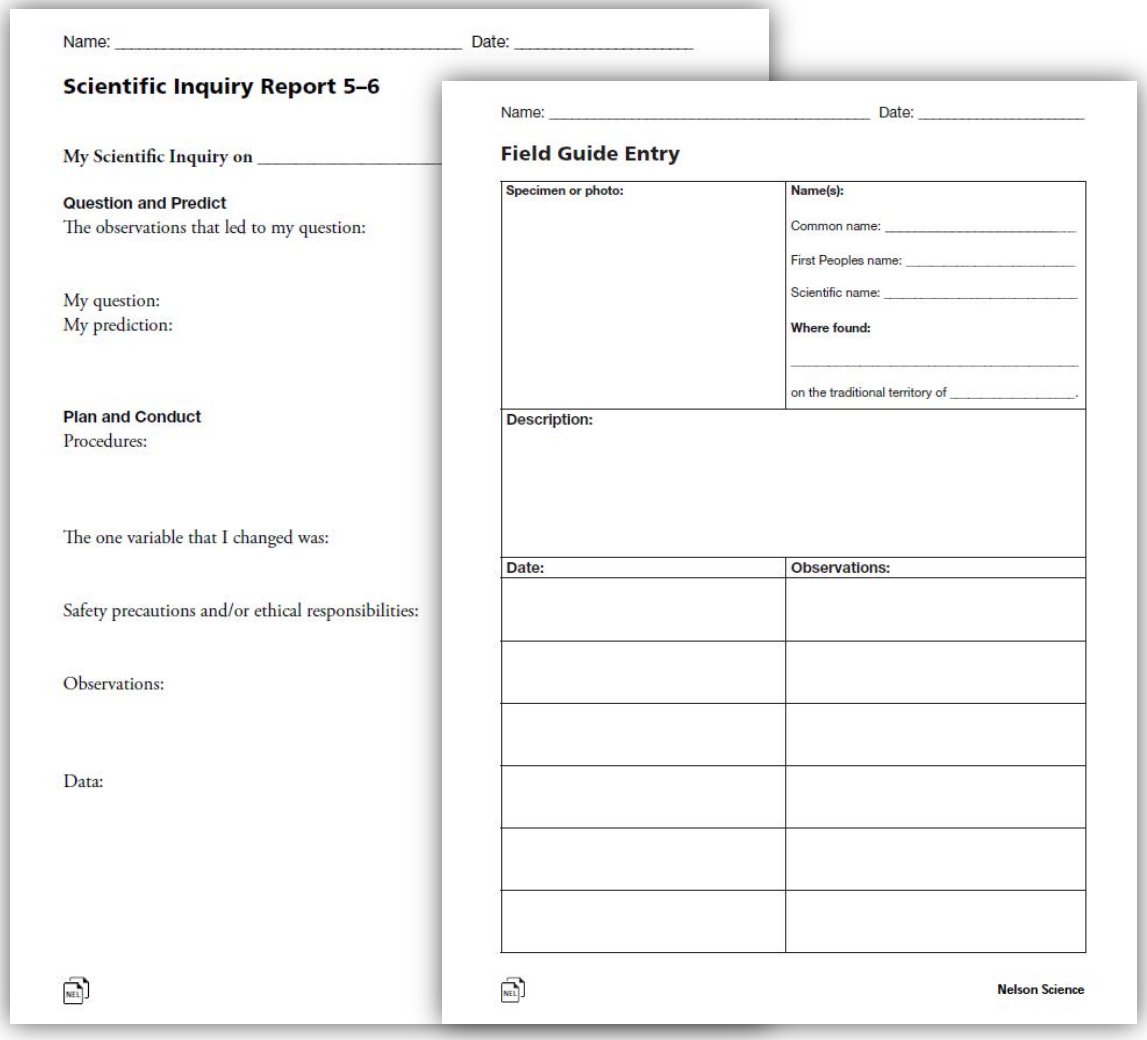
Nelson Science

By teachers

- Documenting Student Learning templates
- Templates of observational notes for core competencies, by facet, and by profile

Tools for Documenting Student Learning

BLMs, templates and tools to support documenting student learning



Name: _____ Date: _____

Scientific Inquiry Report 5–6

My Scientific Inquiry on _____

Question and Predict
The observations that led to my question:

My question:
My prediction:

Plan and Conduct
Procedures:

The one variable that I changed was:

Safety precautions and/or ethical responsibilities:

Observations:

Data:

Name: _____ Date: _____

Field Guide Entry

Specimen or photo:	**Name(s):** Common name: _____ First Peoples name: _____ Scientific name: _____ **Where found:** _____ on the traditional territory of _____.
Description:	

Date:	**Observations:**

Nelson Science

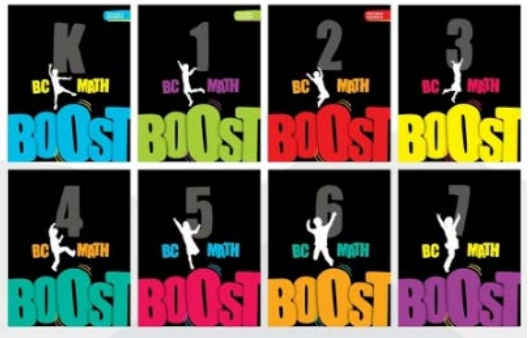
By students

- Graphic organizers
- Self assessment tools
- Templates for entries in science logs, design logs, science portfolios, and/or field guides

The Complete Nelson BC Resource Suite

NELSON

Comprehensive Resources for Full Curriculum Coverage



Nelson Math Boost

Nelson Socials

K-7 Socials

Under One Sun