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Based upon curriculum draft Dec. 2015

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### Questioning and predicting

*Patterns are natural configurations, designs, arrangements or sequences. Many patterns indicate an underlying scientific principle or unifying idea. Scientists identify patterns and look for relationships behind the patterns they find. They use this information to extend their understanding.*

*Key questions about patterns: What patterns do you see in plant life in your local environment? What weather patterns can you observe?*

- Demonstrate curiosity and a sense of wonder about the world →4
- Observe objects and events in familiar contexts →4
- Ask simple questions about familiar objects and events →2

*Form and function: Form and function refer to something being designed, structured or shaped in a way that will help it perform a certain function or functions. For example, the fins of fish help them propel themselves through the water. The human skeleton provides protection for organs, and support for muscles, and allows people to stand upright. Science recognizes this important relationship between form and function.*

*Key questions about form and function: What structural features of plants and animals in your local environment help those plants and animals to function well? How do the properties of natural materials (e.g., wood) help determine useful functions for the materials?*

- Make simple predictions about familiar objects and events

*Cycles are sequences or series of events that repeat/reoccur over time. A subset of pattern. cycles are looping or circular (cyclical) in nature. Cycles help scientists make predictions and hypotheses about the cyclical nature of the observable patterns.*

*Key questions about cycles: How do First Peoples use their knowledge of life cycles to ensure sustainability in their local environments? How does the water cycle impact weather?*

*Cause and effect is the basic principle that an action will result in a consequence. In science, this concept is closely related to the concepts of pattern and change. However, cause and effect may or may not have a predictable outcome;*

*Key questions about cause and effect: What are some causes of biodiversity in BC's wetlands? What is the effect of wind on mountains?*

- Identify questions about familiar objects and events that can be investigated scientifically →4
- Make predictions based on prior knowledge →4

### Planning and conducting

- Make exploratory observations using their senses
- Safely manipulate materials
- Make simple measurements using non-standard units

- Make & record observations →2
- Safely manipulate materials to test ideas and predictions →2
- Make and record simple measurements using informal or non-standard methods →2

- Suggest ways to plan & conduct an inquiry to find answers to their questions →4
- Consider ethical responsibilities when deciding how to conduct an experiment →4
- Safely use appropriate tools to make observations and measurements, using formal measurements →4 and digital technology as appropriate
- Make observations about living and non-living things in the local environment →4
- Collect simple data →4

### Processing and analyzing data and information

- Discuss observations
- Represent observations and ideas by drawing
- Experience and interpret the local environment →7

- Sort and classify data and information using drawings or provided tables →4
- Compare observations with predictions through discussion →2
- Identify simple patterns and connections →2

- Use tables, simple bar graphs, or other formats to represent data and show simple patterns & trends →4
- Compare results with predictions, suggesting possible reasons for findings →4

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### Evaluating

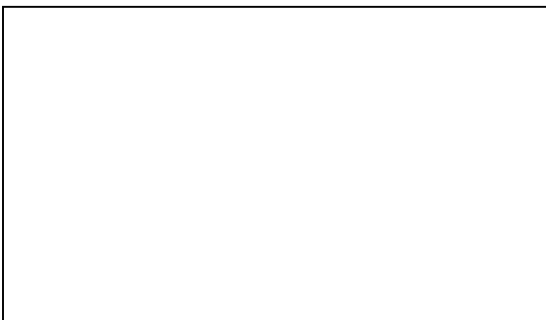
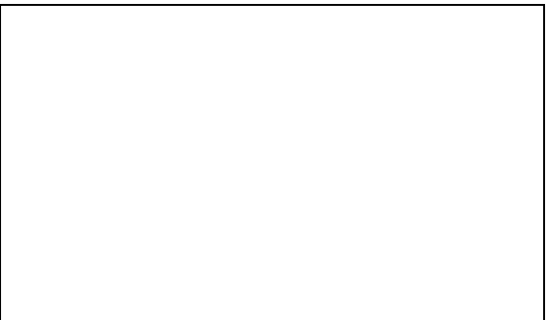
- Compare observations with those of others →2
- Consider some environmental consequences of their actions →2



- Make simple inferences based on their results & prior knowledge →4
- Reflect on whether an investigation was a fair test →4
- Demonstrate an understanding and appreciation of evidence →4
- Identify some simple environmental implications of their and others' actions →4

### Applying and innovating

- Take part in caring for self, family, classroom and school through personal approaches →2
- Transfer and apply learning to new situations →7
- Generate and introduce new or refined ideas when problem solving →7

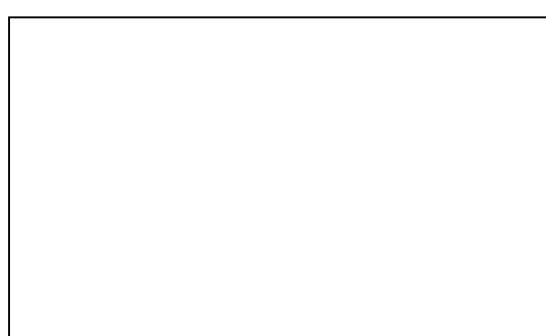


- Contribute to care for self, others, school, and neighbourhood through personal or collaborative approaches →7
- Co-operatively design projects →7

### Communicating

- Share observations and ideas orally
  - Express and reflect on personal experiences of place →2
- Place is any environment, locality, or context with which people interact to learn, create memory, reflect on history, connect with culture, and establish identity.*
- Key questions about place: What is place? What are some ways in which people experience place? How can you gain a sense of place in your local environment: How can you share your observations and ideas about living things in your local environment to help someone else learn about place?*

- Communicate observations and ideas using oral or written language, drawing, or role-play →2



- Represent and communicate ideas and findings in a variety of ways, such as diagrams and simple reports, using digital technologies as appropriate →4
  - Express and reflect on personal **or shared** experiences of place →4
- Key questions about place: How does what you know about place affect your observations, questions and predictions? How does understanding place help you analyze information and recognize connections and relationships in your local environment? How does place connect with stewardship? How can you be a steward in your local environment?*

**Questioning and predicting**

*Order is a pattern that can be recognized as having levels—big to small, simple to complex—or being a process with a sequence of steps.*

*Key questions about order: How is order apparent in the adaptations of forest animals in BC? How does the order of seasons impact local plants and animals?*

*A system is a set of interacting or interdependent pieces or components that come together to form a whole. A system occupies a physical or a temporal space within a set environment, has a representative form, and possesses a purpose or function.*

*Key questions about systems: How do the systems of the human body work together? How can you observe the concept of interconnectedness within ecosystems in your local area?*

- Demonstrate a sustained curiosity about a scientific topic or problem of personal interest → 6
- Make observations in familiar or unfamiliar contexts → 6
- Identify questions to answer or problems to solve through scientific inquiry → 6
- Make predictions about the findings of their inquiry → 7

*Change is making the form, nature, content or future course of something different from what it is or what it would be if left alone. For example, Newton's third law, the idea that for every action there is an equal and opposite reaction describes the changes that occur in response to pushes and pulls.*

*Key questions about change: How has our solar system changed over time? How has the exploration of extreme environments on Earth and in space changed in the last decade?*

*Evolution is the change that occurs in living things over long periods of time. This change is a result of organisms being suited to their environment. Evolution is an important concept in biological science, as scientists are always searching for the underlying laws, reasons, or explanations for their observations of living things.*

*Key questions about evolution: How have species on Earth evolved due to natural selection? How does fossil evidence support the evolution of geological time?)*

- Demonstrate a sustained intellectual curiosity about a scientific topic or problem of personal interest
- Make observations aimed at identifying their own questions about the natural world
- Identify a question to answer or a problem to solve through scientific inquiry
- Formulate alternative "If...then..." hypotheses based on their questions
- Make predictions about the findings of their inquiry

**Planning and conducting**

- Explore and pose questions that lead to investigations → 6
- With support, plan appropriate investigations to answer their questions or solve problems they have identified → 6
- Decide which variable should be changed and measured for a fair test → 6
- Choose appropriate data to collect to answer their questions → 6
- Observe, measure, and record data, using appropriate tools, including digital technologies → 6
- Use equipment and materials safely, identifying potential risks → 6

- Collaboratively plan a range of investigation types, including field work and experiments, to answer their questions or solve problems they have identified
- Measure and control variables through fair tests
- Observe, measure, and record data [qualitative (*evidence expressed through words, descriptions, interviews, narratives*) and quantitative (*evidence expressed through numbers and measurement*)], using equipment, including digital technologies, with accuracy appropriate to the task
- Ensure that safety and ethical guidelines are followed in their investigations

**Processing & analyzing data and information**

- Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data → 6
- Identify patterns and connections in data → 6
- Compare data with predictions and develop explanations for results → 6
- Demonstrate an openness to new ideas and consideration of alternatives → 6

- Construct and use a range of methods to represent patterns or relationships in data, including tables, graphs, key, scale models, and digital technologies as appropriate
- Seek patterns and connections in data from their own investigations and secondary sources
- Use scientific understandings to identify relationships and draw conclusions

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Evaluating

Empty box for student work.

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- Evaluate whether their investigations were fair tests → 6
- Identify possible sources of error → 6
- Suggest improvements to their investigation methods → 6
- Identify some of the assumptions and given information in **secondary sources** (*secondary sources of evidence could include anthropological accounts of First Peoples of BC, news media, archives, journals, etc.*) → 6
- Demonstrate an understanding and appreciation of evidence → 6
- Identify some of the social, ethical, and environmental implications of the findings from their own and others' investigations → 6

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Empty box for student work.

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- Reflect on their investigation methods, including the adequacy of controls on variables and the quality of the data collected
- Identify possible sources of error and suggest improvements to their investigation methods
- Demonstrate an awareness of assumptions and identify information given and bias in their own work and secondary sources
- Demonstrate an understanding and appreciation of evidence (qualitative and quantitative)
- Exercise a healthy, informed skepticism and use scientific knowledge and findings for their own investigations to evaluate claims in secondary sources (*secondary sources of evidence could include anthropological accounts of First Peoples of BC, news media, archives, journals, etc.*)
- Consider social, ethical, and environmental implications of the findings from their own and others' investigations

Applying and innovating

Empty box for student work.

- Contribute to care for self, others, and community through personal or collaborative approaches → 7

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Empty box for student work.

Communicating

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- Communicate ideas, explanations, and processes in a variety of ways → 6
  - Express and reflect on personal, shared, or others' experiences of place → 6
- Key questions about place: How does place influence your ability to plan and conduct an inquiry? How does your understanding of place affect the ways in which you collect evidence and evaluate it? How do the place-based experiences and stories of others affect the ways in which you communicate your findings and information? What does ways of knowing mean? What are the connections between ways of knowing and place? → 6*
- Ways of knowing: refers to the various beliefs about the nature of knowledge that people have: they can include, but are not limited to, Aboriginal, gender-related, subject/discipline specific, cultural, embodied and intuitive beliefs about knowledge.) → 7*

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- Communicate ideas, findings, and solutions to problems, using scientific language, representations, and digital technologies as appropriate
  - Express and reflect on a variety of experiences and perspectives of place
- Key questions about place: How does place inform your questions and inquiries? How does place influence your ability to plan and conduct an inquiry and make predictions about outcomes? How does your understanding of place affect the ways in which you collect evidence and evaluate it? As you consider the significance, worth, or value of an outcome or finding, how can you show different ways of knowing? How can your understanding of place influence your project designs? How do the place-based experiences and stories of others affect the ways in which you communicate and collaborate?*