| **Unit –Time** | **BC Big Ideas (Understand)** | **BC Curricular Competencies (Do)** | **BC Content (Know)** | **Instructional Strategies/ Learning Activities** | **Materials & Resources** | **Assessment Methods/Assessment Date** | **Key Vocabulary** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Unit 1:** September 9- November 29, 2018(12 weeks) | Plants and Animals have observable features |  **Questioning and predicting**Demonstrate curiosity and a sense of wonder about the world Observe objects and events in familiar contexts Ask simple questions about familiar objects and events **Planning and conducting** Make exploratory observations using their senses Safely manipulate materials Make simple measurements using non-standard units **Processing and analyzing data and information**Experience and interpret the local environment Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge Discuss observations **Applying and innovating** Take part in caring for self, family, classroom and school through personal approaches Transfer and apply learning to new situation Generate and introduce new or refined ideas when problem solving **Communicating**Share observations and ideas orally Express and reflect on personal experiences of **place**  | **Content:**Basic needs of Plants and animals.● Include habitat – food, water, shelterFeatures of local plants and animals that help them meet their basic needs.Plants features include: -roots, stem, leaves, flowers, seedsAnimal features include: - shape, size, feet, teeth, body covering, eyes, earsFirst People’s uses of plantsOral history with Elder – plant and animal use (e.g., local berries or food, plants and animals, conservation of resources) |  **Guiding questions to support inquiry:**● How do the different features of plants and animals help them meet their basic needs?● What basic needs do plants and animals have in common?● What are your basic needs? **Strategies:*****\*\* To be filled in by the classroom teacher. \*\****          | Anchor charts (plant parts, labelled animals)A-Z books , booksPeople in communityGuest speakersPan Canada Science (KG2) Lessons 1-4 (adapt as required)YouTube VideosField trip: Farm/Game Reserve/Zoo | Journalsobservationsphoto documentationanecdotal documentationconferencingchecklist/rubricsAssessmentsLiving/nonliving - sort and paste20/9/18Needs of animals- identify four needs of animals4/10/18Needs of plants - identify five needs of plants18/10/18Animal features - create own animal - eyes, ears, skin covering, feet, mouth - 15/11/18Plant features - Identify the need that a feature of a plant helps a plant to fill29/11/18 | living thingnonliiving thinggrowmovementlife cycle needswaterairfoodenergyshelterspacesoilfeaturesrootsstemleaf/leavesflowermouthteethbeakfeethoof/hoovesclawsshaperoundovalsizetinysmallbigvery bigbody coveringfeathersscalesskinfureyesearsQatari animalscamelsand catdugongperegrine falconArabian horseEthiopian hedgehogCanadian animalsmoosebobcatwhaleeagleporcupine |

Notes:

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* Access to the Teacher’s Resource
* Black Line Masters
* Weblinks (videos, etc)
* Assessment Tool PDFs

| **Unit –Time** | **BC Big Ideas (Understand)** | **BC Curricular Competencies (Do)** | **BC Content (Know)** | **Instructional Strategies/ Learning Activities** | **Materials & Resources** | **Assessment Methods/Assessment Date** | **Key Vocabulary** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Unit 2:** December 2 - February 14, 2019(9 weeks)\*\* The lessons expand over 8 weeks. The additional time allotted is to allow for different paces of progression. **Please make note of the final possible date for completion of Summative Assessments**  | Daily and seasonal changes affect all living things |  |  | **Week 1:****Inquring into Daily and Seasonal Changes****Opening provocation:*** Show a time-lapse video of a forest through the cycles of the seasons.
* Discuss the video by asking questions such as: “How could you tell when it changed from winter to spring? Spring to summer? Summer to fall? Fall to winter?
* Show the video a second time. Invite students to share observations (I see) and their wonders (I wonder...). Record these on a chart

Turn wonders into inquiry questions. | **Nelson Science Teacher’s Resource:*** Pp. 34-35

**Nelson Online Resources*** Time lapse video: Single oak through the seasons
* Teaching notes for video
* Weblinks
 | **Diagnostic assessment:*** Student responses to video showing awareness of seasons
* Anecdotal notes
 | * Wonder
* Seasons
* Inquiry
* Spring
* Summer
* Fall/Autumn
* Winter
* Change
* Question
 |
| ***Questioning and predicting:**** Demonstrate curiosity and a sense of wonder about the world

***Planning and Conducting:**** Make exploratory observations using their senses

***Processing and analysing Data and information:**** Experience and interpret the local environment.
* Discuss observations.
* Represent observations and ideas by drawing charts and simple pictographs.

***Communicating**** Share observations and ideas orally.
* Express and reflect on personal experiences of place.

**Core Competencies*** Communication
 | *Students will know:** Weather changes
* Seasonal changes
* Living things make changes to accommodate daily and seasonal cycles
 | **What season is it?****Week 2:****Whole Class*** Show images from online resources one at a time. Have students make visual observations. Ask questions to further discussion. (How does the weather/people/animals/plants show the season?

**Place-based experience:*** Take the class outside for a guided walk in the gardens. Have them also think about things they may have seen in Qatar.
* Ahead of time research and find photos/videos of various seasons in Qatar. Show these to the class.
* Discuss: How are the seasons the same in Qatar as the images shown in the introduction. How are they different?
* Use the weather today teacher card to record current weather. Look at relevant weather icons.
* Invite students to bring in evidence (may be photos) of the season in Qatar to share with the class for the next lesson.

**Week 3****Small groups*** Organize the photo evidence into categories: plants, animals, people, weather
* Discuss: How the evidence shows what season it is. Ask questions to deepen understanding/thinking
* Have students identify the most important evidence
* Take photos of the finished charts and store them digitally
* Reflect: What does your evidence tell you about what kinds of plants and animals you can find in Qatar? Do you think students in Canada would find the same evidence? Why/why not?
* Discuss cyclical nature of the seasons

**INQUIRY OPPORTUNITY:*** Create a weather station. Use the weather chart to record daily weather (temperature, sunny/cloudy/rainy/dusty/foggy) etc
 | **Nelson Science Teacher’s Resource:*** Pp. 36-39
* Clipboards
* Bags or buckets for evidence
* Whiteboard marker

**Nelson Online Resources*** Weather chart
* Documenting learning: What season is it?
* Scientific inquiry scale k-3
* Documenting communication: profiles
* Documenting communication: Facets
* Scientific inquiry skills toolkit (observe, interpret results, display data, communicate, reflect on place
* Image bank
* Teacher’s cards
* Weblinks

Literature resources:* A Leaf Can Be by Laura Purdie Salas and Violeta Dabija
* Where does Kitty Go in the rain by Harriet Ziefert
 | **Formative assessment:*** Observe whether students are using different senses when collecting evidence
* While students are working, observe how they collaborate with other students to decide what evidence best represents the season (PS competency)
* Observe how students represent their observations and evidence in a chart (C competency)
* Observe how students experience and interpret the local environment and express and reflect on their experiences of place (PS competency)

**Summative Assessment: (Rubric) – completed no later than January 10*** The student can orally identify the season shown in a picture using clues provided by people, plants, animals, and weather.
* The student can orally identify 2 ways seasons are similar in Qatar and Canada.
* The student can orally identify 2 ways seasons are different in Qatar and Canada.
* **\*\***Students orally sharing this information can also be used as an ELA speaking mark
 | * Season
* Spring
* Summer
* Fall/autumn
* Winter
* Weather
* Rainy
* Cloudy
* Sunny
* Dusty
* Fog
* Cold
* Hot
* Temperature
* Precipitation
* Snow
* Evidence
* Weather chart
* Thermometer
 |
| ***Questioning and predicting:**** Demonstrate curiosity and a sense of wonder about the world
* Ask simple questions about familiar objects and events

***Processing and analysing Data and information:**** Experience and interpret the local environment.
* Represent observations and ideas by drawing charts and simple pictographs.

***Applying and innovating:**** Transfer and apply learning to new situations.

***Communicating**** Share observations and ideas orally.
* Express and reflect on personal experiences of place.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
 | *Students will know:** Seasonal changes
* Living things make changes to accommodate daily and seasonal cycles
* Basic needs of plants and animals
 | **Some ways living things Change****Focus question:** What are some ways plants and animals change to meet their needs as seasons change?**Week 4:****Whole Class*** Show activity card (images). Discuss what they see. Ask: What are the animals doing? How did plants/animal change to survive the different seasons?
* Dormancy – look at images ask: Are these plants growing? What clues do you have? What season do you think each picture shows?
* Ask questions to support student thinking about the needs of plants to survive. What might they not get?
* Migration – identify animals. Explain migration. Do they know any birds in Qatar that migrate. (Teacher research required.) Why might the birds need to migrate?
* Hibernation – What are the animals doing? Why might they not be able to meet their needs in winter? Explain hibernation. What animals in Qatar might hibernate (hedgehog)
* Other changes – what is different? Why do think this change helps the animal?
* How might animals prepare for winter if they do not migrate or hibernate?

**Inquiry opportunity:*** Track/document local living things throughout the year and how they change. Take photos in different seasons
 | **Nelson Science Teacher’s Resource:*** Pp. 40-43

**Nelson Online Resources*** Images
* Documenting learning: some ways living things change
* Scientific inquiry scale K-3
* Documenting communication: Profiles
* Documenting Communication: Facets
* Documenting Critical Thinking: Profiles
* Documenting Critical thinking: Facets
* Scientific Inquiry Toolkit
* Weblinks

**Literature connections:*** Over and Under the Snow by Kate Messner
* Going Home: The Mystery of Animal Migration by Marianne Berkes
 | Formative Assessment:* Observe whether students are able to apply what they’ve learned about the needs of animals to their understanding of dormancy and migration.
* Observe whether students demonstrate curiosity and ask questions about hibernation or other types of changes)
* Observe whether students demonstrate critical thinking skills as they analyze the information and see a pattern in the kinds of changes made by animals.
 | * Plants
* Animals
* Change
* Accommodate
* Seasons
* Cycles
* Needs
* Dormancy
* Hibernation
* Migration
* Adapt
* Survive
 |
| ***Questioning and predicting:**** Demonstrate curiosity and a sense of wonder about the world
* Ask simple questions about familiar objects and events

***Processing and analysing Data and information:**** Recognize First Peoples stories (including oral and written narratives), songs, and art, as ways to share knowledge.

***Applying and innovating:**** Transfer and apply learning to new situations.

***Communicating**** Share observations and ideas orally.
* Express and reflect on personal experiences of place.

**Core Competencies*** Positive Personal and Cultural Identity
* Personal awareness and responsibility
* Social responsibility
 | *Students will know:** Seasonal changes
* Living things make changes to accommodate daily and seasonal cycles
* First People’s knowledge of seasonal changes
* Basic needs of plants and animals
 | **Changes through the seasons:****Focus Question: How do living things change to adapt to each season? What can we learn from First Peoples Knowledge of seasonal changes?****Week 5:****Whole Class*** Show images/activity card and focus on the trees. Ask: How would this tree look different in fall? Winter? Spring? Give copies of “tree through the seasons” to each child. Have students cut out and place the pictures of the tree in the correct season. Ask: why does the tree look different in each season.
* Look at the Canada Geese: Where do they fly in fall? Why? What is this called? What do they do in spring?
* Bear: What is the bear doing in winter? Why? What does it do in spring? What might it do in summer? Fall?
* Mountain goat: What do you notice about the mountain goat in spring? Why do you think it has big tufts of thick fur? What other changes occur? Why?
* Consider how people are affected by seasonal changes and ask questions to encourage discussion.

**Week 6** **Small Groups:*** Have students choose an animal. Discuss: what the animal is doing during each season.
* Individually: Use toy animals, modelling clay, and natural materials to build models of what animals are doing in each season. Students will orally explain their models when completed.
 | **Nelson Science Teacher’s Resource:*** Pp. 44-47
* Toy animals (snakes, bees, deer, robins, eagles, etc)
* Modelling clay
* Natural materials (rocks, leaves, twigs, shells)

**Nelson Online Resources*** Tree through the seasons
* Documenting learning: Changes through the seasons
* Scientific Inquiry scale: K-3
* Documenting Social Responsibility: Profiles
* Documenting Social Responsibility Facets
* Scientific Inquiry Toolkit
* Images
* Weblinks

**Literature connections:*** A tree for all seasons
* Picture a tree (HUBS Main Library)
 | **Formative Assessment:*** Observe whether students can transfer and apply their learning about types of changes and their understanding of the cyclical nature of the seasons and how these behavioral and structural changes are connected to the seasons.

**Summative Assessment:** **completed no later than February 14**Students will use toy animals, clay, and natural materials to create a model that shows what the animal needs for a season of their choice. Students will be assessed on their oral explanation of what their animal is doing and how the animal has changed for that season.**\*\*** Opportunity for an **art** assessment and **ELA** speaking assessment(This means some additional time for completion can be taken from Art and ELA) | * Plant
* Animal
* Same
* Different
* Fall
* Spring
* Winter
* Summer
* Seasons
* Dormant/dormancy
* Hibernation
* Migration
* Plant
* Animal
* Person
* Adapt
* Animal features
 |
| *Planning and Conducting:** Make exploratory observations using their senses

*Processing and analysing Data and information:** Experience and interpret the local environment.
* Discuss observations.

*Communicating** Share observations and ideas orally.
* Express and reflect on personal experiences of place.

Core Competencies* Communication
* Creative thinking
* Critical thinking
* Positive Personal and Cultural Identity
* Personal awareness and responsibility
* Social responsibility
 | *Students will know:** Living things make changes to accommodate daily and seasonal cycles
* Basic needs of plants and animals
 | **Day and Night****Focus Questions: What do living things do during the day? What do living things do at night?****Week 7:****Whole class:*** Show image/activity card. Ask: how is night different from day? What do you usually do during the day? What do you usually do at night? How do you think this is different/ same from animals?
* Focus student attention on the day side of the image. What do you see? Make a t-chart with a day column and a night column. List the animals that are seen in each sections of the card/image. Discuss what each animal is doing and how this meets the animal’s needs.
* Focus on the night side. Find the same animals. Discuss the actions and how these actions meet the needs of the animals.
* Focus attention to the plants. Do plants change from day to night? How? Why do students think this happens.

\*\* Send note to parents asking them to help their child observe changes in plants and animals during the day and night that are around their home.**Week 8:****Place Based Experience*** Give students a copy of Day and night. Ask them to draw some living things they saw during the day and some at night from around their home. Have them explain their pictures orally.

**Inquiry opportunity:**Have students bring in pictures of how local landscapes change during the day and night. Create a bulletin board displaying these photos. | **Nelson Science Teacher’s Resource:*** Pp. 48-51

**Nelson Online Resources*** Day and Night
* Documenting learning: Day and Night
* Scientific Inquiry scale: K-3
* Documenting Communication: Profiles
* Documenting Communication: Facets
* Documenting Critical Thinking: Profiles
* Documenting Critical Thinking Facets
* Scientific Inquiry Toolkit
* Images
* Weblinks
 | Formative assessment;Observe how students are observing the actions of the animals shown in the activity card and how they share these observations and ideas.Observe whether students understand that animals meet their needs in different ways based on the cycle of day and night.While students are creating and communicating about their personal day and night pictures, observe how they interpret their local environment and represent their personal experience of place. | * Day
* Night
* Animals
* People
* Plants
* needs
 |

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| **Unit –Time** | **BC Big Ideas (Understand)** | **BC Curricular Competencies (Do)** | **BC Content (Know)** | **Instructional Strategies/ Learning Activities** | **Materials & Resources** | **Assessment Methods/Assessment Date** | **Key Vocabulary** |
| **Unit 3:** February 17 - March 21, 2019(5 weeks) | Humans interact with matter every day through familiar materials. | ***Planning and Conducting:**** Make exploratory observations using their senses

***Processing and analysing Data and information:**** Experience and interpret the local environment.
* Discuss observations.

***Communicating**** Share observations and ideas orally.
* Express and reflect on personal experiences of place.

**Core Competencies*** Positive Personal and Cultural Identity
* Personal awareness and responsibility
* Social responsibility
 | *Students will know:** Properties of familiar materials
 | **Focus Question: How can you identify a property of a material****Week 1:****Whole class:*** Investigate how materials look and feel. Explore the properties. Have students share observation and work to build associated vocabulary.
* Scavenger hunt in the classroom to find materials. Discuss the properties.
* Ask: What are materials? What materials can you find in the classroom?
* Talk about how materials looks and feel

**Week 2:*** Show students the activity card/images. Have them identify properties that discussed the week before. Explain colour is also a property.
* Have students share opinions on what properties they think the class will be able to find outside.

**Place based experience:*** Have students list ways of being respectful to the school and natural environment when outside.
* Discuss materials that can be collected outdoors and those that must be left alone.
* Do a scavenger hunt outside looking for materials with each of the properties. Take photos if necessary
* Outside have students connect with their senses: what they hear, see and smell and how these senses help us gather observation
* Sort the materials.
* Make comparison between items found inside and outdoors. What things do we use every day that come from nature? What are some ways you can be careful not to be wasteful with materials?

**Inquiry opportunity:**Have students create their own sorting mats to sort properties of their choosing. | **Nelson Science Teacher’s Resource:*** Pp. 56-59

Materials with the following properties:* Smooth
* Rough
* Dull
* Shiny

Chart papermarkers**Nelson Online Resources*** Documenting Learning: Properties of materials
* Scientific inquiry scale k-3
* Documenting Social Responsibility: Profiles
* Documenting Social Responsibility: Facets
* Scientific Inquiry toolkit
* Weblinks
 | **Diagnostic Assessment:*** T-chart recording observation of materials
* Anecdotal notes of comments
* Photographic evidence

**Formative Assessment:*** Observe whether students observe familiar objects and can differentiated the properties of materials from the properties of objects
* While students look for materials, observe to what extent they use their senses to identify properties.
* Observe how students experience and interpret their local environment.
* While students sort the materials, observe whether they orally share their observation about a material’s properties
 | * Investigate
* Look
* Feel
* Taste
* Smell
* Properties
* Materials
* Smooth
* Rough
* Dull
* Shiny
* colour
 |
|  |  | ***Questioning and predicting:**** Observe objects and events in familiar contexts
* Ask simple questions about familiar objects and events

***Planning and Conducting:**** Make exploratory observations using their senses

***Processing and analysing Data and information:**** Discuss observations.
* Represent observations and ideas by drawing charts and simple pictographs.

***Communicating**** Share observations and ideas orally.

**Core Competencies*** Creative thinking
* Critical thinking
 | *Students will know:*Properties of familiar materials | **More or Less?****Focus Question:** *How do the properties of different materials compare?***Week 3:****Small Groups:*** Show the activity card and look at the pictures. Discuss the differences between the objects.
* Provide students with familiar materials. Work in small groups on one property arrow at a time and rank the materials in terms of the property. Take photos of the created scales. Have students explain their thinking.
* Share observations with other groups of students.
* Have students complete again independently with materials of their choosing.

**Inquiry opportunities:*** Listen for observations that were not included in the lesson. (i.e. clear, stretchy, etc).
* If students recognize that materials can have more than one property at a time, challenge them to place the material on various continuums.
 | **Nelson Science Teacher’s Resource:*** Pp.

Familiar materials:* Fabric
* Wood
* Glass
* Metal
* Foil
* Sand
* Rubber
* Materials collected from outside the previous week.
* Sandpaper
* Dirt
* Mirrors
* Water
* Wigs
* Rough rocks
* Leaves
* Woodchips
* Leather
* Fake gems

Materials shown on the activity card:* Marbles
* Bark
* Smooth rocks
* Aluminum foil
* String
* Pieces of hard metal
* Paper
* wood

**Nelson Online Resources*** documenting Learning: More or Less
* Scientific Inquiry Scale K-3
* Documenting Critical thinking: Profiles
* Documenting Critical thinking: Facets
* Scientific Inquiry toolkit
* Weblinks
 | Formative assessment:* Observe the extent to which students are using their senses to observe and make decisions about the materials.
* Observe whether students can represent their observations using the continuum and whether they understand that materials can go in the middle as well, not just one side or the other.
* Observe whether students communicate their reasoning for where they placed materials on the activity card.
* Observe whether students ask questions about the materials that could lead to further inquiry. Do a quick check for understanding and ask for an example.
* Observe for the extent to which students think critically as they question and investigate the properties of materials.
 | * Rough/rougher
* Smooth/smoother
* Dull/duller
* Shiny/shinier
* Easy to bend/hard to bend
* Easy to cut/hard to cut
 |
|  |  | ***Questioning and predicting:**** Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts

***Planning and Conducting:**** Make exploratory observations using their senses
* Safely manipulate materials.

***Processing and analysing Data and information:**** Represent observations and ideas by drawing charts and simple pictographs.

***Communicating**** Share observations and ideas orally.

**Core Competencies*** Creative thinking
* Critical thinking
 | *Students will know:*Properties of familiar materials | **Week 4:** **Conduct an Inquiry! Which materials soak it up?****Focus question: *How well do materials soak up water?***Small groups:* Students will work in small groups to complete an inquiry activity on how well various materials soak up water. Ask questions to extend student thinking and have them share observations.
* **Summative Assessment:** Provide each student with small samples of materials used and create a continuum of “Does not soak up well”/”Soaks up well” by gluing the sample materials on a continuum. Discuss it with them
 | **Nelson Science Teacher’s Resource:*** Pp. 64-67

**Materials shown on activity card:*** Sponge
* Cloth
* Paper towel
* Cardboard
* Leaves

**Optional materials:*** Recycled paper
* Construction paper
* Various fabrics: cotton t-shirts, denim, silk
* Rimmed baking sheets

**Nelson Online Resources*** Documenting Learning: Which materials soak it up?
* Scientific inquiry scale K-3
* Documenting Critical thinking: Profiles
* Documenting Critical thinking: Facets
* Scientific inquiry kit
* images
* Weblinks
 | Formative Assessment:* Observe for students’ observation skills
* Observe if students demonstrate curiosity when experimenting and observing how well certain materials soak up water.
* Observe whether students are respecting their classmates and their classroom by using materials safely.
* Observe for critical thinking skills as students question and investigate.

**Summative Assessment: How well does it soak up water? – Due by the week ending March 21** * Observe how students represent their observations on the continuum.
* Observe for how students share their ideas and observations.

**\*\*** Can use some ELA time for students to discuss their continuum with you and do a summative speaking assessment at the same time. |  |
|  |  | ***Applying and innovating:**** Take part in caring for self, family, classroom and school through personal approaches.
* Transfer and apply learning to new situations.
* Generate and introduce new or refined ideas when problem solving.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
 | *Students will know:*Properties of familiar materials | **Week 5:****Design and Make: Can you change a material*** Have students bring in natural materials to work with. Explain that they will first work in small groups to discuss their ideas about what to do with the materials.
* Students will then use provided materials to change a property of their material.
* Students will present their new product in a small group and explain the property that was changed and how it was changed.
 | **Nelson Science Teacher’s Resource:*** Pp.
* Various natural materials (i.e. leaves, twigs, rocks, sand, soil, seeds)
* paint
* paint brushes
* sandpaper
* water

**Nelson Online Resources*** Documenting Learning: Can you change a material?
* Scientify Inquiry stage K-3
* Documenting communication: profiles
* Documenting communication: Facets
* Documenting creative thinking: Profiles
* Documenting critical thinking: Facets
* Design and Make: share scale k-3
* Design tool kit
* Scientific inquiry toolkit
* Weblinks
 | **Formative Assessment:*** Have students identify the properties of materials.
* Observe how they generate ideas based on the natural material they have chosen to work with.
* Observe if they are changing a property following a plan.
* Observe how they deal with problems that occur as they are working.
* Observe if they are safely using materials.

**Summative assessment:*** Have students identify the property of the object that they changed. Have them present this to the class and observe for the extent to which they can transfer and apply their learning about properties of materials and form and function to this new situation.
 |  |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Unit –Time** | **BC Big Ideas (Understand)** | **BC Curricular Competencies (Do)** | **BC Content (Know)** | **Instructional Strategies/ Learning Activities** | **Materials & Resources** | **Assessment Methods/Assessment Date** | **Key Vocabulary** |
| **Unit 4:****Pushes and Pulls****March 24- June 13****(10 weeks)**  | The motions of objects depend on their properties. | ***Questioning and predicting:**** Demonstrate curiosity and a sense of wonder about the world
* Observe objects and events in familiar contexts
* Ask simple questions about familiar objects and events

***Planning and Conducting:**** Make exploratory observations using their senses
* Safely manipulate materials.

***Processing and analysing Data and information:**** Experience and interpret the local environment.
* Discuss observations.
* Represent observations and ideas by drawing charts and simple pictographs.

***Communicating**** Share observations and ideas orally.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
 | *Students will know:** Effects of pushes and pulls on movement
 | **Week 1:****Inquiring into pushes and pulls****Provocation:*** Students race toy cars on various courses and surfaces to access prior knowledge about pushing and pulling and to think about how forces affect movement.

**Types of Movements:****Focus Question:** *How do pushes and pulls affect movement?***Whole Class:*** Show the activity card. Have students identify the objects shown. Connect with student experiences with the toys and ask: how do they move?
* Discuss each type of movement (roll, slide, glide, bounce). Explore these movements through classroom objects or objects that you have provided. Make sure students understand the terms used.

**Week 2:****Place Based Experience*** Explore the natural environment to collect items of various shapes, size and materials that bounce, slide, roll and glide.
* While outside, remind students to connect with their senses about what they see, hear or smell.
* Have small groups investigate how each collected object moves and design ways to test them. Can objects move in more than one way? Have students identify if they are pushing or pulling the object to make it move.
* Have groups sort and classify objects by how they move.

**Whole class:*** Gallery walk to see how objects were sorted and share observations.

**Inquiry opportunity:*** Challenge students to find an object that moves well in at least three different ways then demonstrate the movement of the object for the class.
 | **Nelson Science Teacher’s Resource:*** Pp. 74-75
* Pp.76-79
* Activity card
* Toy cars
* A bucket or other container
* Hula hoops (optional)

**Nelson Online Resources*** Documenting learning: types of movement
* Scientific inquiry scale k-3
* Documenting critical thinking: profiles
* Documenting critical thinking: facets
* Documenting communication: profiles
* Documenting communication: Facets
* Scientific inquiry kit
* Weblinks
 | **Diagnostic assessment:*** Observe and record student’s questions/statements that could be turned into questions for investigations throughout the unit.

**Formative Assessment:*** Observe curiosity/wonder.
* Observe student observation skills.
* Observe methods of investigation used.
* Observe whether students consider the force they must put on the object to create the movement.
* Observe if students test objects in multiple ways.
* Observe the extent to which students think critically as they question and investigate the movement of objects.
* Observe and listen for evidence of students communicating their understanding of pushes and pulls causing objects to move.
* Listen for evidence of understanding the cause and reflect relationship.
* Observe how students represent their observations and ideas when sorting objects.
* Observe for development as students communicate how they sorted and classified their objects by the ways they could move.
 | * Cause
* Effect
* Push
* Pull
* Force
* Size
* Shape
* Materials
* Movement
* Roll
* Slide
* Bounce
* Glide
* Sort
* Classify
* Identify
* investigate
 |
| ***Planning and Conducting:**** Make exploratory observations using their senses
* Safely manipulate materials.
* Make simple measurements using non-standard units.

***Processing and analysing Data and information:**** Discuss observations.
* Represent observations and ideas by drawing charts and simple pictographs.

***Communicating**** Share observations and ideas orally.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
 | *Students will know:** Effects of pushes and pulls on movement
* Effects of size, shape, and materials on movement
 | **How does it move?**Focus question: *How does the size, shape, and material of an object affect how it moves?***Week 3: Whole Class*** Test different objects to see how well they bounce, roll, slide or glide using benchmarks for comparing. Then place items on a continuum.

**Week 4:****Centres or small groups*** Students work in small groups to test objects for the remaining three types of movements. Allow students to rotate through centers. Place items on a continuum.
* Identify properties and material of objects that did well by sharing observations orally.
* Are some able to move in more than one way?

**Week 5: Inquiry*** Have students work on inquiry questions they may have had during this lesson and explore the focus question further.
 | **Nelson Science Teacher’s Resource:*** Pp. 80-83

Objects for testing various types of movement:* Rolling -die, marble, round rock, square wooden block, cotton ball, toy wheel
* Sliding – running shoe, ruler, smooth rock, rubber door stopper
* Bouncing – book, basketball, rock, bouncy ball, balloon
* Gliding – rock, feather, stick, leaf of some sort, seed, flat piece of paper, crumpled piece of paper, small parachute, bag

**Nelson Online Resources**images/photo cards* Documenting Learning: how does it move?
* Scientific inquiry scale k-3
* Documenting critical thinking: Profiles
* Documenting critical thinking: Facets
* Documenting communication: Profiles
* Documenting communication: Facets
* Scientific inquiry toolkit
* Weblinks
 | Formative assessment:* Photos/videos of continuums and student explanations.
* Anecdotal notes of student observations.
* Use of materials safely.
* Use of exploratory observations
* Measuring using non-standard units
* Transfer and application of knowledge from types of movement to each object on continuum
* Development of communication as they collaborate to test the movement of objects
* Extend of critical thinking as they question and investigate objects
* Student explanations of the effects of size, shape and materials on movement
* Extent of critical thinking when placing objects on continuums
* Communication when reviewing observations

**Summative assessment – Week of April 28*** have students create a continuum for the type of movement of their choice using objects. Students must justify their placement of objects.

**\*\*** Could also be an opportunity for an ELA speaking mark | * Movement
* Roll
* Glide
* Slide
* Bounce
* Test
* Materials
* Properties
* Predict
* Compare
* Continuum
* Non-standard unit of measurement
* Shortest
* Longest
* Count
* Identify
* Material
* Less
* more
 |
| ***Questioning and predicting:**** Ask simple questions about familiar objects and events

***Planning and Conducting:**** Make exploratory observations using their senses
* Safely manipulate materials.

 ***Processing and analysing Data and information:**** Discuss observations.

***Communicating**** Share observations and ideas orally.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
 | *Students will know:** Effects of pushes and pulls on movement
* Effects of size, shape, and materials on movement
 | **Conduct an Inquiry: How do you make it move more?****Focus question:** *How can you use the different pushes and pulls and the properties of objects and surfaces to change the movement of an object?***Week 6:****Whole class:*** Show the activity card. Ask them what they think they might be doing in this activity. Explain they will be experimenting with using different pushes and pulls, and objects and surfaces of different sizes, shapes and materials to make objects move more quickly, slowly farther, etc.

**Place based experience:*** Go outside. Connect with senses.
* Provide students with natural objects and have students volunteer to try and move objects of different sizes, shapes and materials on surfaces using different pushes and pulls.

**Small groups:*** Have students choose different objects and surfaces to investigate and to try and have objects move further, more quickly, more slowly, etc. **Let students experiment without guidance unless there are safety issues.**
* Have students demonstrate how they made an object move for the whole class or another small group. Have them identify the pushes/pulls used, properties of objects and materials and the affect.

**Week 7:****Inquiry opportunity*** Have students design and set out challenges for each other.
* Have students further explore different surfaces and materials.
 | **Nelson Science Teacher’s Resource:*** Pp. 84-87
* Teacher card: How do you make it move more
* Balls
* Pine cones
* Rocks
* Sticks
* Woodent blocks
* Feathers
* Books
* Dice
* Shoes
* Ruler

**Nelson Online Resources*** Documenting Learning: how does it move?
* Scientific inquiry scale k-3
* Documenting critical thinking: Profiles
* Documenting critical thinking: Facets
* Documenting communication: Profiles
* Documenting communication: Facets
* Scientific inquiry toolkit
* Weblinks
* Weblinks
 | **Formative assessment:*** Ask questions using the terminology of properties to clarify and extend their understanding of the properties of the objects they are moving..
* Observe whether students understand how their actions result in movement of their objects (cause and effect)
* Observe if students are working safely.
* Observe students’ observation skills
* 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.
* Listen for students’ questions
* As students explain their results, observe whether they can identify the properties that affected the movement of the object. Ask questions to clarify their thinking.
* As students demonstrate and explain their results listen for evidence of critical thinking.
* As students present their results, observe for demonstrations of the communication competency
* Photographs or videos to document learning
 | * Experimenting
* Pushes
* Pulls
* Objects
* Surfaces
* Different
* Sizes
* Shapes
* Materials
* Move
* Quickly
* Slowly
* Father
* Safely
* Controlled
* Hear
* See
* Smell
* Senses
* Cause
* effect
 |
| ***Applying and innovating:**** Take part in caring for self, family, classroom and school through personal approaches.
* Transfer and apply learning to new situations.
* Generate and introduce new or refined ideas when problem solving.

**Core Competencies*** Communication
* Creative thinking
* Critical thinking
* Positive Personal and Cultural Identity
* Personal awareness and responsibility
* Social responsibility
 | *Students will know:** Effects of pushes and pulls on movement
* Effects of size, shape, and materials on movement
 | \*\* Collect various recyclable materials that could be used in student creations**Week 8, 9, and 10**This lesson will be completed over several weeks.* Show students the activity card and let them look at the images and talk about what they see.
* Explain they will make a toy that can be pushed or pulled. Emphasize the three stages of applied design: Ideate, Make, Share.
* Students will use items (recyclable items or items they have brought in) and create a toy of their choice. They must create it through trial and error as they redesign aspects that do not work they will revise their thinking.
* Students may make more than one toy over the three weeks, but each time they should improve the final product in some way.
* Students will demonstrate their creations to their classmates and talk about the process of creating it and how they revised their ideas. They will identify if it is a push/pull and why they chose the materials.
 | **Nelson Science Teacher’s Resource:*** Pp. 88-91
* Activity card
* Feathers
* Rocks
* Pine cones
* Sticks
* Wood chips
* Leaves
* Balloons
* Empty paper-towel rolls
* String
* Craft sticks
* Straws
* Masking tape
* Construction paper
* Shoebox

**Nelson Online Resources*** Documenting Learning: Design and Make! Design a toy you can push or pull
* Scientific Inquiry scale k-3
* Documenting creative thinking: profiles
* Documenting creative thinking: facets
* Documenting critical thinking: profiles
* Documenting Communication: profiles
* Documenting communication: Facets
* Design and Make: Share stage K-3
* Design toolkit
* Scientific Inquiry toolkit
* Weblinks
 | **Formative Assessment:*** While students ideate, observe how they generate ideas for their toys based on their experience and interests.
* Observe for whether students add to others’ ideas when ideating.
* Observe whether students are able to choose an idea to pursue.
* While students select materials, observe how they transfer and apply learning about how objects with different properties move.
* Observe how students solve problems while making their toy or when their toy doesn’t work as well as they want.
* While students are working, observe whether they are safely manipulating tools, technologies and materials.
* As students demonstrate their toys, and tell their stories of designing and making them, listen for them describing the stages of the design process.
* As students explain how they plan to share their toy with others, observe how they demonstrate caring for self, family, classroom and school through personal approaches.
* Observe students as they ideate make and share
* Observe the emotions of students as they tell the story of their toy.
 | * Ideate
* Make
* Share
* Design
* Materials
* Properties
* Size
* Shape
* Push
* Pull
* Tools
* Technologies
* Safely
* Test
* Remake
 |

Notes:

**Nelson Online Resources:** https://www.mynelson.com/mynelson/webapp/staticcontent/html/PublicLogin.html

**Username:** online.resources.qa@hayatschool.com

**Password:** online123

Included in the Online Resources:

* Student Card images that can be projected on to the whiteboard with the projector.
* Access to the Teacher’s Resource
* Black Line Masters
* Weblinks (videos, etc)
* Assessment Tool PDFs