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| Subject: | Farm | Grade: | 6 | Duration: |  |

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| Big Ideas: | Summative Assessment: |
| Multicellular organisms rely on internal systems to survive, reproduce, and interact with their environment. (Science 6) | **Students will ask and answer questions through observation:**   1. How is a farm a system? 2. In my everyday life, how am I interacting with systems on the farm? 3. How did I use systems thinking in this field study? 4. What questions do I still have about the farm and the organisms that live on the farm? |

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| Unit Understandings: | | |  | Content: |
| * All organisms are connected and interact with each other (competition, predatory-prey, symbiotic, parasitic relationships) * Organisms interact with the surrounding environment (abiotic factors) including energy, water, air and soil * Living organisms have interdependent body systems that interact to sustain life * How our actions impact an organism’s (positive and negative) ability to survive | | |  | The basic structures and functions of body systems:   * Excretory * Reproductive * Hormonal * Nervous |
| Transfer: | | |  | Essential Questions: |
| * Understand that a variety organisms rely on internal systems to survive, reproduce, and interact with their environment * Understand the interconnectedness of all living things * Connect to place and understand their role and responsibility as stewards of the environment | | |  | * How am I interacting with systems in my everyday life? * How can changes in the environment affect a community of organisms? * How do living organisms adapt to, and interact with, their environment? |
|  | Concepts: |  |  | Curricular Competencies: |
|  | * System * Interdependence * Environment |  |  | * Experience and interpret local environment * Demonstrate curiosity about the natural world * Make observations * Make ethical judgements about events, decisions and actions that consider the conditions of a particular time and place and assess appropriate ways to respond (ethical judgement) * Make questions to answer or problems to solve through scientific inquiry |
| First People’s Principles of Learning: | | |  |
| Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).  **Cheakamus Centre Principles:**   * **Teaching in and learning about Place:** students will experience a working farm whilst studying systems related to farms and farm animals * **Engaging students with Nature-based Inquiry**: students will ask and answer questions such as, how is an organism a system; how do the animals interact on the farm; and how do we interact with animals? * **Making personal connections:** students will learn about and experience where there food and food by-products come from | | |  |
| Core Competencies: | | | |
| **Communication:**   * I ask and respond to simple, direct questions * I am an active listener; I support and encourage the person speaking * I can recount simple experiences and activities and tell something I learned   **Thinking:**   * I can ask open-ended questions and gather information * I get ideas when I use my senses to explore   **Personal and Social Emotional Learning:**   * I can participate in classroom schools, community, or natural world * I can identify how my actions and the actions of others affect my community and the natural environmental and can work to make positive change | | | |

**Field Study Planning:**

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| Pre-visit connections: | Resources: |
| **Possible leading questions/ideas to discuss with class prior to visit:**   * Exploration of basic farming systems. What is a system? In what ways is a farm a living system? * Introduce students to the ways in which animals on a farm provide us with food and products. * Introduce students to the concept of ‘Farm to Table’ and sustainable food production practices. * How do we depend on farms’ systems? * How are humans and systems connected to one another on the farm? | **Websites:**   * Grow BC – A guide to BCs Agricultural Resources: <https://www.bcaitc.ca/> * Just Eat It: <http://www.foodwastemovie.com/schools/> * Eat - The Story of Food: * <https://www.nationalgeographic.com.au/tv/eat-the-story-of-food/> |
| **Please see ‘during visit connections’ below for more ideas to explore before your students’ visit ODS** |  |

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| During visit connections: | Resources: |
| **The Farm Lab:** The lab is a good location to begin the Farm Field Study. Here you can orient the students to the components of the farm and explain that it is a teaching farm, not a working farm. This is a great time to introduce the concept of systems.  **Food Systems:** How do we depend on food systems?Everything we eat comes indirectly from a farm. Discuss and record what students have eaten today. Consider the “Story of Food”. Where does our food come from? What food might be local to this area at this time of year? If it is not local, where might it grow in the world? Brainstorm benefits of eating local foods. Some of the foods that are local to Cheakamus’ farm include apples, potatoes, eggs, maple syrup, berries, herbs, and vegetables. Can students think of any other foods that might come from the animals living on the farm?  **Animal Systems:** There are more systems at play on the farm than just food systems. How do animals depend on their own body systems to survive? How do animals on the farm interact with their environment? Animals have many interdependent body systems that interact to sustain the organism. Farm animals require food, water, shelter for survival. Food grown/animals raised on a farm are part of food chains, which trace back to plants and the sun. Describe the life cycle of our farm animals, including life span and reproductive cycles. As you go around the farm ask students to observe the animals for the  **Chickens:** The adult female chicken is a hen, the adult make is a rooster and the young chickens are chicks. Every chicken came from an egg, but not every egg contains a chicken. Rooster and hen must mate for the egg to be fertilized (sexual reproduction, internal fertilization). A Hen will continue to lay eggs even if it has not mated with a rooster. A healthy adult hen will lay one egg every 24 hours. It is only if the hen has mated that she will lay a fertilized egg. We do not eat fertilized eggs but place them in our incubator to develop into chicks!  **Sows:** Sows give birth to a litter of young called piglets. They are pregnant for just under 4 months. They nurse their young for 3-5 weeks.  **Goats:** Goats birth two to three kids at one time. Female goats/nannies/does are pregnant for 5 months. A male goat is a Billy goat.  A farm produces more than just food. (E.g., cotton for jeans). Find the pig kit in the Farm Lab, pass out the objects and have students discover some of the every day products derived from pigs. Debrief sustainability. I.e., Use of whole pig. | **Resources at Cheakamus Centre:**   * Chopping board and knife * Bee Hive Trays * Bee Keeper Helmet/Gloves * Maps of Agricultural Areas of B.C. * Body parts of pig cards and examples of products made from pigs * Benefits of eating local foods sheet. * I notice, I wonder, It reminds me of cards * Stethoscope and brushes for goats. |
| **Chickens:** There are two teaching areas for the chickens. The first is the chick habitat in the “Farm Lab” upstairs in the barn. The second location is the hen nesting area in the barn, located downstairs in the doors called “Le Palais des Poules”.  Start upstairs in the farm lab. Here you will find:  · An egg washing station and instructions  · An egg incubator with eggs in development  · Several instructional posters  · A projector to candle eggs  · A fridge and egg log for non-incubated eggs  · An egg scale  Here you can explain about the development cycle of a chick using the poster on the wall for visual reference. There are usually several eggs in the incubator. They should have two dates on them. The top date is the date marks the collection day of the egg. The bottom date marks 21 days from the collection day. Turn off the ceiling lights, turn on the projector beside the incubator, and hold up a more recently harvested egg up in front of the light. The egg will look translucent and have little shading. Then take a few more eggs out of the incubator, each getting progressively older, and hold them up to the light so the students can see how the chick development compares between each egg. Be sure to replace the eggs with the wide round end up (air pocket!). If there are chicks in the cage, students can each hold the chick. Have the students sit in a semi-circle on the floor, so students can pass the chick gently around the circle.  **Le Palais des Poules**: Take students downstairs to the nesting area to harvest eggs.  **When viewing the chickens, consider the following questions:**  Aside from grain, chickens eat insects. Some of these insects are so small that we can’t see them. How do you think chickens find them? Chickens have amazing eyesight. They can move each eye independently; they can also see ultra violet light. Meaning that they can see the heat from the bugs, which helps them to find their food. What part of their feet do chickens walk on? Chickens walk on their toes. Scientists have found a commonality between chickens and dinosaurs. Chickens share common ancestry with dinosaurs and are deemed the closest living relative of the Tyrannosaurus Rex and Velociraptor.  Chickens use their beaks in 4 different ways. How do you think the chickens use their beaks? Chickens use their beaks to: learn about objects, protect themselves, hold things, and groom themselves.  **Visiting tips**: Hens are hard at work producing about five eggs a week! Be respectful and quiet when entering their home. Be calm and gentle.  On the grass outside of Le Palais des Poules, discuss behaviour expectations with the students. Inside, students should be quiet and gentle when reaching into the hen beds. Take the students inside and explain about the lighting. Chicks usually lay eggs in the spring and summer. We leave the light on to simulate the longer daylight hours. Students can then reach in and take some eggs. If it’s the morning field study, only take half of the eggs so there are some for the afternoon field study to use. Take the eggs back upstairs. The warmest egg should go in the incubator. Using the pencil on the fridge, write the current day’s date on the egg. Using the calendar on the wall, count ahead 21 days and mark that date on the egg as well. Gently place the egg in the incubator, pointy-side down and round side up. This will ensure the developing chick has access to the air sac inside the egg. Wash and place the other eggs into the fridge. Printed washing instructions are located on the wall above the sink. To wash the eggs:   * Use very hot water * Wash eggs individually under running water. Scrub off surface dirt using the green plastic scrubber kept beside the sink. * Sanitize with bleach and water solution (instructions are located on the bucket beside the sink along with the bleach). Dip eggs in solution and let air dry in egg crates. * Once dry, date eggs and place in fridge. * Record the numbers on the chart on the fridge door.   After you finish collecting eggs, go outside and feed the chickens. The feed is located downstairs in Le Palais des Poules. There is a bucket on top of the feed container. Fill the bucket up to the fill line on the outside of the container. This is not the chickens’ main meal for the day; it is only a snack. Note: If there are two groups doing Farm Field Study at the same time, they should share the amount of feed. This will prevent the chickens from over eating throughout the day. When feeding the chickens, students should lay their hand out flat and let the chickens peck the feed from them. If at any points students are afraid, they can drop the feed and walk away. If children are nervous, they can try feeding the hens first, as they are usually gentle. When you are finished, direct the chickens back into the pen where they came from. |  |
| **Goats:** Goats have many predators like coyotes, wolves and foxes. Wild goats also need to be aware of wolves and cougars. Goats have adapted in some ways that help them defend themselves against their prey.  **When viewing the goats, consider the following questions:**   * What shape are the goats’ pupils? How do you think this could help them defend themselves from predators? Goats’ pupils are rectangular; this gives them a panoramic view of their surroundings so they can always have a 360-degree view. * Are the goats usually by themselves or with the rest of their herd? Why do you think this is? Goats are herd animals, when they are all together they have a stronger defense against predators.   **Visiting Tips:** Be calm and gentle; Sometimes goats jump up, especially if they think you might have food in your hands. Open and lower your hands to show that you do not have any food. Goats are not biters but do like to nibble at things, so watch your fingers and clothing. They do not have a top front row of teeth. They could not be serious biters even if they wanted to.  Start by taking the students into the goat barn and showing them the facilities. The feed container is located inside the door on the left-hand side. Fill the bucket up to the fill line on the outside of the container. This is not the goat’s main meal for the day; it is only a snack. *Note:* If there are two groups doing Farm Field Study at the same time, they should share the amount of feed. This will prevent the goats from overfeeding throughout the day. The goats are extremely enthusiastic to receive the feed. To help keep things manageable, do not take the feed bucket into the goat pens. Hand out the feed to the students at La Grange and put the bucket back on top of the feed barrel before heading over to the field. Instruct students to cover the feed with their hands as the approach the gate, then walk directly into middle of the field before feeding the goats. If there is a bottleneck at the gate, the goats will crowd the students and some may leave the pen. When in the goat pen, students should remain standing at all times. When feeding the goats, students should lay their hand out flat and let the goats take the feed from them. If at any points students are afraid, they can drop the feed, show the goats their empty hands and walk in the opposite direction of the goat. The goat’s interest will be with the feed. Students can also groom the goats using the brushes in the basket. There is also a stethoscope in the basket. If there is a pregnant goats, one at a time, the students can place it on the belly of the goat and try to hear the baby goat’s heartbeat inside. Both of these are good activities for students who may be afraid to feed the goats but still want to interact inside the pen |  |
| **Pigs**: “Capitol’s Place” is the name of the pig house. The pens each have an inside area that can be accessed through the barn door and an adjoining outside pen for viewing. We allow students to pet pigs, except for Capitol, our male pig. The pigs feed during daily chores, so they do not need feeding during the Farm Field Study.  **When viewing the pigs consider the following questions:**   * Do the pigs look dirty at all? Do you think they have dirt on themselves by accident or on purpose? Why? Why not? Despite their reputation, pigs are not dirty animals. They are actually quite clean. The pig’s reputation as a filthy animal comes from its habit of rolling in mud to cool off. Pigs that live in cool, covered environments stay very clean. * Do you notice anything on the male pig’s face that may have been helpful for wild pigs, but might not be for the environment that he is in now? Male pigs (boars) have tusks for fighting other males. This was helpful in the wild. Do you think tusks are still as useful for a domesticated animal? |  |
| **Wrap-Up:** Once you have visited all the stations at the farm, students should wash their hands back upstairs in the Farm Lab. There are two sinks.  **Possible Closing Circle Questions:**   * What is a system? In what ways is a farm a living system? * How have I experienced systems at Cheakamus? * How am I interacting with systems in my everyday life? |  |

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| Post-visit connections: | Resources: |
| * Establish a farm-to-school garden. * Reduce waste in your school by setting up a composting systems project. * Organize a visit to UBC farm to explore the concept of healthy and sustainable food systems. | **Websites:**   * <https://growing-minds.org/school-gardens/> * <http://www.schoolgrounds.ca/projects/composting.html> * <http://kbee.ca/handbook/> See page 13 : ‘Mission Compostable’ * <http://ubcfarm.ubc.ca/instructional-resources/food-systems-learning-resources/> * <https://farmtoschoolbc.ca/> * Loutet Farm – Edible Garden Project <http://ediblegardenproject.com/loutet-farm/> |