

SCIENCE / SOCIALS 3-5: HOW AGRICULTURE TOOLS HAVE CHANGED OVER TIME

DESCRIPTION OF LEARNING EXPERIENCE

- This cross-curricular learning experience was created to allow students to explore the technological developments in an important British Columbian industry over time. This experience highlights how we have technologically changed over time, and how sources of energy and force in machines differ between now and the early 20th century. It connects the development of BC's agricultural industry to simple machines, and uses of energy, allowing students to discover BC's pioneer heritage, and see working models of steam, animal, and man powered equipment.

BC CURRICULUM TIE INS

Big Ideas	<p><u>Socials 3:</u> People from diverse cultures and societies share some common experiences and aspects of life</p> <p><u>Socials 4:</u> The pursuit of valuable natural resources has played a key role in changing the land, people and communities of Canada.</p> <p><u>Socials 5:</u> Natural resources continue to shape the economy and identity of different regions of Canada.</p> <p><u>Science 3:</u> Thermal energy can be produced and transferred</p> <p><u>Science 4:</u> Energy can be transformed</p> <p><u>Science 5:</u> Machines are devices that transfer force and energy</p>
Competencies	<p><u>Socials 3, 4 and 5:</u> Use Social Studies inquiry processes and skills to ask questions; gather, interpret and analyze ideas; and communicate findings and decisions.</p> <p><u>Socials 4 and 5:</u> Sequence objects, images or events, and determine continuities and changes between different time periods or places</p> <p><u>Science 3, 4, and 5:</u> Make simple inferences based on their results and prior knowledge; transfer and applying learning to new situations</p> <p><u>Science 5:</u> Demonstrate a sustained curiosity about a scientific topic.</p>
Content	<p><u>Socials 3:</u> Relationship between humans and their environment; reshaping the land for resource exploration and development/ domestication of animals/ organization and techniques for agriculture.</p> <p><u>Socials 4:</u> The history of the local community (visit a local museum); Physiographic features and natural resources of Canada</p> <p><u>Socials 5:</u> Resources and economic development in different regions of Canada.</p> <p><u>Science 3:</u> transfer of thermal energy; food chains, and energy pyramids</p> <p><u>Science 4:</u> energy has various forms, and is conserved</p> <p><u>Science 5:</u> properties of simple machines and their force effects; constructed machines.</p>

PRE-VISIT ACTIVITY

LEARNING INTENTION

For students to be able to identify and compare different sources of energy that power machines, when they are used, and how our use of power has changed overtime.

(for Grade 5s→ you can add a lot in here about simple machines and asking them to identify different components of a simple machine, and how their uses have stayed the same or changed throughout history)

GUIDING QUESTIONS

What did our ancestors use for energy?
How is it different than what we use for energy?
How do these differences make life harder or easier?

ACTIVITY

- Do a Wonder activity with pictures of Early European farmers, and First Nations peoples. Have students brainstorm questions about the pictures, and make estimations about things like what they are doing, what they are using for power, what they are farming etc?
- Allow students to research simple machines, and tools used by early famers and First Nations people around the inclusion of BC into Confederation. Look into questions like, what sources of power did people have, what did farming look like?
- For Grade 5s (and younger if you so choose) introduce the topic of simple machines. What are they? What do they do? Where do we see them in everyday life?

SUGGESTED QUESTIONS FOR FURTHER THINKING

- What did people use for power back in the pioneer days?
- How was life different? How was it harder?
- What have we done/developed as a society to make things easier for people today? Are there consequences to these changes?

YOUR VISIT TO THE BC FARM MUSEUM

FOCUSES OF YOUR VISIT

The focus of your visit is to explore the importance of farming technology to the lives of people in the province, and to compare the technology of yesteryear to that of today, looking at energy forms, and simple machines.

LEARNING INTENTION

For students to see how technology has developed over time to make things easier. To give them insight into human ingenuity, showing them how creativity, science, and purpose can cause people to solve problems for themselves and others.

GUIDING QUESTIONS

- What was it like to farm in BC in the 1900s?
- What technology did people use to farm?
- How does this technology differ from what we use now? How is it the same?
- What simple machines can we see in this farm equipment?
- What forms of power do we see used in this equipment?

WHAT TO EXPECT

- The BC Farm Museum houses many agricultural, household, and technology artifacts that show what life was like on a BC farm throughout the late 19th and early to mid 20th century. We have many interactive exhibits, and numerous displays showing how life has changed from the pioneer days, and the mid century.
- The museum is housed in two open buildings with lots of room to explore. Many of the displays include historic farm equipment

ACTIVITY

Start with a welcome to the BC Farm Museum

As a whole group we will talk about the following questions:

- What is agriculture?
- What kinds of agriculture do we have in BC?
- What do you think farming is like today? What was it like in the early 1900s?

We are going to be looking at items, and things that show us how farms functioned in the past. Some things might be familiar and others may not be, so students will be asked to ask as many questions as they can come up with.

- The class will be placed into 5 groups and go to 5 different stations throughout the Museum.
- Each group will need an accompanying adult, and some of the stations may have BC Farm Museum volunteers to help you observe the function.
- Each station should take 10 minutes
- We suggest using a KWL Chart for students to take around the museum with them to remain engaged in all activities, and to give you some feedback into their engagement and learning outcome. (Please see attached KWL at the end of the document)

STATION 1- EGG GRADER

At this station students will be shown a vintage egg grading machine, and how it sorts and cleans the eggs. On top of this machine are a Candler, scale, and polisher. The egg grader does the job of all 3 of these things.

Questions to consider

- BEFORE INTRODUCING THE MACHINE: What do you think this machine does?
- Why is it important to sort eggs for size? Has anyone ever noticed this happening somewhere?
- POINT OUT THE THREE OBJECTS ON TOP OF THE MACHINE? What do you think these each did? How are they different from the egg grader?
- Why does the egg grader help the farmer? Why couldn't the farmer just use the Candler, scale and polisher?
- Can you think of any other things we see in our lives that are like the Candler, polisher, and scale? Where do we use those? How are they different than these pioneer tools?
- What simple machines do we see here?
- How is this machine powered? What about the older versions?

STATION 2- ROPE MAKING

At this stations students will be shown how rope was made on a farm, using some simple tools.

Demo:

1. Ask for 3 volunteers (depending on the age of your group, may have to use an adult to do all of the tasks) to help with the demonstration: hook, paddle, and crank.
2. Have the student at the **crank** to slowly turn the handle. Note how the hooks turn around. That motion will mimic braiding and twist the rope.
3. Have the student with the **paddles** to hold up the different types. Explain that these paddles will help form the shape of the rope. Depending on what the farmers needed the rope for, there are 3, 4 and 5 strand paddles.
4. Have student with the **hook** carefully hold it up for the others to see. This part is

extremely important if farmers wanted to make a tight and sturdy rope. It is also good for measuring the length of rope needed.

Set up the ropes and proceed with the demonstration. *There should be enough time to do 2 demonstrations depending on the grade.

Questions to consider (Pose these before, during, and after your demo)

- What can be used to make rope?
- What would the farmers of BC, and pioneers have use the rope for?
- Who else would have used rope?
- What simple machines do we see here?
- How is this machine powered?
- How do we make rope now? What is different about modern rope to this rope?
- FINISHING QUESTION: Can you imagine making rope without this machine? How long do you think that would take?

STATION 3- WINDMILL

This station allows students to see a windmill used for irrigation, and water pumping on a farm. This windmill is currently powered by electricity, as it is inside, but was not in its original state.

Questions to consider

- What would this windmill do on a farm?
- What simple machines do we see here?
- How would this windmill have been powered when being used on a farm?
- What other things did windmills do on the farm? Where were they commonly used?
- Why was it important for farmers to be able to pump water to different places on their farm? What did they do before they had the ability to do that?

STATION 4- STEAM POWERED PUMP

At this station students will view a giant working steam powered pump that could have been used for a variety of jobs in the early 20th century. It is no longer powered by steam, but still could do the jobs it was created for. You can also show students the other steam powered equipment around this area during this station.

Questions to consider

- Why did people use steam back in the pioneer days?
- Why don't we use steam anymore?
- What kind of jobs could this machine have done? Would it have been used only on a farm, or could it have been used in other important BC industries?
- What about this machine stands out to you? How have we improved on it?
- What simple machines do we see here?

STATION 5- TOMATO GRADER

At this station students will get to see a working Tomato Grader from the mid 1900s sort tomatoes. This machine was handmade by a farmer in the Netherlands.

Questions to consider

- BEFORE INTRODUCING THE MACHINE: What do you think this machine does?
- Why would this machine be helpful to farmers?
- Do you think machines like this are still used?
- It is easy to connect this idea to what students see and buy at the grocery store...

when they are there are all the tomatoes that are priced the same are similar sizes.

- What simple machines do we see here?
- How is this machine powered?

SCAVENGER HUNT

For the remaining 30 minutes of your visit to us, we have created a Scavenger Hunt for the students to do that relates to the BC Curriculum.

- (see attached page) Students will have to go around the museum and find things that do the job of a modern piece of technology.
- If students or schools have the ability to do this as a photo scavenger hunt, that would be great, as then students can share their findings, and the differences they see between the modern technology and the equipment at the museum.

POST-VISIT ACTIVITY

LEARNING INTENTION

For students to connect what they have seen at the BC Farm Museum to modern technology and farming, so they can witness how technology has changed, and stayed the same over time.

GUIDING QUESTIONS

- What simple machines did you see in farming equipment?
- What kinds of power sources have been used in farming over time? How have these changed?
- How have developments in farming technology changed the industry?
- How has technology changed us? Has it been for the better? What are the consequences?

ACTIVITY

DISCUSSION POINTS:

POSSIBLE ACTIVITIES:

- Do a mini inquiry into an agricultural tool that students saw at the museum. Have students research how the job a piece of equipment they saw at the museum is being done today. Have them discuss the similarities and differences in the technology, and if these changes have impacted the farming industry.
- Have students design a farm tool based on a time period or have them design multiple tools with the same function that would be used at different points in time. (This project has many ADST curriculum tie ins as well)
- Have students use some of the technologies that they saw at the BC Farm Museum and develop their own technology to meet a need that they have. Have them go through the process of design, prototyping, and creating (This project has many ADST curriculum tie ins as well).

BC FARM MUSEUM SCAVENGER HUNT

Try and find a piece of equipment in the BC Farm Museum that does the same (or similar job) as modern equipment pictured. For the last 3 spaces find things that match the description in the box.



SOMETHING THAT A CHILD
WOULD USE FOR FUN

SOMETHING A PROFESSIONAL
(E.G. DOCTOR, ENGINEER,
ARCHITECT...) WOULD
USE

SOMETHING THAT WOULD BE
USED TO HELP AROUND THE
HOUSE.

KNOW

WONDER

LEARN

Blank space for writing under the 'KNOW' header.

Blank space for writing under the 'WONDER' header.

Blank space for writing under the 'LEARN' header.

