



Lesson Plan Template

<p>Lesson</p>	<p>Subject: 19th Century Life: Simple Machines</p> <p>Grade Level: 3-5</p> <p>Scope of Lesson: 1.5 hours</p>
<p>Overview/ Rationale: Central Focus and Purpose for Lesson/ Content</p> <p><i>What is the central focus for the content in the learning segment or unit?</i></p> <p><i>Why is this skill or topic important for the students to learn?</i></p>	<p>Utilize the resources of The Farmers' Museum to facilitate classroom instruction of the Simple Machines curriculum.</p> <p>Many tools that 1840s farmers used can be classified as simple machines. A simple machine is a machine that operates without electricity and is used to make work easier for humans. A simple machine changes the power, speed, or direction of the movement of force. Citizens and farmers of upstate New York in the nineteenth century may not have viewed these machines through today's language of physics; however, they did know that it allowed them to perform tasks and jobs they could not perform without the help they received from these tools and objects. To understand more on the farmers' possible view and knowledge of physics review the section, The Nineteenth Century and Simple Machines. In using the Farmers' Museums collections to understand the life experience of farmers in 1845, it is imperative to appreciate simple machines and how they helped them.</p>
<p>Standards: New York State Next Generation Learning Standards (Specific skills/information that will be learned)</p>	<p>Next Generation Science Standards:</p> <p>K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p> <p>K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p> <p>Next Generation ELA Standards:</p> <p>KR1 Develop and answer questions about a text. (K-PS2-2)</p> <p>KW6 Develop questions and participate in shared research and exploration to answer questions and to build and share knowledge. (K-PS2-1)</p>

	<p>KSL3 Develop and answer questions to clarify what the speaker says. (K-PS2-2)</p> <p>Next Generation Mathematics Standards</p> <p>MP.2 Reason abstractly and quantitatively. (K-PS2-1)</p> <p>NY-K.MD.1 Describe measurable attributes of object(s), such as length or weight, using appropriate vocabulary. (K-PS2-1)</p> <p>NY-K.MD.2 Directly compare two objects with a common measurable attribute and describe the difference. (K-PS2-1) *Connection boxes updated as of September 2018</p>
<p>Learning Targets:</p> <p>Skills/ Procedures</p> <p><i>What do you want the students to be able to understand or do by the end of the lesson? (List in bullet form key concepts and information to be learned.)</i></p>	<p>Students will define “force”, “simple machines”</p> <p>Students will describe the three possible effects on force by a simple machine.</p> <p>Students will be able to define, describe and identify the six types of simple machines. (pulley, lever, wedge, inclined plane, wheel & axle, screw)</p> <p>Students will be able to explain the uses of simple machines in the 1840’s, then compare the uses in their daily lives.</p>
<p>Teacher/ Parent Preparation</p>	<p>To prepare for the lesson, read “The Nineteenth-Century and Simple Machines” (Appendix A)</p>
<p>Content Vocabulary:</p> <p><i>What specific words in the subject do students need to understand by the end of the lesson.</i></p>	<p>Force – a push or a pull</p> <p>Simple Machine – a device that helps us do work</p> <p>Mechanical Advantage – how many times a machine multiplies the effort used</p> <p>Velocity -</p> <p>Lever -</p> <p>Fulcrum -</p> <p>Pulley -</p> <p>Wheel -</p> <p>Axle -</p> <p>Wedge -</p>
<p>Materials Needed:</p> <p>Teacher:</p> <p><i>What materials does the teacher need for this lesson?</i></p> <p>Student:</p> <p><i>What materials does the student</i></p>	<p>Teachers in the classroom/Parents at home: Preview the Interpreter’s Guide.</p> <p>Students should already know what a simple machine is, as well as the concepts of force, and mechanical advantage.</p> <p>Teacher will make copies of the worksheets for each student in the class. For those students without internet, but with an electronic device (ie Chromebook), copy the jump drive provided with the lesson and print out copies of the worksheets. Make copies of the parent guides and answer keys.</p> <p>For students without a device or internet, paper copies of all materials will be copied and a packet with transcripts and pictures.</p> <p>Worksheets, writing utensil</p>

<p><i>need for this lesson?</i></p>			
<p>Procedure: The lesson may need to be taught for a variety of situations. Please consider how the lesson will be taught In Person, Remotely with Internet Access, or Remotely without Internet Access</p>	<p>In Person Instruction</p>	<p>Online Instruction with Internet Access (Google Classroom, etc.)</p>	<p>Paper/Pencil Instruction (Hard copy worksheets, documents, etc. For students without internet access)</p>
<p>Introduction: Opening Activity __15__ Minutes <i>How will you start the lesson to engage and motivate students?</i></p>	<p>Review of Simple Machines, Force, and Mechanical Advantage</p> <p>The DL instructor will teach the three effects of a simple machine.</p> <ul style="list-style-type: none"> - Increase force - Change direction of the force - Change the distance of the force. 	<p>Students will follow the lesson outline provided.</p> <p>Live Tour will be provided on video</p> <p>Students will watch videos as directed, then complete activities or worksheets when prompted.</p>	<p>Teachers will make copies of the video transcript, materials, and worksheets.</p>
<p>Instruction: 60 Minutes total 10 minutes each to demonstrate each of the 6 machines at the museum) <i>What will you do to engage students?</i> -to develop an understanding of the objective(s)</p>	<p>For each station, students will be asked the following questions:</p> <ul style="list-style-type: none"> - What is force? - What is a simple machine? <p><i>A simple machine is a tool that makes a task easier by enabling us to 1) change the direction in which we move an object 2) increase the force needed to move an object, or 3) change the distance over which we move the object.</i></p> <p>Hand out Worksheet #1 – Students will complete each section as they watch the corresponding video.</p>	<p>Video Presentation of Tour</p>	<p>Video transcripts with pictures will be provided to lead students through the tour via a paper guide.</p> <p>Utilize Infographics <i>(see folder)</i></p>

<p><i>-to engage to understand the concepts</i></p> <p><i>What questions will you ask?</i></p> <p><i>What will students do? (Activity)</i></p> <p><i>How will you know if the students are meeting the targets?</i></p> <p><i>What opportunities for practice are given to students?</i></p>	<p>At the start of each video at the station, the instructor (MT) will pose the problem, discuss possible solutions, then demonstrate how the simple machine provides a mechanical advantage.</p> <p>Station 1: Inclined Plane How do you get a heavy item from the ground to the upper floor of a building. - School House - Ramp - Stairs</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples Handicapped Ramp</p> <p>Station 2: Wedge How do you split a piece of metal? - Print Shop Woodshed - Wedge / Maul</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples Hardee Froe Chisel Axe</p> <p>Station 3: Screw How would you get juice out of the apple? - Cider Press How would you get the excess moisture out of the cheese? - Cheese press</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples</p>		
--	--	--	--

	<p>Vise</p> <p>Station 4: Lever How do you lift a heavy weight? - Lippitt Gardens (Move a rock) - Lever and Fulcrum</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples Wheel Barrow Bellows Printing Press</p> <p>Station 5: Pulley How would you lift a heavy bag from the ground straight up to an upper floor. - Sweet Marble Barn - Block and Tackle</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples Flagpole</p> <p>Station 6: Wheel and Axle How do you operate a corn sheller? - Brooks Barn - Corn Sheller</p> <p>Main Barn Classroom – Demo</p> <p>Other Examples Root Grinder Grinding Wheel Bicycle Children’s merry-go-round</p> <p>At the end of the videos, students will fill in any blanks they may have left on the worksheet.</p>		
<p>Closure: _15_ Minutes</p>	<p>Review Content Vocabulary</p>		

<p><i>How will you end the lesson?</i></p>			
<p>Assessment: <i>How will you determine if the students met the lesson targets? (How well did they learn what you wanted them to?)</i></p>	<p>Students will be given the assessment chart to complete. They will be asked to define, describe, and give examples of each of the six simple machines.</p> <p>Print out assessment chart for all students.</p>		
<p>Parent Connection: <i>What instructions, background information, and answers will parents need to assist their student in completing the lesson?</i></p> <p><i>(Additional Readings, instructions, answer keys)</i></p>	<p>If the lesson is being taught at home with internet access, parents will be provided with the overview, copies of completed activity sheets, and the assessment.</p> <p>If the lesson is being taught at home without internet access, parents will be provided with a jump drive (or the jump drive information downloaded onto the student device by teacher), or all paper copies with transcripts will be printed out by the teacher and sent home if there is not a device available to the student.</p> <p>Utilize Simple Machines Infographics</p>		
<p>Differentiation <i>How will you provide for students with varying abilities?</i></p> <p><i>Students who will finish the activity quickly or need to be challenged more:</i></p>	<p>For the Scavenger Hunt worksheet, the complexity of responses can be varied depending on student ability. Examples can be given in picture form, by either drawing or cutting a picture out of an old magazine and pasting it into the box on the sheet. The answers can also be given in written responses requiring complete sentences, including specific lesson vocabulary terms.</p>		

<i>Students with IEP's or 504 Plans:</i>	
Resources References for Resources Used:	https://educators.brainpop.com/lesson-plan/simple-machines-lesson-plan/ https://nyshistorical-my.sharepoint.com/:w:/r/personal/w_baker_farmersmuseum_org/_layouts/15/Doc.aspx?sourcedoc=%7BACB156C1-9169-4B2D-953A-6C81EE8606EA%7D&file=SimpleMachinesInterpretiveGuideUpdated.doc&action=default&mobiledirect=true