

Lakehead Orillia Lesson Plan Template		
Name: Maija Merriam	Date: October 28, 2022	Timing of Lesson: 50-60 minutes
Grade/Subject: Grade 5 Science	Curriculum Strand: Structures and Mechanisms	

Big Idea/Enduring Understandings <i>The global understanding for students. “It is important that students be connected to the curriculum, that they see themselves in what is taught, how it is taught, and how it applies to the world at large.” (Ont. Min. of Educ., 2013)</i> Big Idea: understanding internal and external forces and how they affect natural and built structures Adapted from TVO Learn activity.
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Curriculum Connections and Assessment
Overall Expectation: D2. Exploring and Understanding Concepts

Specific Expectations	Learning Goals	Learning Skills	Achievement Chart	Assessment FOR/AS/OF	Assessment Mode/Strategy/Tool
• Observable and measurable. • Assessment must match expectations	• We will be learning... • Use language that is grade appropriate We are learning to describe practical applications of science and technology in civil engineering and explain how these solve real-world problems.	• Assess separately from curriculum expectations. • Identify one or two that teacher will focus on and/or assess e.g. provide feedback (“FOR”) ☐ Responsibility ☐ Organization ☐ Independent Work ☒ Collaboration ☐ Initiative ☐ Self-Regulation	• Identify 1 or 2 category(ies) from curriculum Achievement Chart that are primarily addressed through this assessment task ☐ Knowledge/Understanding ☐ Thinking ☐ Communication ☒ Application	• Identify assessment purpose(s) (“FOR, AS, OF”) as students demonstrate their progress in achieving the learning goal	• Identify mode and strategies/tasks • Identify the tool used by the teacher to record, describe, or measure students’ learning. • As appropriate, identify tools used by students (“AS”) in order to self/peer assess and/or monitor their own learning.
D2.3 describe forces resulting from natural phenomena that can have severe consequences for human-built structures, and	Success Criteria • I can demonstrate my learning by... (Identify Achievement Chart Connection: Knowledge/Understanding, Thinking, Communication, Application)	Success Criteria • I can demonstrate my learning by... (Identify exactly what you are expecting your students to demonstrate for the chosen learning skill	Application of knowledge and skills (e.g., concepts and processes; procedures related to the safe use of tools, equipment, materials,	Assessment AS Learning	Mode: Do Strategy: Building a structure Tool: Self-assessment (exit ticket)

identify structural features and materials that can allow such structures to withstand these forces	● I can explain the difference between internal and external forces ● I can describe how natural forces can affect human-made structures	● I can work with others to design and test a structure	and technology; investigation skills) in familiar contexts		
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Considerations for Planning
Prior Learning: <i>Review and connect prior experiences, knowledge and skills</i> Knowledge about forces acting on structures (external, internal, live loads, dead loads), basic understanding of the Engineering Design Process.
Differentiation: <i>Consider Choice and Flexibility with Open-ended and Parallel tasks</i> This lesson plan could be adapted for online learning. The only physical resources are relatively easy to get access to (and students could substitute for alternatives).
Resources and Technology: <i>List ALL items necessary for the delivery of the lesson. Attach resources and materials students will use.</i> Devices (computers/tablets/iPads/etc) to access website (alternatively one projector screen for all to see), anchor chart & markers (or virtual alternative), popsicle sticks, binder clips, clothespins

Three Part Lesson	
Minds on: Motivational Hook/Engagement /Introduction (approximately 10-20%) <i>How I will engage the learners (motivational strategy, hook, activation of learners prior knowledge, activities, procedures, compelling problem)</i>	
I will begin by asking students consider what is important to think about when designing structures. We will make a list (based off TVO Learn answers and anything else students want to add): location, materials, shape, and size. (2-4 mins) Next, I will introduce the idea of civil engineers and then walk students through the “Forces” section of the TVO Learn activity. They will already have a base understanding so it is more of a review. (3-5 mins)	Critical Thinking Questions: <i>Questions used to activate prior knowledge and develop critical/creative thinking</i> ● What might we need to consider before designing a structure? ● Why are these important parts to think about? ● Can you think of other examples of compression, tension, torsion, and/or shearing forces?
Action: During /Working on it (approximately 60%) <i>How I will provide practice of new concepts, and have them demonstrate new learning. Consider what students will do when work is completed or finish early that is connected to the lesson/subject.</i>	
I will guide the students through the TVO Learn Action activities beginning with going over “Location and materials.” I will continue through the sections until “Review your learning.” (10-15 mins)	Critical Thinking Questions: <i>Questions that promote engagement and empowerment.</i> ● What are you including in your design? ● How might you work together in your group(s) to create your structure?

Next, I will ask them to imagine they were civil engineers and they were trying to build a structure. I will give them the “Grade 5 Science Ontario Focus - Building Design” handout from TVO Learn and ask them to plan out their structure in groups of 3-4. (5 mins) I will then give them popsicle sticks, binder clips, and clothespins and they can build their structure (influenced by this post). (5-10 mins) Then we will test the structure with a fan to simulate wind. They will then have time to make modifications to their structures and re-test. (5-10 mins)	● What did (/not) work with your structure? ● What could you change to get a different result? ● How will you know if your structure is strong enough?
Consolidation & Connection (Reflect, Connect, and Assess) (approximately 10-20%) <i>How I will bring all the important ideas from the learning experiences together for/with students. How I will check for understanding. (exit ticket, elbow partners, self-assessment)</i>	
Next, we would have a debrief using the critical thinking questions. (5-7 mins) Finally, they will complete an exit ticket consisting of three questions based off the success criteria, see Gr5 Sci Exit Ticket document. (2-3 mins)	Critical Thinking Questions: <i>Questions that will allow students to reflect and connect with Learning Goals and Success Criteria.</i> ● How could you build your structure differently? ● Did any of your classmates’ structures stand out to you? Why? ● What might you do differently if you wanted to make your building wider? Taller? ● We focused on wind for this project, but if we wanted to withstand earthquakes what might we change? ● What might you need to think about if we wanted to test the strength of our structures instead of stability? ● How might you use what you learned to build a bridge rather than a tower?
Next Steps and Lesson Reflection - Placement Only <i>Next Steps: After assessing Consolidation and student learning demonstrations, reflect how this affects the next lesson.</i> <i>This portion of the lesson will be completed following the conclusion of the lesson (What went well, what will I change - see reflection questions)</i>	
N/A	