

Bachelor of Education (Secondary) STEM

Lesson Plan

Monday,
December

Lesson Title: Simple Mechanics of House Building Lesson # 2 Date: 15th 2020

Name: Julia Subject: Physics Grade(s): 11

Rationale:

This lesson is a continuation of the Navigation and the addition of vector and scalar quantities lesson plan, but still stands on its own. It elaborates on topics covered in the previous lesson following the same rationale, but also begins to introduce new physics concepts and ideas. The big idea that an object's motion can be predicted, analyzed, and described is explored in greater depth. Students continue to expand their vocabulary and thinking around objects in motion. They are challenged to relate these ideas to objects and means of transport. Students continue to reflect on their own experiences and identity as a means of learning.

Core Competencies:

Communication	Thinking	Personal & Social
ibid	ibid	ibid

Big Ideas (Understand)

ibid

Learning Standards

(DO)	(KNOW)
Learning Standards - Curricular Competencies	Learning Standards - Content
ibid	Ibid horizontal uniform and accelerated motion

Instructional Objectives & Assessment

Instructional Objectives (students will be able to...)	Assessment
<ul style="list-style-type: none"> • Mathematically define accelerated motion in an object • Differentiate between acceleration and other forms of motion • Apply First Peoples perspectives and knowledge, other ways of knowing, and local knowledge as sources of information • Analyze cause-and-effect relationships • Implement multiple strategies to solve problems in real-life, applied, and conceptual situations 	<ul style="list-style-type: none"> • Kahoot game • Review Questions • Reflective Questions • Worksheet

Prerequisite Concepts and Skills:

In the previous session students were introduced to vector and scalar quantities addition and subtraction and right-angle triangle trigonometry. These topics will be reviewed and expanded on.

Indigenous Connections/ First Peoples Principles of Learning:

Learning recognizes the role of Indigenous knowledge – The knowledge of first people has not always been acknowledged and is still often put aside to focus on post-industrial Euro-centric cultures. Students will consider other ways of knowing from an Indigenous science perspective. Historically, Indigenous people used many means of transportation that can be used to demonstrate the idea of motion. The region of these communities highly impacted which means of transportation was most effective.

For example, canoeing was an essential means of transportation for coastal indigenous people in addition to being a sense of strength and pride. In this video Tsimka Martin, a member of the T'ashii paddle school in Tofino talks about her relationship with canoeing.

<https://www.youtube.com/watch?v=ZyzE8fCSDbo> (5 min)

Universal Design for Learning (UDL):

This lesson plan supports learners with multiple intelligences:

Interpersonal – This lesson heavily supports interpersonal students by asking them to reflect on their own experiences by giving them the option to choose a means of transportation that relates to them or indigenous people.

Existential – Students will be given opportunities to relate big ideas in physics their own experiences in the world.

Visual Spatial – A video demonstrating the motion, purpose and significance of canoeing is used to support indigenous learners.

Interpersonal – Students will be provided with indigenous cultural views and believes and be asked to relate them to fundamental physics content.

Verbal-Linguistic – Students will be given a several short lecture on some key terms and concepts. They will also be asked to present their learning in writing.

Logical Mathematical – Students will be presented with the idea of acceleration in terms of mathematical variables.

Naturalistic – Students will be supported by asking them to reflect on how indigenous people navigated the natural world. In the canoeing video, Martin also talks about how canoes are made using nature. The video has a very holistic tone to it.

Differentiate Instruction (DI):

Ibid

A.L. will be supported in this lesson by being given extra time to complete their worksheet and reflective questions if needed.

Materials and Resources

Projector, prepared power point, prepared questions, worksheet

Lesson Activities:

Teacher Activities	Student Activities	Time
Introduction (anticipatory set – “HOOK”): As a class we review vector and scalar quantities and right angle trigonometry as a means to add and subtract vector quantities	Students will participate in a kahoot game. They will be allowed to use their phones or electronic devices if they have access to one. If not, they will be	20 min

<p>focusing more on the later. We will do this by starting the class with a Kahoot game. It will be used to help the students review their learning and to help me assess how well the class is comprehending the big ideas and the curricular content covered in the previous lecture.</p> <p>Using the information from the Kahoot game, I will review questions relating to content areas students are having trouble grasping. These questions will have been prepared ahead of time and I will try to relate it to their oral presentations done in the previous lesson plan.</p>	<p>provided with either a tablet or a Chromebook.</p> <p>Students will individually work on assigned word problems. They will be given 2 minutes per problem and before they are solved. Students are given time to correct their work and ask questions in between problems.</p>	
<p>Body: Students will be introduced to new vocabulary acceleration. Acceleration will be connected to their previous descriptive vocabulary velocity and change in time. The students will be introduced to the equation for acceleration. Variables will be defined as a group. The equation for acceleration will be compared to the equations for speed, displacement, velocity and change in time. Units will be emphasized.</p> <p>I will guide students through their reflection on the different means of transportation they use and used by indigenous people. As they identify transportation methods, I will identify the regions that rely on these forms of transportations and whether it is still used.</p> <p>I will give an example describing canoeing as a means of transport using the new and reviewed vocabulary. Before going over the example, we will watch a short video showing how important canoeing was for coastal indigenous people. In this video Tsimka Martin, a member of the T'ashii paddle school in Tofino talks about her relationship with canoeing. https://www.youtube.com/watch?v=ZyzE8fCS_Dbo (5 min)</p> <p>I will ask students to use one of the given examples or their own and to use their new and reviewed vocabulary to describe the object in motion. They will be given the option of working individually or collaboratively with their peers to answer the following questions:</p>	<p>Students will be introduced to new vocabulary acceleration. Students will note and reflect on their previous knowledge and try to connect the equations they previously were introduced to with the new equations.</p> <p>Students will be asked to reflect on different means of transportation they use and that different groups of indigenous people use.</p> <p>Students will watch the video and listen to the example. They will wither partner up or work individually to answer the questions provided to them.</p> <p>Once done they will hand in their work</p>	<p>45 min</p>

<ol style="list-style-type: none"> 1) Is your chosen means of transportation used by indigenous people? 2) Do you have a personal relationship to this means of transportation? 3) Describe how your transportation system is displaced. 4) Describe how your transportation system maintains speed. 5) How does your transportation system change direction? 6) How does your transportation system accelerate? How does your transportation deaccelerate? <p>I will quickly check the handed in work for understanding. If there is any confusion, I will address it in either in this lesson or the next lesson.</p>		
<p>Closure: For the end of class students will be given a worksheet to complete. When possible the worksheet will incorporate indigenous perspective and means of transportation. I will have 5 questions aimed at challenging their ideas of acceleration, velocity and speed. I will walk around the class and check in with individual students. The worksheet will be due on Thursday.</p>	<p>Students will be given a worksheet to complete. If they do not complete it before the end of class students will hand it at the start of the next class.</p>	<p>10 min</p>

Organizational Strategies:

ibid

Proactive, Positive Classroom Learning Environment Strategies:

ibid

Reflections (if necessary, continue on separate sheet):

ibid

References

CanadianWildlifeFed. (2014, December 12). First Nations Transportation: The Canoe. Retrieved December 19, 2020, from <https://www.youtube.com/watch?v=ZyzE8fCSDbo>

Learning requires exploration of one's identity. (2019, August 09). Retrieved December 19, 2020, from <https://firstpeoplesprinciplesoflearning.wordpress.com/learning-requires-exploration-of-ones-identity/>