UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

LESSON PLAN

Candidate's name: Aurora Mernickle

Grade/Class/Subject:	Grade 1/2 - Science/ELA	School:	Dragon Lake Elementary
Date:	November 10, 2022	Allotted Time:	45 - 60 min
Topic/Title:	Contact Forces – Friction, Tension, Compression		

1. LESSON ORIENTATION

Key resources: Instructional Design Map

Briefly, describe purpose of lesson, and anything else to note about the context of lesson, students, or class, e.g. emergent learning needs being met at this time, elements of focus or emphasis, special occasions or school events.
The purpose of this lesson is to inspire inquisition into how forces interact with objects in everyday life. Students will make connections with types of forces that require contact and how these forces affect the objects that they touch. This is an age group where students enjoy playing so combining play with scientific discovery is a perfect way to explore the world around us.

1. CORE COMPETENCIES

Key resources: https://curriculum.gov.bc.ca/competencies

Core /Sub-Core Competencies *(check all that apply):*	*Describe briefly how you intend to embed Core Competencies in your lesson, or the role that they have in your lesson.*
☒ COMMUNICATION – Communicating ☒ COMMUNICATION – Collaborating ☐ THINKING – Creative Thinking ☒ THINKING – Critical Thinking ☒ THINKING – Reflective Thinking ☒ PERSONAL AND SOCIAL – Personal Awareness and Responsibility ☐ PERSONAL AND SOCIAL – Positive Personal and Cultural Identity ☒ PERSONAL AND SOCIAL – Social Awareness and Responsibility	-Students will share ideas, questions and inquiries. -Students will reflect on how this knowledge is useful and meaningful to them and society. -Students will reflect and make connections to previous learning to understand a new concept. -Students will share how they understand the material covered. -Students will make connections with family and community with regards to how this is meaningful. -Students will develop an understanding regarding how each student can have different ideas but still be correct while practicing acceptance & tolerance.

2. INDIGENOUS WORLDVIEWS AND PERSPECTIVES

Key resources: First Peoples Principles of Learning (FPPL); Aboriginal Worldviews and Perspectives in the Classroom

FPPL to be included in this lesson *(check all that apply):*	*How will you embed Indigenous worldviews, perspectives, or FPPL in the lesson?*

☐ Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors. ☒ Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place). ☒ Learning involves recognizing the consequences of one's actions. ☐ Learning involves generational roles and responsibilities. ☐ Learning recognizes the role of Indigenous knowledge. ☐ Learning is embedded in memory, history, and story. ☒ Learning involves patience and time. ☐ Learning requires exploration of one's identity. ☐ Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.	-Students will recognize that they are learning together and that it takes time and practice to gain skills. -Students will practice skills of respect, understanding of one another and acknowledgment of how the individual actions of one can effect many.

3. BIG IDEAS

Key resources: https://curriculum.gov.bc.ca/ (choose course under Curriculum, match lesson to one or more Big Ideas)

What are students expected to understand? How is this lesson connected to Big Idea/s or an essential question?
Forces influence the motion of an object.

4. LEARNING STANDARDS/INTENTIONS

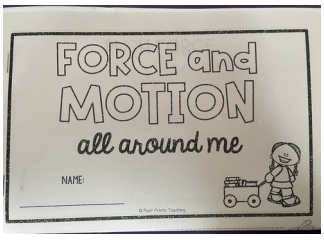
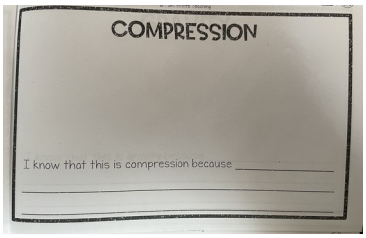
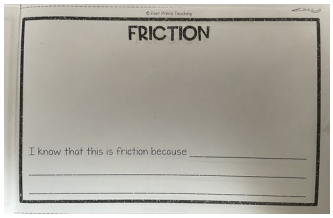
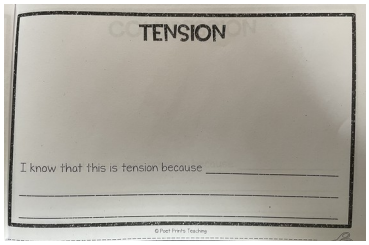
Key resources: https://curriculum.gov.bc.ca/ (choose course under Curriculum)

Curricular Competencies: *What are students expected to do?*	**Content:** *What are students expected to learn?*
Questioning and predicting -Demonstrate curiosity and a sense of wonder about the world. -Observe objects and events in familiar contexts. -Ask simple questions about familiar objects and events. Planning and conducting -Make and record observations -Safely manipulate materials to test ideas and predictions -Make simple measurements using informal or non-standard units. Processing and analyzing data and information -Experience and interpret the local environment -Sort and classify data and information using drawings, pictographs and provided tables -Compare observations with predictions through discussion -Identify simple patterns and connections	Types of forces

<u>Applying and innovating</u>. -Take part in caring for self, family, classroom and school through personal approaches -Transfer and apply learning to new situations Generate and introduce new or refined ideas when problem solving <u>Communicating</u> -Communicate observations and ideas using oral or written language, drawing, or role-play -Express and reflect on personal experiences of place	

5. ASSESSMENT PLAN

Key resources: Instructional Design Map and https://curriculum.gov.bc.ca/classroom-assessment

How will students demonstrate their learning or achieve the learning intentions? How will the evidence be documented and shared? Mention any opportunities for feedback, self-assessment, peer assessment and teacher assessment. What tools, structures, or rubrics will you use to assess student learning (e.g. Performance Standard Quick Scale)? Will the assessments be formative, summative, or both?
<u>Formative assessment:</u> (used to ensure that the information is available and students are getting the most from their learning) Are the students connecting with the material through inquiry and discovery? Are the students making connections with how the scientific method can be applied to real life situations? Are the students engaged in a positive way (thumbs up, smiles, collaboration, sharing stories and showing interest)? Are students able to extend their learning of these concepts into personal experiences? Are students able to engage in scientific inquiry and understand the steps of the process with independent thought? <u>Summative Assessment:</u> After exploring the three different types of contact forces students will be asked to think about other real-life examples of these forces and display them in their Force and Motion All Around Me workbook. This will show the student's understanding of the contact forces covered and determine whether they are able to make connections.          

https://www.poetprints.ca/blog/force-and-motion-activities-for-kids

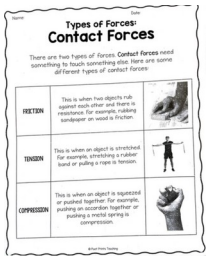
6. DESIGN CONSIDERATIONS

Key resources: Instructional Design Map

Make brief notes to indicate how the lesson will meet needs of your students for: differentiation, especially for known exceptionalities, learning differences or barriers, and language abilities; inclusion of diverse needs, interests, cultural safety and relevance; higher order thinking; motivations and specific adaptations or modifications for identified students or behavioural challenges. Mention any other design notes of importance, e.g. cross-curricular connections, organization or management strategies you plan to use, extensions for students that need or want a challenge.
-Students will have multiple sources of material to connect the understanding (verbal, pictorial, and experiential). -We will have an extra support person to help manage the activity and possible challenges. Students will be experimenting with different materials to see how each interacts with another. This can lead to some challenges with regards to self moderation and social emotional learning. -Students will be able to communicate with written, verbal and pictorial interpretations. -Vocabulary needed for understanding the lesson will be pre-taught and integrated throughout the lesson.
Required preparation: *Mention briefly the resources, material, or technology you need to have ready, or special tasks to do before the lesson starts, e.g. rearrange desks, book a room or equipment.*
-We will have to set up a ramp set up using a board. -We will need 5 toy cars. -We will need 1 or 2 squishy balls. -We will need a rubber tension band. -We will need a few different types of materials to cover the board (felt material, cardboard, fleece blanket, other classroom supplies). -We will need 22 copies of Force and Motion All Around Me Booklet -We will need the vocabulary words printed with definitions for contact forces. -We will need the smart board set up to look at and work through the vocabulary.

7. LESSON OUTLINE

Instructional Steps	**Student Does/Teacher Does** *(learning activities to target learning intentions)*	**Pacing**
OPENING: *e.g. greeting students, sharing intentions, look back at what was learned, look ahead to what will be learning, use of a hook, motivator, or other introduction to engage*	-Teacher will ask all students to meet at the carpet for some discovery. -Teacher will ask students if they remember the previous lesson about forces. -Class will have a short discussion about what we remember about forces and teacher will introduce the new vocabulary ideas: • Contact Forces	10 min

students and activate thinking and prior knowledge	• Friction • Tension • Compression and give a real life example of each. -We will discuss as a class what our understanding of each of these forces means.	
BODY: *Best order of activities to maximize learning -- each task moves students towards learning intentions* *Students are interacting with new ideas, actively constructing knowledge and understanding, and given opportunities to practice, apply, or share learning, ask questions and get feedback* *Teacher uses learning resources and strategic opportunities for guided practice, direct instruction, and/or modelling* *Can include: transitions, sample questions, student choices, assessment notes (formative or otherwise), and other applications of design considerations*	-Teacher will then ask students to match the word with it's meaning as a group: The teacher will ask for 2 volunteers to come and read the words and the definitions and will be held up and read by the teacher. As a class we will determine which definition matches which word.  Types of Forces: Contact Forces FRICTION TENSION COMPRESSION https://www.poetprints.ca/blog/force-and-motion-activities-for-kids -Teacher will then show the class ,with physical examples ,what is meant by each type of force. • A squishy ball will be passed around the class for the students to determine what type of force it is. We will discuss as a class why this is compression and write our ideas on the whiteboard. • A stretchy band will be passed around the class and we will discuss why this is tension and write our ideas on the whiteboard. • To demonstrate friction the teacher will have a ramp set up at the circle with different options to put on the ramp and a few cars for each of the students to try on each of the surfaces. • We will discuss as a class, on what material did the car go the quickest and on what material did it go the slowest. • We will try cars side by side on two different materials to compare their speed. • We will discuss why one car might be faster or slower than the other. As we think about this teacher will have students feel the different materials to get an understanding of friction. We will write our ideas on the whiteboard.	5 min 10 min

CLOSING: *Closure tasks or plans to gather, solidify, deepen or reflect on the learning* *review or summary if applicable* *anticipate what's next in learning* *"housekeeping" items (e.g. due dates, next day requirements*	-Teacher will ask the helpers to hand out the Forces all around us booklet and show students which pages are to be completed (compression, tension and friction) while talking about some possible examples. -Students will then be asked to take it to their desks and work independently or with a partner and fill out with their ideas. -Students will be asked to write, draw and colour their ideas. -Teacher will circulate around the class giving feedback, support and encouragement. -When students finish they will be asked to put their hand up to have their work checked before putting it in the bin.	20 min

9. REFLECTION *(anticipate if possible)*

Did any reflection <u>in</u> learning occur, e.g. that shifted the lesson in progress?
What went well in the lesson (reflection <u>on</u> learning)?
What would you revise if you taught the lesson again?
How do the lesson and learners inform you about necessary next steps?
Comment on any ways you modelled and acted within the Professional Standards of BC Educators and BCTF Code of Ethics?
If this lesson is being observed, do you have a specific observation focus in mind?

Did the students enjoy the lesson?

-The students were inquisitive about the subject and made brave attempts to answer the inquiries about certain types of contact forces. The were engaged and interested.

Were intentional connections made and can we build on this process?

-Students were able to make connections with previous understanding and make extensions to their own everyday life experiences.

Can children have a take home message that they feel good about?

-Students were able to see that we are all learning together and that we may not always have the correct answer but if we are open to taking chances then we can learn.
Was the time allotted effective?

-The time allotted was very effective and each section of the lesson seemed like just enough for the level of the students.

Was the material inclusive?

-All students were able to connect with the material through different methods. Some of the students understood the connections through hands on, some understood through language and some understood through their booklet reflections and questions.

Do the students have connections to past and future learning experiences?

-The students can take from the lesson some real life connections and understanding about the world around them.

What would I do differently next time?

-I would ensure that the positioning of the students was more strategic as there were a few students sitting together that needed more separation to gain the best chance of success.

-I would try to find a few more examples to show the class or generate a list from the internet to give more detail about and make more connections with the different contact forces.