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**Lesson Plan Template (Revised 2020)**

**Elementary Years**

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| **Name:** | **Daniel Mulhall** |

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| **Grade** | 2 | **Topic** | Science – Forces and Motion |  |
| **Date** | November 17, 2020 | **Allotted Time** | 55 minutes |  |
| **STAGE 1: Desired Results****Cite sources used to develop this plan:**  |
| <https://curriculum.gov.bc.ca/curriculum/science/2>‘Asking Questions and Finding Solutions’ by Riley Flynn ‘Pushes and Pulls’ by Anna Claybourne**FORCES IN MOTION DLC KIT (toy cars, car tracks, and books)** |

**Rationale**: *How is this lesson relevant at this time with these students? Why is it important?*

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| This lesson will help students understand the world around them. Real world examples and exciting demonstrations will help make this lesson accessible and memorable. Students will learn about forces and motions they see in everyday life (magnets, friction, gravity, pressure). Students will learn through exciting demonstrations and hands on experiential way with the car ramp activity, which will get students physically interacting with their learning. This lesson will set the foundation for future science lessons on forces and motions, as well as get students to think about the forces and motions they experience in their daily lives. Students will get to make predictions and wonder. |

**Core Competencies:** <https://curriculum.gov.bc.ca/competencies> (refer to “profiles” for some ideas)

*Which sub-core competencies will be the focus of this lesson? Briefly describe how and why:*

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| **Communication*** Communicating
* Collaborating
 | **Thinking*** Creative Thinking
* Critical & Reflective Thinking
 | **Personal and Social*** Personal Awareness & Responsibility
* Positive Personal & Cultural Identity
* Social Awareness & Responsibility
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|  |  **Students will need to think critically about the world around them. Students will begin to develop an understanding of the world they live in and will need to think creatively about the demonstrations they see. Students will need to be critical as they consider new concepts and reflect on how they apply to their daily lives. As students make predictions and inferences, they will be developing reflective thinking skills.**  |  |

**First Peoples Principles of Learning (FPPL):**

*How will Indigenous perspectives, knowledge & ways of knowing be acknowledged, honoured or integrated into this learning experience?* (Jo Chrona’s Blog: <https://firstpeoplesprinciplesoflearning.wordpress.com/>)

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| **FPPL to be included in this lesson:** | **How will the FPPL be embedded in lesson:** |
| Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place) | **“Where possible, learning activities should be a part of real-life situations, but where that is not possible, they should reflect real-life situations so that the knowledge learned is directly transferable to the learner’s life. In this way the learning also helps to create and support community.”**This lesson will use real world examples to assist learning in making connections between the learning and their lived experiences. Students will explore forces and motions they see in their everyday life. Students will get to physically interact with their learning through the examples. |

**Curriculum Connections:** <https://curriculum.gov.bc.ca/> (Curriculum)

*What Big Ideas (Understand),Curricular Competencies (Do), Content (Know) does this lesson develop?*

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| ***Understand***Big Idea(s):Forces influence the motion of an object.*Essential or Guiding Question(s):*How can we understand the world we live in more? How can we have fun with science and apply it to real situations? What are examples of forces and motion? How are things affected by forces? How do objects fall down? What is gravity? What is air resistance and how does it work with gravity? What is friction? How can we begin to understand friction and how it works? How do objects more over different surfaces/materials? |
| ***Do***Curricular Competencies (Learning Standards):Demonstrate curiosity and a sense of wonder about the worldSafely manipulate materials to test ideas and predictions |
| ***Know***Content (Learning Standards):types of forces:magnetsstatic electricitybalanced and unbalanced forces:the way different objects fall depending on their shape (air resistance)the way objects move over/in different materials (water, air, ice, snow) |
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**STAGE 2: Assessment Plan**

FORMATIVE ASSESSMENT: (Assessment as Learning; Assessment for Learning)

Students will learn through experiencing and observing demonstrations. Students will make predictions and estimates about the distance the car will travel over the different surfaces. Students will demonstrate their learning through answering questions.

SUMMATIVE ASSESSMENT: (Assessment of Learning)

An exit slip will be used for students to demonstrate their learning. The exit slip will allow students to write (or draw) one thing they learned during the lesson. This will help solidify their learning and provide the teacher with useful feedback

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| **The Learning Intention:** *What will students learn in this lesson? (i.e. Learning Standards)* | Students will learn about forces and motions in the world.Students will learn about new forces like air resistance, static electricity, and friction.Students will learn to make predictions and test those predictions in experiments.Students will learn to wonder and make guesses about the world around them.Students will connect learning to their lived experiences.  |
| **Evidence of Learning:** *How will students demonstrate their learning? What does it look like?* | Students will demonstrate their learning by paying attention during the demonstrations.Students Will demonstrate their learning by making predictions an estimates during the race car track activity.students will demonstrate their learning by completing the exit slip.students will demonstrate their learning by participating in discussion, asking questions, and answering questions. |
| Criteria:*What do students need to do to meet or achieve the learning intention?* | students need to participate in the discussions.students need to complete the exit slip to the best of their ability.students need to make predictions and guesses based on knowledge and learning.students need to be actively engaged in the learning.students need to consider what they are seeing and how it applies to real life situations. |

**Planning for Diversity:**

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| **Learning Target:** *In what ways does the lesson meet the needs of diverse learners?* *How will you plan for students who have learning/behaviour difficulties or require enrichment?* |
| Students need to/must dostudents need to watch the demonstrations students need to complete the exit slip students need to listen to the discussions Access/All | Students can dostudents can watch the demonstrations and consider what it teaches them students can complete the exit slip to demonstrate their understanding and learning from the lesson students can participate in the discussions Most | Students could do/try tostudents could try to understand the demonstrations and think about how they apply to real world situations .students could try to complete the exit slip to an extending level to demonstrate their understanding and connections they made students can participate in the discussions by asking extending questions and providing insightful contributions .Few/Challenge |

**STAGE 3: Learning Plan**

**Resources, Material and Preparation:** *What resources, materials and preparation are required?*

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| ‘Pushes and Pulls’ by Anna Claybourne‘Asking Questions and Finding Solutions’ by Riley Flynn.**FORCES IN MOTION DLC KIT (toy cars, car tracks, and books)car tracks, carseraser, cup, coin, paperclip**balloonModellinng clayJenga blocks |

**Organizational/Management Strategies:** *(anything special to consider?)*

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| Use the carpet so all students can see the demonstrations.Consider noise level and preloading students with the expectations.Consider cleanup of materials to avoid mess (laying something under the track for the water/snow portion).Print exit slips before lesson.Have everything ready to go so class time is not wasted.Consider students who need extra guidance for staying on task.Discuss with EA before hand to see if anything may upset or trigger a student. |

**Lesson Development:**

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| **Connect:***How will you introduce this lesson in a manner that engages students and activates their thinking? Activate or build background knowledge, capture interest, share learning intention.* | Pacing |
| **Teacher will** Make announcement that reading time will end in 2 minutes. Put 2 minutes on the timer (this will help assist students with transitioning to the next lesson).When the 2-minute timer is up, ask all students to put their books away in their appropriate places. Ask students to take their seats when they are done.Once students have taken their seats, gather the attention of the class. Explain what we will be doing today. First, preload/explain that we will be doing a lot of fun and exciting things in science today. Explain the expectations for this lesson clearly. Explain that the noise level will need to stay low and students must be paying attention and not wandering the room, talking with friends, or anything else. As per conversation with CT, advise the lesson will stop if behaviour is not meeting these standards. Ask all students to come and join my on the carpet so I can read ‘Asking Questions and Finding Solutions’ by Riley Flynn.This book is designed to get students thinking about science and asking questions about the world around them. Read the book to the students.Ask the class what they understood from the book (chose 3-5 students to share their takeaways). Direct the conversation to science and how we need to wonder and think creatively about the world around us!Explain that today I will be doing lots of demonstrations about different forces and motions. Ask if they are ready? And remind about the expectations for behaviour again so students are informed. (Quiet, hands to self, no talking, no touching any of the demonstration supplies, raising hand, not getting in others personal space) | **Students will** Put books away in proper place and begin to transition into science Pay attention as teacher explains the expectations for the lesson. Consider how to meet these expectations and remain respectful of others learning.Gather on the carpet and listen as the teacher reads the book. Consider the content and how they themselves can wonder about science.Share a takeaway from the book and demonstrate an understanding of the meaning of the book (to wonder and ask questions about the world around you)Listen as the lesson is explained.Say yes and be ready to learn and be excited by the learning! | 10 mins |

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| **Process:** *What steps and activities are you going to use to help students interact with new ideas, build understanding, acquire and practice knowledge, skillsand/or attitudes? In what ways have you built in guided practice?* | Pacing |
| **Teacher will**  Demonstrations will be done on the carpet so all students can see.Open ‘Pushes and Pulls’ by Anna Claybourne to the page on pushes and pulls. Read about pushes and pulls and then quickly demonstrate the forces in action with the toy car and modeling clay.Explain that pushes and pulls are forces that we see in everyday life. Provide a few examples they see on a daily basis (this is K content so it should be a good reminder and a good starting point to scaffold our learning to more grade appropriate forces).Open ‘Pushes and Pulls’ by Anna Claybourne to the page on pressure. And read.Blow up a balloon and let it go (this should cause a level of excitement and noise – which is the point! This is meant to grab their attention!!!)Count backwards from 5 to refocus their attention back on the learning.Explain what happened when I let the balloon go and describe what pressure is. Provide other examples the students will be familiar with.Open ‘Pushes and Pulls’ by Anna Claybourne to the page on Dropping/Gravity. Knock over a Jenga block tower to demonstrate gravity. (this is also a concept that is not in the grade 2 content specifically but is building towards the lesson). Jenga tower will be prebuilt.Now that a few forces have been mentioned, we can move into forces specifically mentioned in the grade 2 content:Next, talk about static electricity. Demonstrate this by blowing up a balloon and asking for a volunteer. Rub the balloon on their head and then hold it up and watch the hair stand up. Explain that this is static electricity which is a force. Next, discuss air resistance how the shape of an object affects how it travels through the air. Hold up a piece of blank paper and a paper airplane. Ask which one will travel further through the air if I throw them? Ask them to predict (They will probably pick the paper airplane because they are familiar with them). Ask them why? Ask them if they have ever considered why? Push their thinking further by saying “both are the same piece of paper, they weight the same and are made from the same material, so why does on travel further when thrown?). Ask them to make a prediction by raising their hand if they think the paper airplane will travel further. throw both pieces of paper and see the results. Explain air resistance and how it is a force all around us all the time.Next talk about magnets and mention the white board and how we see magnets every single day! Give a quick (grade appropriate) explanation of magnets.Last but not least, ask if anyone knows what friction is?Ask all students to rub their hands together for 30 seconds. Ask them if they noticed the heat? Explain that this is friction, and it happens when two objects rub together!Stand up and move to the desks in the front row. Ask students to rotate on the carpet so they are still facing me. Put a cup, an eraser, a coin, and a paperclip on the desk. Ask students to predict which object will fall off and hit the floor first if I tilt the desk?Have students vote to see which one they think.Remind students that the gravity of the desk being tiled is what is making the objects fall, but also ask them to consider the friction of the objects rubbing along the desk.Tilt the desk and note which object falls first! Explain how the friction of the object was less because it is smoother so there was less rubbing together!Ask if anyone has any questions. Take about 5 questions here and allow students to wonder and ask questions about things they have seen (this ties back to the message of the book we read at the beginning).Ask students if they are ready to test their understanding of friction in a fun activity?Ask them to clear a space on the carpet and wait quietly while I get the next activity ready. | **Students will** Follow along as the teacher reads about pushes and pulls. Reflect on how they may know these already from previous learning.Watch the demo and consider. Follow along as the teacher reads about pressure. Watch the demo and consider. Follow along as the teacher reads about Gravity and dropping. Watch the demo and consider. Follow along as the teacher explains about Static electricity. Watch the demo and consider. Follow along as the teacher discusses air resistance. Predict which paper will travel through the air further? Consider why? Ask questions and make a guess. Raise or lower thumb to show guess. Observe the demo and determine if they guessed correctly or not. Follow along as the teacher talks about magnet and think about the magnets in the class they see every day. Rub hands together and notice the warmth it generates. Begin to think about friction. Follow the teacher.Use knowledge of friction, predict which object will fall off the desk first! Think about why they will move at different speeds!Watch and see if prediction was accurate.Ask questions by raising hands and waiting to be selected. Ask relevant questions to extend learning. Wait quietly as the teacher sets up the next part of the lesson. | 15 mins |

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| **Transform:** *How will students apply or practice their learning? Can they show or represent their learning in personalized ways? What are the choices for student task?* | Pacing |
| **Teacher will** In the space the students make on the carpet, lay down a race car track.Give the special helper an object and ask them to put the object to mark where the car stops.Shoot the car down the racetrack and have the special helper mark where the car stops.Explain that this will be our standard because this is how far the car travels on the track in prime conditions.Now, lay paper along the track. Ask students to predict how this will affect how far the far will travel? Allow students to make predictions and ask them to raise their thumbs for further and put their thumbs down for shorter distance. Shoot the car down the racetrack and have the special helper mark where the car stops.Discuss. Discuss how the greater friction of the paper cause the car to travel a shorter distance.Next, sprinkle some salt on the racetrack.Ask students to predict how this will affect how far the far will travel? Allow students to make predictions and ask them to raise their thumbs for further and put their thumbs down for shorter distance. Shoot the car down the racetrack and have the special helper mark where the car stops.Discuss. Discuss how the car travels differently across different surfaces and how the salt caused friction and stopping forces on the car. Next, sprinkle some soil on the racetrack.Ask students to predict how this will affect how far the far will travel? Allow students to make predictions and ask them to raise their thumbs for further and put their thumbs down for shorter distance. Shoot the car down the racetrack and have the special helper mark where the car stops.Discuss. Discuss how the car travels differently across different surfaces and how the soil caused friction and stopping forces on the car. Quickly clean the salt and soil off the tracks by tilting it into my hand and putting it in the garbage.Next, go to the door and grab some snow and sprinkle it along the racetrack.Ask students to predict how this will affect how far the far will travel? Allow students to make predictions and ask them to raise their thumbs for further and put their thumbs down for shorter distance. Shoot the car down the racetrack and have the special helper mark where the car stops.Discuss. Discuss how the snow affected how the car travelled.Wait a minute or two for the snow to melt.Ask students to predict how the water will affect how far the far will travel? Allow students to make predictions and ask them to raise their thumbs for further and put their thumbs down for shorter distance. Shoot the car down the racetrack and have the special helper mark where the car stops.Discuss. Discuss how the water affected how the car travelled.Discuss how the car travelled different distances based on the forces acted upon it! Allow discussion and questions to be asked from the students. Relate to real life experiences (swimming, falling, playing in snow, etc) | **Students will** Make a space for the racecar track/Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this)Consider how the paper will change the cars distance. Make a prediction.Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this).See if the prediction made was correct Why not? Why? ConsiderConsider how the salt will change the cars distance. Make a prediction.Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this).See if the prediction made was correct Why not? Why? ConsiderConsider how the soil will change the cars distance. Make a prediction.Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this).See if the prediction made was correct Why not? Why? ConsiderConsider how the snow will change the cars distance. Make a prediction.Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this).See if the prediction made was correct Why not? Why? ConsiderConsider how the water will change the cars distance. Make a prediction.Watch as the racecar is shot down the track! Special helper to mark where it stops (other students can assist with this).See if the prediction made was correct Why not? Why? ConsiderConsider how the different surfaces affected the cars distance. Consider if friction played a role! Relate to real life! | 20 mins |

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| **Closure:***How will you solidify the learning that has taken place and deepen the learning process?* *Refer back to the learning intention, connect to next learning.* | Pacing |
| **Teacher will** Ask the students to return to their desks quickly and quietly.When they are seated, ask them to take out a pencil.Hand out an exit slip to each student.Ask students to write or draw one takeaway from the lesson. This will be used to quickly assess their learning and solidify their learning. It will also be used by the teacher to see which demonstration was the most memorable for future lesson planning.Provide 5 minutes to work on exit slip. Advise a drawing is ok (this supports students with weaker writing skills).Walk around and check in on students!When the timer is up, ask students to hand in their exit slip (remind about names).Thank everyone for being great helpers and experimenting with science today! End the class on a positive note and remind students to ask questions and wonder about the world around them! | **Students will** Return to desks quickly and quietly.Take out a pencil.Listen to the exit slip explanation and how to complete it. Use the 5 minutes provided to demonstrate their learning on the exit slip.Check in with teacher and ask for help if needed.Hand in exit slipReflect on lesson and if they had fun or not! | 5 mins |

**Reflection***What was successful in this lesson? If taught again, what would you change to make this lesson even more successful and inclusive for diverse and exceptional students?*

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Lesson Planning Guide (adapted from Thompson Rivers University)

*The lesson plan template is designed as a guide for students to use when planning lessons. The plan may be adapted to specific subject areas and modified as students gain experience or to suit their presentation style. The template is a basic outline that can be used directly as printed or expanded from the electronic version. It is important that the lesson plan be sufficiently clear and detailed so that another teacher could use the plan to teach the lesson.*

***Rationale****: Why are you teaching this particular lesson at this time? One consideration is the context for the lesson (e.g. this introductory lesson determines what students know and want to know about the topic, this lesson relates to previous and future learning by . . .) Another consideration is student motivation (e.g. what are some reasons the learner might care about the content/concepts/ skills for future learning, careers, or interests?).*

***Curricular Connections:***

The curriculum asks you to plan what the students will DO, what they will KNOW, and then what they will UNDERSTAND. ***Big ideas*** *capture the “big picture” or general area of learning (e.g. interdependence of living things with the environment, stories are a source of creativity and joy) and will be what students come to UNDERSTAND.* ***Curricular competencies*** *are what students will DO in their learning activities (e.g. using comprehension strategies, sorting and classifying data, making ethical judgments) that are related to each discipline. The* ***learning standards for content or concepts*** *are a more specific consideration of what students will come to KNOW. Many of the standards are written in broad, general terms to allow flexibility. You can, using the intention of the standard, make it clearer and more specific (e.g. learners will be able to describe the main idea in a paragraph or story, learners will be able to classify leaves based on properties they identify). The lesson should make a connection to both types of learning standards – curricular competencies as well as content. A reminder that the direction of new curriculum has identified core competencies of thinking, communication, and personal / social development as a foundation for all curricula.*

***Learning Intentions:*** *How can you make clear and share with your learners what they are going to learn or have learned or accomplished? Statements like: “I can add two fractions” help frame their learning in positive student language.*

***Prerequisite Concepts and Skills:*** *What concepts and skills are needed for students to be successful? This communication helps connect lessons together in a logical sequence by building/scaffolding new knowledge onto previous learning. For example, if students are going to be engaged in debate did you build or scaffold group work strategies, communication skills, expected etiquette, criteria beforehand?*

***Materials and Resources /References*** *List all materials and resources that you and the students will need. What things do you need to do before the lesson begins? (e.g. prepare a word chart.) What things do the students need to do? (e.g.read a chapter in the novel.) Have you honoured the sources of ideas or resources? Disorganized materials can ruin a great lesson.*

***Differentiated Instruction (DI): (accommodations):****How will you accommodate for diverse learners in your class? How will you allow for some variety in expression of learning? How can you modify the learning activities for success? How can you provide engaging extra challenges for those that are ready? How might you alter the learning environment if needed? Have you considered Aboriginal and cultural influences? IEP’s?*

***Assessment and Evaluation:*** *Did the students learn what you taught them? What tools might you use for assessment (e.g. check list, rubric, anecdotal record). How will you provide formative feedback to students about their learning? The results of the assessment should be directly connected to what your students were able to write say or do related to the learning intentions and or curriculum. Strive for accuracy and build assessment into teaching and learning and not as an “add on” at the end.*

***Organizational/Management Strategies:****Have you thought-out organizational management strategies to facilitate a proactive positive classroom environment? Some examples are: organizing for movement, distributing and collecting materials, grouping strategies, blended grade classroom logistics.*

***Aboriginal Connections / First Peoples Principles of Learning:*** *Are there any connections to Aboriginal or other cultural knowledge, worldviews, or principles of learning?*

###### Lesson Activities/Structure:

***Connect****: How will you get students interested/motivated/ hooked into learning? How will you connect this lesson to past and future lessons? How can you share the learning intentions in student friendly language? How will you provide a lesson overview?*

***Process****: What sequence of activities will the student’s experience? What will you do? What will they do? Estimate how much time will each activity take (pacing)? What are grouping/materials strategies? There are many ways to describe the body (step by step, two columns dividing student and teacher activities, visual flow chart of activities and connections, others?)*

***Transform****: How will students apply and personalize the learning? What will they do or create to show you that they have learned?*

***Closure:*** *How will the lesson end? (e.g. connecting back to learning intentions, summarizing learning, sharing of accomplishments, connecting to next lessons). Google “40 ways to close a lesson.”*

***Reflections****: Complete the reflections section as soon as possible after teaching the lesson. What went well? What revisions would you make to the lesson? Anything else***?**