UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

LESSON PLAN (PILOTED 2022)

Candidate's name: EMORY GEORGES

Grade/Class/Subject:	Kindergarten Science	School:	Suwilaawks Community School
Date:	March 14th 2023	Allotted Time:	60 minutes
Topic/Title:	Introduction to Magnetism (physical modelling, push and pull)		

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.
In this Science lesson students will continue to investigate properties of magnetism. Previously students did experiential learning to determine which objects are magnetic object or non-magnetic. In this second lesson of the Science unit on magnetism, students will continue to explore the forces of pushing and pulling based on a magnet's North and South poles, and experience first hand how the magnetic field can transfer through objects.

2. 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.*
x☐ COMMUNICATION – Communicating x☐ COMMUNICATION – Collaborating ☐ THINKING – Creative Thinking x☐ THINKING – Critical Thinking ☐ THINKING – Reflective Thinking X☐ PERSONAL AND SOCIAL – Personal Awareness and Responsibility ☐ PERSONAL AND SOCIAL – Positive Personal and Cultural Identity ☐ PERSONAL AND SOCIAL – Social Awareness and Responsibility	This lesson will be Science center with small groups of 3-4 students cycling through this centre. The class will be divided into three or four groups to visit various learning centres. The other centres will include magnetic building blocks, a review science centre to test what is and what is not magnetic, and a silent reading/puzzle area). In this Science center students will hypothesize and experiment with magnets through experiential play. They will be expected to do individual work to test and can discuss as a group what they think the magnets will do.

3. 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. x☐ 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.	This lesson reinforces learning on how magnets can effect the physical world (pushing and pulling based on the a magnetic object and the magnetic poles of an another magnet).

☐ Learning is embedded in memory, history, and story. x☐ 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.	

4. 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?
Science – The motion of objects depends on their properties. Humans interact with matter every day through familiar materials. .

5. 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 Observe objects and events in familiar contexts Ask simple questions about familiar objects and events Planning and conducting Make exploratory observations using their senses Safely manipulate materials Processing and analyzing data and information Represent observations (teacher will tally the results but students will orally explain if the result matched their hypothesis) Discuss observations (group comes to a consensus if an object is magnetic or not and records their results). Ask the groups why they think it was or wasn't magnetic. Communicating	*Students are expected to know the following:* properties (can magnetism transfer between familiar materials magnetic objects like paper clips? effects of pushes/pulls (of magnets)

Share observations and ideas orally	

6. 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 they know if they are proficient? How will the evidence be collected, documented and shared? Will you use **observation**s, have targeted **conversations**, or collect **products**? 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?*
I will be using an assessment sheet for each group and record each student hypothesis and their testing results for the science magnet poles activity. Conversations will be formative to test their understanding of magnets and how were they are used in everyday life.

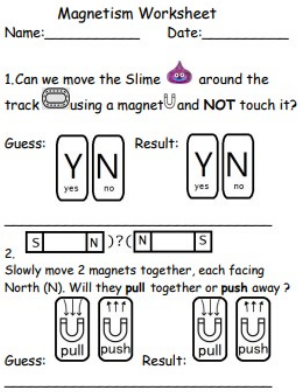
7. DESIGN CONSIDERATIONS

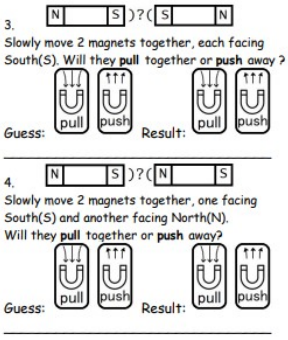
Key resources: Instructional Design Map

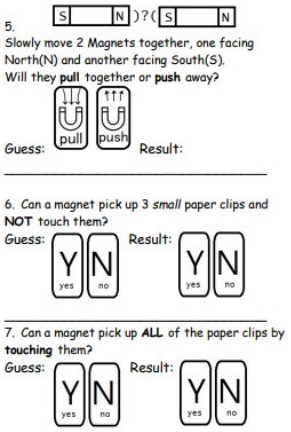
Make brief notes to indicate how the lesson will meet needs of your students for: differentiation, especially for known exceptionalities, learning differences or barriers, and language abilities; inclusion of diverse needs, interests, cultural safety and relevance; higher order thinking; motivations 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.
The data in the assessment worksheet will be filled out by the teacher, but it has icons to provide visual aids to the students to help them understand the prompts. This lesson is hands-on, but it is also important for the teacher to model the actions for the students. Different race tracks are provided to support students with fine motor skill issues. A visual map on where to place and pick up the paper clips is also provided.
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.* *Tables, markers (each group gets one marker for recording - red, blue, green and yellow marker.)* *Items to test: paper clip (pincer type), standard wax crayons, leaf, scissors, key, clothes (doll), button (plastic), spoon (metal) (alternative wooden spoon after), book, quarter / 25cent coin.* **Have some additional items for the students to explore (no need to record them just for learning and to experiment with after they finish).*
Slime magnets:  , one per person and one paper cup per person. Small paper clips 12 (3 per person). *Optional challenge if time permits:* large paper clips (12 - 3 per person), (12 - 3 per person) plastic covered paper clips * Only 3 if teacher demonstrates. Ideally (Assuming one Strong Magnet per person : 4 Strong Magnets + 4 Large paperclips - We could use less but students

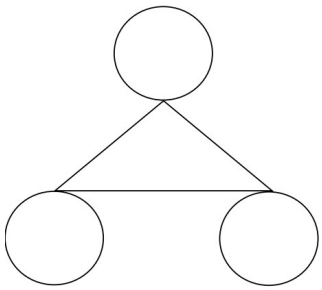
would have to share and the centre takes more time).
Teacher also needs a set of magnets for demonstrating or will need to demonstrate and then share with a student.

Assessment Sheet (1 per group, teacher fills out based on oral input from students)
Files: Magnetism Assessment Worksheet.docx, Magnetism Assessment Worksheet 2 no challenge.pdf, Magnetism Assessment Challenge.pdf (This is in case you have extra time). Triangle Visual Aid.pdf (placement visual aid for the paperclips)
Note: Prompt 7 will be optional time permitting, as are the challenges.









Differentiated laminated race tracks. Circle is easier (wider tracks, and easier motion) for students with motor skill issues.

8. 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 students and activate thinking and prior knowledge*	During the class STORY Block we will play this video by Learn Bright "Magnets for Kids | What is a magnet, and how does it work?" https://youtu.be/7HHs98PBgk0 Playing the video up to the time of 1:14 will introduce magnets, the concept of a magnetic field, and that magnets have a North and South pole. After reaching 1:14 we have have 2 options: Option 1 : Stop the video and allow for *experiential discovery* learning during the science centre. Students could fail in their initial hypothesis but could learn the pattern from their experience as we go step by step For example: Teacher: What happens with North and North, South and South, North and South, or South and North?. After seeing that North and North push away, some students might guess that the same thing happens with South and South. Teacher: (North and North are the **same poles** and *they pushed away*. What do you think happens when we do it with the **same poles** South and South?) I think this option is more engaging and the student learning experience could be meaningful/memorable but it could also *take more time*. Option 2: We can continue to play the video until 1:34 to explicitly teach that opposite poles attract (are pulled together) and that similar poles repel (are pushed apart). In this case, the questions during the science centre will be assessing if they remembered the previous learned points from the video. This is not necessarily bad as the activity is still *experiential* because the students will be moving the magnets to *prove* if what they learned was true. If you choose option two, be sure to review *attract* as pull together, and *repel* as push away after the video. YouTube links: What you will learn in Magnets for Kids: 0:00 Introduction to magnets 0:27 What is a magnet? 1:06 North and south poles of magnets Option 1: *(Stop at 1:14) ** Option 2: *(alternatively stop at 1:34 to have the video explain what happens when similar or opposite poles are placed together)* Skip these sections. Instead have the class discuss where magnets are used. *2:06 Three types of magnets—temporary, permanent, electromagnet *3:13 *Where are magnets used?* *4:04 Review of the facts	2 minutes video + up to 8 min intro discussion during story block. 6 minutes Review class expectations for centres 1 minute to give out materials and explain the first task.

	Some probing questions: Review - magnetic field is that invisible field that surrounds the magnet and can push or pull objects. Magnets have two poles. What are they? Where are magnets used in our class? Possible answers: whiteboard magnets, our magnetic ball and connector blocks, the tangram travel book, etc. Where else are magnets used? (Outside of school) Possible answers: Fridge magnets, the fridge door, furniture, speakers, TVs, computers, toys, tools, motors, door bells, telephones, compasses. --- Transitioning out of story block to centres: Teacher: During our centres today we will have a *special* Science centre with me (the teacher) to learn more about magnets. In our centre … We will see what happens when we put two magnets together facing **the same** poles like North and North. We will see what happens when we put two magnets together facing **different** poles like North and South. We will test if strong magnets can work ***through*** objects, and if magnets can pick up things through other *magnetic objects*. Last week, we tested different things to see if they were *magnetic objects* or non-magnetic objects. Do you remember something that was magnetic? Were your scissors magnetic? How about a leaf? Today, our EA will help us have another magnetic testing centre where you can continue to test different things to see if they are magnetic objects. It is important to be gentle with the magnet fishing rods. Do we pull on the string? No. Do hit each other with the fishing poles? No. That is a *very bad* touch. Don't do that. Do we take turns when testing different things? Yes. Another centre will be a magnetic ball and connector centre at this end of the carpet. (Point) Remember we are SHARING the magnets. Sharing is caring. Be kind and work together to expore making things with magnets. (Point) Remember we NEVER put the magnets near our mouth or face. We don't throw the magnets and we need keep the magnets and the metal balls on the carpet. When it is time to clean up we have to put everything away. We can not save what you make because other groups need to use the	

	magnets too. Our final centre will be reading center. I will record your centre stamps at the end of the day when centres are over. Some of you almost have your stamp box done! So when I call out two minute clean up, what do we do? We must **stop** what we are doing right away and clean up. I know you might be having fun, but we need to be ***kind*** to each other so that every group has a turn at the centre. So how do we clean up? For reading centres/puzzles .. we put books back, and puzzles away. (Elicit). For magnet blocks… we put **everything** back into the box. (Elicit) For EA's magnet centre we put away the testing items and the fishing rods. Our EA can help with that. For my magnet center we put back our paper clips and give me (the teacher) back your strong magnets. So… ***where*** do go we *after* we clean up our centre? Back to our groups. When ***everyone*** is back at their group, I will tell each group where to go next. Remember to be quick so that everyone gets a chance to do our centres today. --- Introduction to the centre: Once the group is sitting nicely at the centre. Explain the expectations: We are working with magnets today so I need you to be kind and show respect to each other. No hitting things with your magnet, Just like the magnet puzzle no magnets near your mouth. Be gentle with the Slimey Magnets as they travelled all the way from Japan to help us today. Show the assessment sheet and read the first prompt. Record their guess. Lets find out if we can do it! First each of you gets a race track. (Circle race track for green and blue teams). Next each of you will get a "strong magnet." Finally, each of you get a slimey. Remember: You get what you get and you don't get upset. Pick a hand (Left or Right). Give the person the Slimey Magnet in that hand.	

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*	Discovery learning: Let the students figure out how to move the slimey around the track with their magnets without them touching. If they need a hint demonstrate how but have the race track facing forward. The begin to tilt until they see a magnet under the sheet. Once they figure it out, ask the students to go around the track once. When they succeed ask them to return strong magnet, the race track and the Slimey magnet. When done circle the Yes on the sheet for everyone in the group to see. Next read the next prompt from the assessment sheet. Record each person's guess. Next give each student two magnets with a N and S. Have them try to solve the answer. Explain what to do with two hands. Hold each of the magnets with the top facing North (so show me the big N). Now slowly put the two magnets together. So do they push away or pull together? Record the result. Congratulate those that guessed / remembered right. Do the same for the next prompt. Record their guesses. Hold each of the magnets with the top facing South(so show me the big S). Now slowly put the two magnets together. So do they push away or pull together? Record the result. Congratulate those that guessed / remembered right. Do the same for the next prompt. Record their guesses. In your left hand show me South(big S). In your right hand show me North (big N) Now slowly put the two magnets together. So do they push away or pull together? Record the result. Congratulate those that guessed / remembered right. Next collect the magnets from everyone. Show the next prompt and record their guesses. Show the Strong magnet with a large paper clip at the end of it. Give everyone a triangle sheet and ask to place one paper clip in each circle. Teacher should demonstrate for ELL students. Now using Strong magnet with a large paperclip at the end, show how to pick up 1 paperclip. Ask them to try and pick up all 3 but not to touch the magnet. Check the time. If you have more time you do the optional challenges. Otherwise announce 1 minute clean up and have everyone return their stuff and go back to their group. Prepare for the next group.	Each block is 13 minutes with a 1-2 minute transition period

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*	Students return the materials to the teacher and go back to their groups to find out where to go next. At the end of centres we have the end of day routine (put away the classroom) and announcements.	1 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?*