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| **TEAM Lesson Plan Template**  kcs-seal-75inch.jpg | |
| Teacher: Heidi Swaney | |
| Class: 2nd Grade Science | |
| Course Unit: Forces in Nature | |
| Lesson Title: The Magnet Dance | |
| **LESSON OVERVIEW** | **Summary** of the task, challenge, investigation, career-related scenario, problem, or community link. |
| Students will use the scientific method to determine how magnets interact with each other. They will create a dance modeled after the movements and energy the magnets displayed as they attracted and repelled. | |
| **STANDARDS** | **Identify what you want to teach.** Reference State, Common Core, ACT College Readiness Standards and/or State Competencies. |
| State Standard- Science- Forces in Nature:  0207.12.1 Explain how two magnets interact.  Dance Standards:  1.1 Demonstrate non-locomotor movements using more refined motor skills such as flick, dab,  wring, dodge, and carve.  1.2 Demonstrate and compare eight basic locomotor movements (walk, run, hop, jump, leap,  gallop, slide, and skip) traveling forward, backward, sideward, diagonally, and turning.  1.9 Create and perform movement showing the qualities of energy (smooth, sharp, free, bound,  strong, light, vibratory, and swinging).  2.3 Show the ability to respond in movement to stories, poems, artworks, music, world cultures,  natural science, and math concepts.  4.3 Discuss opinions about dances with peers in a supportive and constructive manner.  Common Core State Standard- ELA-Literacy-Writing: 2.8 Recall information from experiences or gather information from provided sources to answer a question. | |
| **OBJECTIVE** | **Clear, Specific, and Measurable – NOT ACTIVITIES**  Student-Friendly |
| * The learner will be expected to explain what happens when like poles and opposite poles of magnets are put together. * The learner will be expected to demonstrate how like poles repel using their body. * The learner will be expected to demonstrate how opposite poles attract using their body. * The learner will be expected to utilize a sharp force/energy in their movements. * The learner will be expected to create and perform a four-move dance where they correctly attract or repel against another pole using locomotor and non-locomotor movements. | |
| **ASSESSMENT/EVALUATION** | **Students show evidence of proficiency through a variety of assessments.**  Aligned with the Lesson Objective  Formative/Summative  Performance-Based/Rubric  Formal/Informal |
| * Students will participate in class discussion and group-work. * Students will record data from their experiment on the recording sheet. * Students will complete a planning sheet for their four-move dance. * Students will perform their dance with a partner. * Students will answer at least one question on the ticket-out-the-door. | |

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| **MATERIALS** | **Aligned with the Lesson Objective**  Rigorous & Relevant |
| * Bar magnets (class set) * Other types of magnets (1 each: wand, horseshoe, ring, etc.) * Chart Paper or Board for writing * Name Tags for Students: “North” and “South” (one per student) | |
| **ACTIVATING STRATEGY** | **Motivator/Hook**  An Essential Question encourages students to put forth more effort when faced with a complex, open-ended, challenging, meaningful and authentic questions. |
| Show students two magnets. What will happen if I push the two magnets together like this? (like poles) What if I push them together like this? (opposite poles) | |
| **INSTRUCTION** | **Step-by-Step Procedures-Sequence**  Discover/Explain – Direct Instruction  Modeling Expectations – “I Do”  Questioning/Encourages Higher Order Thinking  Grouping Strategies  Differentiated Instructional Strategies to Provide Intervention & Extension |
| 1. We already know that magnets attract things made of iron, but what about magnets and other magnets? Today we will learn about how magnets interact with each other and we will represent what we learn with a dance. 2. Show students a basic bar magnet labeled with N and S for North and South. Tell students that magnets have two poles, where the pull is the strongest. All magnets have a north and south pole. Show different types of magnets (horseshoe, wand, ring, etc.) Explain that even if it isn’t labeled, one side is the north pole and the other side is the south. 3. We are going to use the scientific method to answer our question: “How do magnets interact with each other?” We need to make hypotheses for how these magnets will interact at their poles. Record students’ hypotheses on chart paper or on the board. (Ex. *I think the north and north will stick together. I think the north and south will push away from each other.)* 4. If we are going to represent the movement of magnets with a dance at the end of our lesson we need to make hypotheses about the type of energy the magnets demonstrate when they move. Begin a list of vocabulary on the board and write: *Dance Element: Force- how the body uses energy while moving.* Dancers can move with different types of energy: heavy/light, sharp/smooth, tensed/relaxed, bound/flowing. Have students stand up and practice moving with the different types of force as you call them out: “heavy….light…sharp…smooth…” 5. What do you think about how the magnets will move when two poles are put together? Record more hypotheses about the movement. (Ex. *I think that when the north and north are put together the energy will be smooth and flowing. I think that when the north and south are put together the force will be very sharp and quick.)* 6. In order to determine whether or not your hypotheses are correct we must do an experiment. Give partners or small groups of students two bar magnets and a recording sheet. (*What happened when you put two like poles together? What kind of energy did they demonstrate when they moved? What happened when you put two opposite poles together?...)* Let students spread around the room as they gather their data. 7. Come back together and write the vocabulary words *attract* and *repel* on the board. Ask students what these words mean and write the definitions: *attract- to cause to draw near by force; repel- to push back or away by force* 8. Record data from the experiment on chart paper/board about the interaction of the poles and the type of movement. Ex:  |  |  |  |  | | --- | --- | --- | --- | |  | North-North | South-South | North-South | | Interaction | Repel | Repel | Attract | | Force | Sharp | Sharp | Sharp | | |
| **GUIDED & INDEPENDENT PRACTICE** | **“We Do”-“You Do”**  Encourage Higher Order Thinking & Problem Solving  Relevance  Differentiated Strategies for Practice to Provide Intervention & Extension |
| 1. Turn and Talk: What conclusion can you draw about the interactions between the poles and the type of force/energy that was demonstrated by the moving of the magnets? (Ex. *The poles that are opposite attract. They move very quickly with one sharp movement.)* Share conclusions and check for accuracy. 2. Tell students that when the magnets moved they had energy to attract and repel because of force. Can our bodies demonstrate force when we move? Yes! Ask students to stand up beside a friend. Practice these moves one at a time:  * A move to show attracting using the whole body and a sharp force * A move to show attracting using the whole body and a smooth force * A move to show repelling using the whole body and a sharp force * A move to show repelling using the whole body and a smooth force * A move to show attracting using only the arms/hands and a sharp force * A move to show attracting using only the arms/hands and a smooth force * A move to show repelling using only the arms/hands and a sharp force * A move to show repelling using only the arms/hands and a smooth force  1. Remind students that when they move from one place to another it is a locomotor movement and that when their feet stay in the same place during a movement it is non-locomotor (locomotor and non-locomotor movements should be previously learned dance skills for this lesson). Demonstrate an example of a non-locomotor move that shows attracting with a sharp force (example: bow down and extend arms in front) Ask students to come up with their own move. Demonstrate an example of a locomotor movement that shows repelling with a sharp force (ex. jump backwards) Ask students to come up with their own move. Do more examples if necessary to prepare for their own dance creation. 2. When dancers move their bodies they have to decide what kind of force or energy to use. Look back at your data. Did the magnets move with a sharp or smooth energy? (sharp) 3. Explain to students that they will be assessed by doing a “magnet dance.” They will be assigned either north or south and with a partner will come up with four moves that demonstrate attracting or repelling with sharp force. Show students the rubric and explain the requirements. Give each student a nametag that says north or south. Make some groups have like poles and some groups have opposite poles. Give students time to plan their moves and practice their dance. 4. Come back together as a whole group. Have students remove their north/south nametags. Give time for each pair of students to perform their four-move dance. Have the students in the audience tell whether their moves showed *attract* or *repel* and if they were two like poles or two opposite poles. Discuss their energy and movement choices and use the rubric to assess. (If time does not allow, have students record themselves doing their dance and show at a later time to the class.) | |

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| **CLOSURE** | **Reflection/Wrap-Up**  Summarizing, Reminding, Reflecting, Restating, Connecting |
| 1. Review the objective with students and give them their ticket out the door. They can choose to answer one or all of the questions: *How do magnets show force? When is a time your body repelled away from something? If the Earth has a North and South Pole, what can you infer about the Earth?* | |
| **CROSS-CURRICULAR CONNECTIONS** |  |
| Science-Dance-Writing | |

**NOTES:**

* **Prerequisites: knowledge about locomotor and non-locomotor movements and experience with classroom dance/movement activities**
* **Recording Sheet, Planning Guide, etc. are included on subsequent pages**

**EXPERIMENT RECORDING SHEET**

**Group Members: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Recorder: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

1. What happened when you put two like poles together (north and north, south and south)?

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1. What happened when you put two opposite poles together (north and south)?

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1. What kind of energy did they demonstrate when they moved?

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**MAGNET DANCE PLANNING SHEET**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ North South (circle one)**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ North South (circle one)**

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| **Move 1** | **Move 2** | **Move 3** | **Move 4** |
| **Attract Repel**  (circle one) | **Attract Repel**  (circle one) | **Attract Repel**  (circle one) | **Attract Repel**  (circle one) |
| **Locomotor**  **Non-Locomotor**  (circle one) | **Locomotor**  **Non-Locomotor**  (circle one) | **Locomotor**  **Non-Locomotor**  (circle one) | **Locomotor**  **Non-Locomotor**  (circle one) |
| **Movement:** | **Movement:** | **Movement:** | **Movement:** |

How can we use our bodies to demonstrate a sharp force? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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How do your movement choices show attracting or repelling? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **MAGNET DANCE RUBRIC** | **3** | **2** | **1** |
| **Magnet Interaction** | Students demonstrate four attracting movements for opposite poles or four repelling movements for like poles. | Two or more of the movements show correct attracting or repelling. | Students demonstrate the incorrect movements for their assigned poles. |
| **Force** | Students move consistently with sharp energy. | Students are inconsistent with sharp movements. | Students do not demonstrate sharp movements. |
| **Movement** | Students incorporate non-locomotor and locomotor movements to show attracting or repelling. | Students incorporate one type of movement, either all locomotor or all non-locomotor | Students are unable to perform four moves |

**TICKET-OUT-THE-DOOR: Respond to one or more of these questions**

*1. How do magnets show force?*

*2. When is a time your body repelled away from something?*

*3. If the Earth has a North and South Pole, what can you infer about the Earth?*