

Dr. Barbara Ehlers
Grade 3 Science
Useful Magnet Tools

Standards:

Next Generation Science Standards:

Grade 3: Motion and Stability: Forces and Interactions

3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.

Bloom's Levels: Remembering, Understanding, Creating.

Essential Questions:

Where do magnets come from?

What are magnets made of?

What are properties of magnets?

How are magnets useful in everyday life?

Learning Outcomes:

1. The students will understand the magnets are natural earth materials and have unique properties.
2. The students will compare the properties of magnets and other substances.
3. The students will design a useful tool with magnets.

Objectives:

1. The students will be able to list the properties of magnets and explain where they come from.
(Cognitive).
-**I can** list the properties of magnets and tell where they come from.
2. The students will be able to determine whether materials are magnetic or not by making a T chart
(Cognitive).
-**I can** list which things are magnetic and which are not on a T chart.
3. Using the provided magnets, the students will create and demonstrate a useful tool to the class
(Cognitive, Psychomotor).
-**I can** make a tool using a magnet and explain it to the class

APK (Engage)

The teacher will read *Shivers in the Fridge* by Fran Manushkin. Do not mention magnets before reading the book. Discuss what the surprise was in the story. Fill out the K and W portion of the KWL about magnets to find out what they already know about magnets and what they wonder about. The students will generate a list of questions they have about magnets.

ANI (Explore)

Give the students a variety of magnets to examine. Allow the students time to explore throughout the classroom to find items that are magnetic. Have them write down information about the materials they are using on a T-chart indicating which are magnetic and which are not. Provide them with iron filings and salt mixed and see if they can separate it. How is that possible?

Read *What Makes a Magnet?* by Franklyn M. Branley. Provide the following books for students to read in groups or with partners to find out new information about magnets. *Amazing Magnetism*, by Rebecca

Carmi, *What Can Magnets Do?* By Allan Fowler, *Experiments With Magnets*, by Salvatore Tocci, *Magnets: Pulling Together, Pushing Apart*, by Natalie Rosinsky. Share with the class the new information they have learned about magnets. Add to the KWL chart.

APP (Explain)

The students will share with the class/group what they have learned about magnets. Were all of their questions answered? Allow time to explore online for other information about magnets using these websites:

Fun Magnet Facts for Kids

<http://www.sciencekids.co.nz/sciencefacts/magnets.html>

All About Magnetism

<http://easyscienceforkids.com/all-about-magnetism/>

What is a Magnet?

http://www.physics4kids.com/files/elec_magnets.html

Fun Magnet Facts for Kids

<http://www.first4magnets.com/fun-magnet-facts-for-kids-i77>

GEN (Elaborate)

Continue filling out the L portion of the KWL chart. Students will design a new tool utilizing a magnet or magnets. They may choose from the magnets available in the classroom. They will demonstrate their tool to the class and explain how it works and relate it to the properties of magnets.

Assessments (Evaluate)

The L portion of the KWL indicates what they have learned about magnets. They must include where magnets come from, the properties of magnets and examples of items that are magnetic and items that are not. Their explanation of their tool can also serve as an assessment.

Materials:

A variety of magnets, iron filings, salt, other materials that are not magnetic. KWL and T charts.

Books:

Read *What Makes a Magnet?* by Franklyn M. Branley.

Amazing Magnetism, by Rebecca Carmi,

What Can Magnets Do? By Allan Fowler,

Experiments With Magnets, by Salvatore Tocci,

Magnets: Pulling Together, Pushing Apart, by Natalie Rosinsky.

Websites:

Fun Magnet Facts for Kids

<http://www.sciencekids.co.nz/sciencefacts/magnets.html>

All About Magnetism

<http://easyscienceforkids.com/all-about-magnetism/>

What is a Magnet?

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HW

Students have until the next day to design their tool. They may work on it at home or during free time at school. The teacher will provide materials if necessary.

Accommodations/Modifications

TAG-Challenge TAG students to research and include how magnets and electricity are connected in their tool.

At-Risk-Send home materials or set aside time with a volunteer to help students complete the project.

ELL-Have Spanish versions of the books read available.

Special Education-The tool doesn't have to be a new idea, the student can demonstrate how magnets are used in the classroom.

Reflection

I thought the lesson could be completed in one day, but it took two class periods. Next time I teach the lesson, I would give them more time to explore the classroom and more time to read the various books about magnets and explore the websites. I also might have them work in groups to make the magnetic tools rather than by themselves.

UPPER IOWA UNIVERSITY

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Classroom Teacher (for FE and Student Teaching Only) Boltz

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Date 2/24/2019 Grade Level/Content Area 3rd Grade/Science

TITLE OF LESSON TO BE TAUGHT Magnet Lapbooks

I. Learning Outcomes and Objectives

- Iowa Core State Standards:**
 - 3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.
 - 3-PS2-4. Define a simple design problem that can be solved by applying scientific ideas about magnets.
- Learning Outcomes (for the unit):**
 - The students will understand the magnets are natural earth materials and have unique properties.
- Essential Questions (for the unit):**
 - How do magnets work?
 - What type of material is magnetic?
- Objectives/Learning Targets (for the lesson):**
 - By the end of the lesson, the students will understand how magnets attract and repel each other.
 - By the end of the lesson, the students will know the three types of magnets (temporary, permanent, and natural).
- I Can Statements:**
 - I can understand how magnets attract and repel each other.
 - I can name the three types of magnets.
- Bloom's Levels and/or Depth of Knowledge (DOK)**
 - **Remembering**
 - **Understanding**
 - **Creating**

Materials Needed: Lapbook materials, scissors, glue, pencil, file folders, Magnet video

II. Assessment

- Formative Assessment-** Explain after each of these steps- APK, ANI, APP
- Summative Assessment:** Exit Ticket

III. Procedure

- **Access Prior Knowledge (Step APK):** The students will share their magnetic tools/inventions with the class. Review what was learned about magnets in the previous lesson.

- **Acquire New Information (Step ANI):** The teacher will discuss with the students the properties of magnets. The teacher will play the video <https://www.youtube.com/watch?v=DR9w4koW2EA>. Stopping at various times to discuss and create the interactive lap books. Tell the students this may be a review from the previous lesson.
 - @ 0:57 - Magnetic Field
 - @ 1:17 - Magnetic Materials
 - @ 2:54 - Poles and Attract & Repel
 - @ 4:20 - Earth
 - Compass
 - Magnets @ Work
 - Electromagnet
 - Vocab and Non-Magnetic/Magnetic
- *Lapbooks can be created over the course of a unit instead of one lesson
- **Apply Declarative/Procedural Knowledge (Step APP):** The students will work to complete their lap books. They may color the parts of the book. The students will share with the class something new they learned today.
- **Generalize or Summarize-Closure of the Lesson (Step GEN):**
 - The teacher will summarize the lesson and discuss the three types of magnets (temporary, permanent, and natural). The students will complete the exit ticket.
- **Summative Assessment:** Exit Ticket
- **Homework (Step HW):** Students can work to complete their lap books.