

Activity Name: Magnetic Discovery Bottles

Activity Description: Using a magnet, a discovery bottle, various items made of iron or containing iron, various metal items not made of iron or containing iron and various items not containing metal, students will predict, test and compare the various types of materials and explain, with at least one supporting detail, which objects are magnetic and which ones are not.

Suggested Grade Level/Age Range: K-6

Science Content Covered: Magnetism/Prediction

Time needed to complete the activity: 5-10 minutes

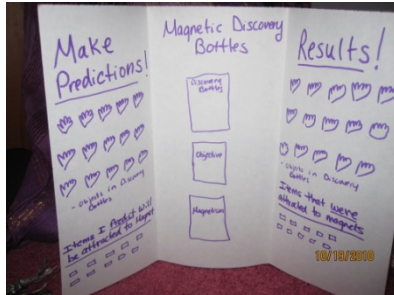
Materials Required (per student): A strong magnet; 1 clean, sealed soda bottle one-third full of sand; various items made of iron or containing iron (nail, thumb tack, bobby pin, paper clip); various metal items not made of iron or containing iron (dime, penny, nickel, soda-can tab, aluminum); various items not containing metal (rubber band, crayon, eraser, toy frog, dice); display board that has information about magnetism, objective of the experiment, the purpose of discovery bottles and also Velcro sections so that it can be easily manipulated by students.

Directions as well as Activity Success Tips for Parents and Teachers:

- Give or show the students a magnet and ask them to identify what it is and what it can be used for. Ask if they know what is special about magnets? Ask if they have ever used a magnet before and if so, what did they use it for.
- Give students a discovery bottle to observe and ask, "Which objects in this discovery bottle do you predict will be able to be moved by the magnet and which will not?" (Using their prior knowledge, they should be able to predict what they think will happen.)
- Instruct students to predict and document which items they believe will be attracted to the magnet and have them justify their predictions. (For our activity, we used a display board and we had the students manipulate it by moving the labeled objects that they predict will be attracted to the magnet under the "Items I Predict Will Be Attracted to the Magnet" section of the

- bottom, left-panel of the poster board. A graphic organizer/worksheet could be used as an alternative assessment in the classroom.)
- Students will test their predictions by moving the magnet up and down the sides of the discovery bottle and also by bringing the magnet close to each object in the bottle.
 - Students will report their results/conclusions as they test each object. *Make sure that they are recording data accurately. (Again, for our activity we used our display board and we had the students manipulate it by moving the labeled objects under the "Items that Were Attracted to the Magnet" section on the bottom right-panel of the poster board. Again, a graphic organizer/worksheet could be used as an alternative assessment in the classroom.)
 - Students will compare the results to their predictions. (The objective of a display board is to present the main areas and conclusions of the activity so the students can easily understand what they accomplished. It is an effective tool for visual and kinesthetic learners.)
 - Instruct students to make explanations based on their findings. Possible key questions to ask students may include the following: (Listen to students' explanations to see if their reports are supported by the findings that you observed as experiments were being conducted.)
 - Based on your observations, what do you think makes a material or object attracted to a magnet?" (Explain that NOT all metal objects are magnetic - you can again show how aluminum is not magnetic.)
 - Describe some properties of the objects that are not attracted to the magnets? (nonmetal objects and the objects not containing the ferromagnetic properties/iron)
 - What characteristics do all of the magnetic objects have in common? (They are all metal and contain ferromagnetic properties - nickel, cobalt, iron.)
 - Do magnets attract all the objects that you had that were made of metal?
 - Did any of the objects reactions to the magnet surprise you? Which one(s)?
 - Give a brief explanation of what happened (objects must contain ferromagnetic properties. *Explanation and properties of magnetic objects will be provided thoroughly on display board.)
 - Ask student(s) if they have any questions.

Example of what our display board will look like: It will have Velcro strips so that the different objects can be manipulated and moved to the appropriate places on the board. (Left-panel: predictions; center-panel: information on experiment, discovery bottles and magnetism; right-panel - results.)



Possible follow-up, extension activities or ideas for children and parents to explore:

Using a magnet, students can search for objects around their house or classroom that are magnetic or they can search for objects that contain magnets (games, toys, refrigerator magnets, etc.)

Safety comments / considerations:

Caution needs to be exercised when using magnets since placing them near computers and computer discs, televisions, VCR's, microwave ovens, radios, telephones, or credit cards can damage these items. Remember to also keep magnets away from small children who may want to put them in their mouth and swallow them.

Source:

Watson, Sandy. "Discovery Bottles." *Science and Children*. Summer - July/August (2008). 20-24. Print.

Christine Royce, Associate Professor Shippensburg University

www.ship.edu

#: 717-477-1681

caroyc@ship.edu