

Sample Lesson Plan (Intern Format)

Header Information:

Name:	Any Teacher
School:	Any School
Subject:	Physical Science
Date:	September 15, 1999
Age/Grade Level:	Grade 2
Topic:	Magnets and Forces
Lesson Length (minutes):	45 minutes
Total Number of Students:	26
Number of IEP Students:	4 learning disabled

Objectives - Broad goal: Students will explore how to use pushes and pulls on a daily basis to change the position or motion of common objects. The specific objective for this lesson: Students will be able to determine which is the stronger of two magnets and to explain their choice in terms of force.

Connections - The lesson objective is based upon:

KY Academic Expectation 2.3 [Students identify and analyze systems and the ways their components work together or affect each other]. The activity focuses on the interaction between a magnet and the object it is picking up.

KY Core Content for Assessment SC-E-1.3.4 [Magnets attract and repel each other, and magnets attract certain kinds of other materials]; and SC-E-1.2.3 [The position and motion of objects can be changed by pushing or pulling. The amount of change in position and motion is related to the strength of the push or pull (force)]. Children experience the attraction of a magnet for objects and the relative strength of different magnets. They relate the strength of the particular magnet to the concept of force.

Context - This lesson is important in helping the children address the broad goal of the unit. Forces created by magnets are just one type of force investigated in the unit. Children have also learned about forces involved in moving furniture around the room and in moving cars down the road. Concerning magnets, they have just completed a sequence of exploratory lessons in which they experienced what magnets do to each other and to different types of materials.

Materials / Technology -

8 small disk magnets	8 medium washer magnets
8 magnet wands	8 boxes of large paper clips
8 six-inch bar magnets	8 boxes of small paper clips

Procedures -

Set induction: In our last lesson, we learned that magnets attract some objects (iron, steel) but not others (wood, plastic). Review how to spell "magnet."

Ask "Do you think it is hard or is it easy to pull a magnet away from something it attracts?" [Answers will vary.] This pulling demonstrates how strong a magnet is. What are some things you could do with a really strong magnet? [Answers vary.]

You have some interesting ideas! Today, we will learn more about how strong magnets are. Have you every wondered how to tell if one magnet was stronger than another? Would you be interested in learning how to do that? **Deliver objective:** After today's lesson, you will be able to tell me which of two magnets is stronger, and what that has to do with force (which we have already studied). Are you ready? Let's begin!

Activity:

Show small disk magnets, and magnet wands. Ask children to describe them.

"Hmm. Bigger might not always be stronger. Let's look at what these magnets do."

Show how magnet picks up paper clip. Discuss pull on paper clip. Lead to idea of counting how many paper clips a magnet picks up as a measure of its strength.

“Let’s see how many paper clips each of these magnets will pick up. Maybe we can find out which is stronger. Let’s work with one magnet at a time.” Use equipment helpers to distribute one small disk magnet and one box of paper clips to each group.

During group work, circulate. Make sure each student has an opportunity to work with the materials. As each group finishes with a magnet, give the equipment helper a different magnet for his/her group to investigate.

In the groups, ask students questions, including:

“How are you making sure you are counting carefully?”

“How do you describe what a magnet does to a paper clip?”

Learning disability accommodation: When talking with James and Sarah, take extra time to ensure they understand that a magnet which picks up many paper clips is stronger than a magnet which picks up only a few.

After they have all worked with two different magnets, retrieve the equipment. Have them sit in a circle and ask each group to tell how many clips each magnet picked up. Record the results on the board and discuss. Make sure the students understand that they can identify the stronger magnet (the magnet wand) by the number of paper clips it picked up. It has the greater pull, or force. Force is a special word we use here.

“Force” is the scientific term for any pull or push. Here, it is the pull of the magnet on the paper clip. Children write “force – a pull or push” in their science journal.

Closure: Have the children describe once more that the stronger magnet is the one that picks up more paper clips. It has a stronger force.

Student Assessment - Take out the bar magnets, the washer magnets, and the small paper clips. “Let’s do a quick check for understanding. Here are two more magnets, different from the others you used. Can you find out which is the stronger of the two, even if I give you paper clips of a different size? Equipment helpers, come take one of each kind of magnet and a box of paper clips. I’ll come around and observe.”

Performance task: Determine which of the two magnets is stronger, and explain the reason for your choice.

Performance criteria or acceptable responses:

Chooses the magnet picking up the most clips as the stronger.

Explains that the stronger magnet has more force (or pull).

Scoring guide

Magnet picking up more paper clips declared stronger. 4
Explanation is that the chosen magnet has the stronger force (or pull).

Magnet picking up more clips declared stronger. 3
Explanation does not include force (or pull).

Magnet picking up fewer clips declared stronger. 2
Explanation may include force (or pull).

No magnet declared stronger. No explanation. 1

Followup Sections: [Note: These sections would normally be completed after the lesson.]

Reflection/Analysis of Teaching and Learning - Most of the children seemed to enjoy the activity. They moved well from habits of playing with magnets to a more systematic approach to studying strength of force. Some of them were unclear about the concept of force until they understood it as a push or pull. When they worked with the new magnets in the assessment, most children were able to use the process learned in the activity to find relative strength of the magnets. All children but three were able to determine which magnet was stronger and explain the reason in terms of force. Overall I believe the lesson was successful. In conversations with children after class it seemed to me that they understood the concept quite well. However, the three children who had difficulty were not able to articulate the concept of force clearly. For example, one child said, "One magnet has more magic than the other."

Lesson Extension/Follow-up - The next time I teach this lesson I will change the set induction to include an activity with forces. I will reinforce this activity with a discussion and a video clip to make sure everyone is familiar with the concept of force before the lesson begins. I will also meet with the IEP children before the lesson and familiarize them with the material and procedures.

[Modified with permission from a lesson plan by Dr. Tom Lough]