



Using Magnetism With *Star Wars*® DroidWorks®

Curriculum Connection: “All students should develop an understanding of motions and forces.” *National Science Education Standards*

Lesson Plan (Grades 5-8):

Use *Star Wars Droidworks* to give students a greater understanding of the concept of magnetism. Demonstrate the concept of magnetism:

Materials needed:

- An overhead projector
- A long narrow powerful magnet on projector glass
- A piece of glass on top of the magnet

For Your Students:

Pour iron filings on top of the glass and have students observe magnetic fields.

After the demonstration, ask the class to interpret what they saw and then encourage brainstorming about characteristics and uses of magnets.

Briefly explain the reason for magnetic attraction: the behavior of atoms in a magnet. Hand out small magnets to each group, and let them observe how the magnets behave with materials you provide. Ask students to determine what a magnet can attract and if a magnet can make what it attracts slightly magnetic as well.

Try using materials such as:

- Paper clips
- Staples
- Thumb tacks

Now try the same experiment with a pushpin. Showing how an object with a metal top and a nonmetal bottom can block the force of a magnet would strengthen the students' understanding of how magnets may be employed in the training mission.

Organize students into groups, and have them use the InDex to see examples of different shapes and types of magnets.

Have students work in pairs to do *Training Mission 2*.

Discuss:

- What parts did they need to change?
- Would it have been appropriate to create a nonmetal robot to complete this mission? Why or why not?
- Is weight of the robot an issue? Is it possible for a robot to be too heavy or too light to complete the mission? Explain your answer.
- Could the height of the robot have an impact on the success or failure of this mission? Why or why not?

Assign the students to answer the questions in the EarthQuest section of the InDex. Assign curious students to find out how magnetism affects compass function.

Related Activities

As a demonstration project, build a simple electromagnet. This would allow students to then test their understanding of what magnets can and cannot attract. You'll find plans for building a simple electromagnet in *Electricity and Magnetism FUNDamentals* by Robert W. Wood, (McGraw Hill, 1996).

(Thanks to educator Eric Thiel for helping brainstorm teaching ideas for our products.)

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