Push or Pull

Objectives:
Students will define force as a push or pull.
Students will discover how force is a push or pull that makes an object move.
Students will discuss examples of force and its importance in the ways machines work.

Concepts to be learned:
Students will learn that force is defined as a push and a pull and that every object needs to be acted upon by a force before that object can be moved.

Materials Needed:
A scrub brush
A paint roller
A toy car
Pencils
Writing Paper
Chalk and chalkboard
A set of index cards that contains a simple description of actions that involve a push or pull (Ex. a person pulling a door closed).
A copy of the book Push and Pull by Patricia J. Murphy for each student.

Procedures:
Introduction:
Ask students to suggest how objects are moved, write answers on board. Give each student a note card with a description of an action that requires a push or pull. Explain to students they are going to play a game of action charades. Go over the rules for charades again and help any student who does not understand their action card. After giving students a few minutes to practice their action, call students one at a time to the front of the classroom and have them act out their action while the other students call out their guesses. After each child has had a turn to act out their charade have students try to determine what all they different actions had in common (a push and a pull). Write the word force and the definition on the chalkboard. Read the definition and have students suggest why their action was an example of a force. Explain to students that they are going to read a book that will discuss and explain more about forces.

Development:
Pair up students using Popsicle sticks and give each student a copy of Push and Pull by Patricia J. Murphy. Explain to students that while they are reading they need to see if the book will help them to identify any other activities that can be described as a push or pull. Have the students sit anywhere in the room with their partner and partner read the book (each student reads a page). When students are finished reading have them return to their seats and ask:
What other activities did the book describe as a push or pull?
What did the book say objects need to have done to them before they can move?
What types of forces did the book describe?

After students have discussed the questions explain to students that they are going to work with their partners again to determine if certain objects are examples of machines. Review with students concepts learned from previous lessons about how machines are devices that help us do work and have students explain why machines need force (objects cannot move unless acted upon by a force so therefore machines can not work unless first acted upon by a force). Show students items they will use, a toy car, a scrub brush, and a paint roller. Explain to students that they need to experiment with moving each object and determine if you can push or pull each object and if each object is an example of a machine. Have students pair up with their same partner and experiment with their objects for five minutes. After five minutes have students return to their seats and have students discuss their findings. Record student responses on the board.

Closure:
After each group has shared their finding with the class, have students suggest other machines they have at home or in school that require a push or a pull. Have students chose one machine they have used and write a paragraph, using writing paper provided by the teacher, describing the machine and why it is an example of a machine. Have students illustrate their writing when finished.

Evaluation:
Students will be evaluated on the whole-class discussions, whether or not they could determine if their charade action was a push or pull, whether or not their group could determine which items used a push or pull, and whether or not their paragraph accurately describes a machine they have used and why it is a machine.