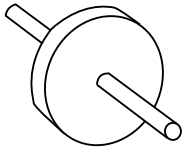


SIMPLE MACHINES PRE-VISIT ACTIVITIES



WHEEL AND AXLE

A wheel with a rod, called an axle, through its center: both parts move together to help us move a heavy load with less effort.

MATERIALS

- A toy car that has removable wheels and axle
- Several heavy boxes
- 2 skateboards
- Plywood (large enough to hold a heavy box or a student)

STEPS

- 1) Show students the toy car without wheels or axles. Ask one student to push the car on a table or desk. Ask students: "How well does this car move? What is missing from the car?" Make sure the students mention the missing axles as well as the missing wheels. If they don't know what the rod connecting the wheels is called, provide the word "axle."
- 2) Tell students that a wheel and axle is a simple machine that helps us move the car with less effort.
- 3) Place several heavy boxes or have a student sit on the piece of plywood. Ask another student to move the plywood forward several feet by dragging it. How difficult is it to move the plywood?
- 4) Ask students to think of an easier way to move the load. What simple machines could help? If students suggest "wheel and axle," pull out the two skateboards. Invite them to figure out how to use the skateboards to help move the load. Let them experiment until they are able to arrange the skateboards beneath the plywood and move the student or boxes on the plywood more easily.

WHAT'S GOING ON HERE?

The simplest wheel and axle has a large wheel and a cylinder that are fastened together and turn together. The wheel and axle form a kind of round lever. The center of the wheel and axle is the fulcrum of the rotating lever. As the wheel and axle rotate, the wheel moves a greater distance than the axle, but it takes less effort to move it. The axle moves a shorter distance, but it turns with greater force. Many machines use the wheel and axle to increase force.

