Learning Objectives

1) Understand that many types of motion exist. For example, an object may be able to roll, slide, spin, glide, or even bounce.
2) Realize that objects can move in different directions (up, down, left, right, frontward and backward).
3) Notice that the shape and size of an object affects how it moves. For example, a sphere or a wheel can roll down a slope easily, but a rectangle, which has flat sides, does not roll very well. A large wheel moves farther for each complete rotation than a smaller wheel does; this is because the large wheel has more edge on which to travel than a smaller wheel does.
4) Understand that modifications can be made to objects that will make them move differently. For example, a single wheel is prone to falling over, but if one were to connect that wheel to another wheel using an axle, both wheels will roll without falling over. If wheels of different size are connected, they will roll in a circle instead of rolling straight.
5) Observe that motion occurs when force is applied to an object. This force can be applied in different directions (up, down, right, left, frontward and backward).
6) Understand that a heavy object requires more force to be moved than a light object does.
7) Realize that the surface on which an object moves affects the force required to move the object. For example, less force is necessary to slide an object on a smooth surface than on a rough surface.

Suggested Activities

1) Before Viewing the Video:
   a) Tell the students, "Move something. Now move something else. Move a part of your body. Tell me what you just did. You put these things in motion—you made them move. What is motion? Watch the video to find out."
2) After Viewing the Video:
   a) Play Make the Motion: Make a set of flashcards on 3" X 5" cards of the following: run, skip, jump, walk, hop, bend, bounce, spin, up, down, left, right, front and back. Have the students stand up and stretch out both arms. They should not touch anyone else. This area is their personal space. Hold up the cards, one at a time, having the students enact what is on each card.
   b) Pre-teaching Activity: Put the following concepts on sentence strips and review with the class: 1. The shape and size of an object affects how it moves. 2. Anything that moves needs a force to start it. 3. The direction of the force affects the way things move. 4. The strength of the force affects how far things move. 5. The surface the object moves over makes it easier or harder to move.
   c) Play **The Rolling Race.** Send a note (or have older students write their own) home requesting that each student bring an object to school that can roll (small car, can, small ball, roller skate, roll of masking tape, etc.) labeled with his/her name. Set up a "roll track" on the floor with a start and finish line. First, let each student roll the object he/she brought and mark how far it goes. Chalk marks can be made and distances measured (another good activity) and put on a chart beside each student's name. Second, let two students at a time roll their objects, starting together, and see which goes the farthest. Record on a chart. Compare the distances on the two charts. Ask questions like: Why did this object go farther? Why did this object roll better? Have students tell the reasons.

Vocabulary

Axle – A rod that connects wheels, allowing them to rotate and remain upright

Direction – The imaginary line along which an object moves

Force – A push or pull

Slope – A slant (in a plane or surface)

Sphere – A ball-shaped object, which can rotate in all directions