



TEACHER GUIDE

SIMPLE MACHINES GRADES K-2

COMMON MISCONCEPTIONS

- **You must have big muscles to move heavy things.**

Simple machines can help make work easier. The weight of the object being moved does not change, but the amount of force needed can be decreased. Typically, the force needs to be applied over a longer distance as a trade-off.

- **Simple machines are difficult to make or use.**

Simple machines are made of few or no moving parts and they make work easier for anyone that uses them. Many simple machines can be made from common things you have lying around. We also use simple machines everyday such as a pair of scissors.

SIMPLE MACHINES

There are six simple machines: the pulley, the wedge, the lever, the wheel and axle, the screw and the inclined plane. Each of the simple machines is designed to make work easier. Depending on the simple machine, the direction of the force may be changed, or the amount of force needed may be changed. Simple machines have been around for a long time dating back to the 3rd century B.C.

It is important to note that simple machines do not magically make work easier, there is a trade-off, which is usually that the force needs to be applied over a longer distance. The inclined plane is a good example of this. To lift something straight up is a much shorter distance than rolling it up a long, gradual ramp. While the ramp takes longer due to the distance, it is easier.

TIPS FOR TEACHERS

Give students opportunities to compare doing tasks with and without a simple machine so they can see how simple machines can make work easier. Also, give students opportunities to differentiate between the different simple machines and know when to use one simple machine over another.

The topic is taught at different grade levels in different regions of the country. For younger students, you can focus on the pushes and pulls and simply point out when it changes direction or makes things easier. An understanding of the trade-off of distance and more complex examples such as levers with fulcrums in different places should be reserved for more advanced grade levels.

