

Grade Level: 4 - 5

Curriculum: Explorations, ADST, Science

Title of Lesson: Introduction to Simple Machines: Wheel and Axle

Learning Goals/Objectives:

- Machines are devices that transfer force and energy
- The choice of technology and tools depends on the task

Materials Needed:

- Pencil and Paper

Activity Instructions: (Step by Step)

- Begin by watching the following video and answering the questions below:
 - <https://youtu.be/N1NODD4NFEM>

Wheels and Axles

What is the force that wheels and axles can help to reduce?

Aside from using wheels and axles to help move heavy objects, what else can we use them for?

If we use a small wheel to spin a wheel that is twice the size of it, how would the large wheel behave?

How do speed, time and distance relate when we examine how wheels and axles work?

If we use a large wheel to spin a wheel that is half of its own size, how would the smaller wheel behave?

When we use a wheel and axle, what are we trading in order to gain a mechanical advantage?

What does RPM stand for? When do we use it when describing the action of wheels and axles?

How is a gear physically different from a wheel?

Name the four different types of wheel and axle assemblies. For each type, give an example of when you might use that kind of assembly (your examples should be different from those in the video!)

Think of a task where you might be able to combine all four types of wheels and axles to accomplish your goal. Sketch out your idea and label each type of wheel & axle!