

Teachers' Guide

Objectives of the lesson

- Students tell that the cranes are used continuously from the ancient times since today
- Students describe how the pulleys in the crane work and what is the advantage of their use
- Development of fine mobility skills
- Students cooperate with each other
- Students develop their creativity and critical thinking skills to solve a problem they are given

Introduction to the activity

The activity is about pulleys and the crane is used as a building example. You can refer to the crane's long history from the ancient times till today, its utility and its applications. Let your students describe their experiences; they have surely seen a crane in one of its forms and most of them would have a crane-toy in younger age.

Simple machine

The simple machine of this activity is the pulley. If you modify the crane, you can also use gears, or even a ratchet and pawl. You can refer to the transmission of motion from the crank to the pulley groove. Don't forget that the rope needs to be stretched the whole time.

Building

The building has no difficulty, and you can finish it on time. You can drag the load or use the pulley up in the beam. Only then you use the pulley. Check out when the load is transferred more easily.

Answers to the worksheet

1. Pulleys are useful to transfer the loads more easily, using the crane.
2. The crane is used when we want to carry massive and heavy loads. Ask your students to sketch how the crane works.

For the rotations of the crank, ask one student to count and the other to turn the crank slowly.

3. Ask your students to adjust the building properly so that they add one more pulley. The load transfer is easier with two pulleys.
4. Solutions apart from using the crane, is to use a trolley or a conveyor belt (like the ones in factories or airports). About the easier or more difficult part depends on what we want to transfer and where. Explain your students that the solution is not only about the right and wrong, but also what fits to each circumstance.