

Teachers Guide

Activity Two

Connecting Two Same-Sized Wheel Gear Connected

Introduction:

Before the students construct machines using Lego Dacta, they should have some understanding of how gears and pulleys work. Most of the constructions covered in this series of activities are simple machines that make use of these materials. This first one explores how same sized wheels work and the names given to each one in the combination.

Concept:

When the driver (the gear turned) and the follower (the gear turned by the driver) are the same size, the wheel gears turn at the same speed, but in the opposite direction. The force exerted on one gear is transferred equally to the other. There is then, no mechanical advantage gained by this type of configuration. It is, however, a good way to transfer energy along a series of gears.

Investigation:

When students become familiar with the Lego Dacta components, they can engage in a more-or-less systematic investigation of how they work. In this activity, students will investigate how a specific gear wheel arrangement works. The knowledge they gain through this activity will be applied later when they do their own inventions.

Lego Dacta Parts

- one 8-stud beam
- one 8-stud long axle
- two bushings
- two 40-tooth gear wheels



Directions

1. Assemble the gear wheels as displayed in the figure to the right.
2. Turn one axle to turn one gear. This gear is called the driver.
3. Record student observations about how the other gear, called the follower, works

Possible Student responses

1. one gear wheel turns another
2. the gear wheels turn in opposite directions
3. the gear wheels turn at the same rate (one complete turn on one equals one complete turn on the other)
4. the gear wheels turn at the same speed
5. The students can also predict and test their predictions on using other pairs of same-sized gear wheels assemblages. Lego Dacta kits usually contain 40, 24 and 6 toothed gears wheels.