Simple Machines – Fruit Wedge
4th Grade
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References:
• Columbus Public Schools SLC Guide, Kelly Krupa [Simple Machines Stations!]

Benchmarks:
SLC 10: Explain the operation of a simple mechanical device

Objectives:
Students will learn the principles and uses of an inclined plane, screw, and wedge. They will also come up with every day examples of simple machines.

Materials:
• Halves of various types of fruit- bananas, apples and oranges work well
• Plastic knives
• Paper towels

Initial Demonstration:
Ask students what the wedges did last week when they pushed them through the sand (see SimpleMachinesIntro)?

Target Observations:
• Wedges can be used to push things apart. [Cut, split, etc]

Target Model:
• Wedges separate things by splitting them apart.
• Examples of wedges are knives, scissors, doorstops, etc.

Procedure:
1. Pass out a fruit halve to each student
2. Instruct them to try and separate the piece of fruit into two or more pieces, with the following rules
   a. The two pieces must be fairly equal in size
   b. They must be separated neatly
3. Pass out a second piece of fruit, have the students try again, but this time let them use a tool. Pass out a plastic knife along with the fruit for them to use.

Ask why the students were not able to separate the fruit on their own [hand is too think to cut the fruit]. Then ask why they were able to separate the fruit with a knife [knife has a thin edge, this makes it easier to split the fruit]. What kind of simple machine is the knife? [wedge] Have the students list as many real-world example of a wedge as they can think of on their own. [maybe use as a carrot to get a piece of bonus fruit?]

**Target Observations:**

- Cutting the fruit exactly in half with bare hands is very hard.
- Cutting the fruit exactly in half with a knife is very easy.

**Target Model:**

- Knives are wedges, a type of simple machine. They make cutting things easier by reducing the force needed to make a cut.

**Summary:**

This lesson expands upon a previous introduction to wedges. Students explicitly see that wedges (in the form of knives) make work (cutting) easier. Wedges help split things apart, and are one of the six types of simple machines.