Gadget Anatomy
5th Grade
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References:

www.mos.org/sln/Leonardo/SketchGadgetAnatomy.html

Benchmarks:

SLC #6: Recognize the advantages and/or disadvantages to the user in the operation of simple technological devices.
CPS Benchmark: Students will identify the difference between work and force as it relates to each of the six simple machines.

Objectives:

• Identify the different simple machines which make up complex machines.
• Recognize the benefits of using these simple machines in these cases.
• Observe a machine closely from several angles while it operates.
• Show how the moving parts in machines relate to and affect each other.
• Create a clear diagram of how a machine works.

Materials:

• Before lesson beginning ask students to bring in broken small appliances (clocks, telephones, etc), or collect items such as an egg beater, cork screw, car jack, can opener, garlic press, tongs, monkey wrench, hand drill, Vise-Grips, the mechanism from a music box, wind up toy, pencil sharpener, stapler, etc.

Initial Demonstration:

Ask students why we use the gadgets/appliances that they have in front of them. Also, ask why they serve this purpose.

Target Observations:

We use these things to make different tasks in our life easier.

Target Model:

• Machines make jobs easier.
• They reduce the force, distance, etc. needed to accomplish a task
Procedure:

1. Provide each group with one machine to examine in detail. Suggest that students take turns operating the machine while the others watch to see how each part moves.

2. Challenge each group with the following questions:
   - What is the function of this machine?
   - How many moving parts does it have?
   - How are the moving parts connected to each other?
   - What does each moving part do in the machine?
   - Which parts are elements of simple machines?

3. Instruct students to sketch a diagram of their machine in their science journal. They should draw the machine from multiple points of view if necessary to show all parts.

4. When the diagrams are complete, students should add arrows and written notes to indicate directions of motion for each part, label the elements of the machines involved, and explain connections.

   Have students display and explain their diagrams to other groups.

Target Revised Model:

- The machines we use daily are made up of simple machines. We can figure out how they work.
- The simple machines within our machines make the job easier for us.

Summary:

Complex machines are just made up of a bunch of simple machines. All machines help make a task easier to do by reducing what is needed to accomplish it (such as force). There are simple machines everywhere around us in everyday life.