

Engineering Design Process Steps

1. **Understand the need:** What is the problem? What do I want to do? What are the project requirements? What are the limitations? Who is the customer? What is the goal? Gather information and research.
2. **Brainstorm and design:** Imagine and brainstorm ideas. Be creative. Investigate existing technologies and methods to use. Explore, compare and analyze many possible solutions. Select the most promising idea.
3. **Plan:** Draw a diagram of your idea. How will it work? What materials and tools are needed? How will you test it to make sure it works?
4. **Create:** Assign team tasks. Build a prototype. Does it work? Talk about what works, what doesn't and what could work better.
5. **Improve:** Talk about how you could improve your end product. Make revisions. Draw new designs. Make your end product the best it can be.

Types of Simple Machines and Their Mechanical Advantages

Wedge	Pushes material apart, cuts.
Axle and Wheel	Makes it easy to move objects by rolling them, and reducing friction.
Lever	Helps lift heavy objects using longer distances.
Inclined Plane	Makes it easier to move objects upward; a longer path but easier lifting.
Screw	Turns rotation into lengthwise movement.
Pulley	Helps lift heavy objects easier by redirecting forces.