

The Engineering Design Process

Adapted from:

<http://www.sciencebuddies.org/engineering-design-process/engineering-design-process-steps.shtml>

- ★ The engineering design process is a series of steps that engineers follow to come up with a solution to a problem. Many times the solution involves designing a product (like a machine or computer code) that meets certain criteria and/or accomplishes a certain task.
- ★ This process is different from the Steps of the Scientific Method, which you may be more familiar with. If your project involves making observations and doing experiments, you should probably follow the Scientific Method. If your project involves designing, building and testing something, you should probably follow the Engineering Design Process.
- ★ The steps of the engineering design process are to:
 - Define the Problem
 - Do Background Research
 - Specify Requirements
 - Brainstorm Solutions
 - Choose the Best Solution
 - Do Development Work
 - Build a Prototype
 - Test and Redesign
- ★ Engineers do not always follow the engineering design process steps in order, one after another. It is very common to design something, test it, find a problem, and then go back to an earlier step to make a modification or change to your design. This way of working is called **iteration**, and it is likely that your process will do the same!
- ★
- ★ Finding an idea for your engineering project requires you to identify the needs of yourself, another person, or a group of people. The act of looking at the world around you to identify these needs is called **need finding**.
- ★ To help you find an idea for your engineering project:
 - Create a list of all the things that annoy or bother the people around you. Record this bug list in your Design Notebook.
 - Mind Map possible design problems, ideas, or areas of interest to you.



- ★ Once you have found an idea for your engineering project, describe the problem by writing a **problem statement**. Your problem statement must answer three questions:
 - **What** is the problem or need?
 - **Who** has the problem or need?
 - **Why** is it important to solve?
- ★ The format for writing a problem statement uses your answers to the questions and follows these guidelines:
 - **Who** need(s) **what** because **why**.
 - ----- need(s) ----- because -----.
- ★ Before moving forward with an idea for your engineering project, be sure to evaluate your problem.

