

Somerset Berkley Regional High School

Robotics Engineering with LabView

1. Engineering Design

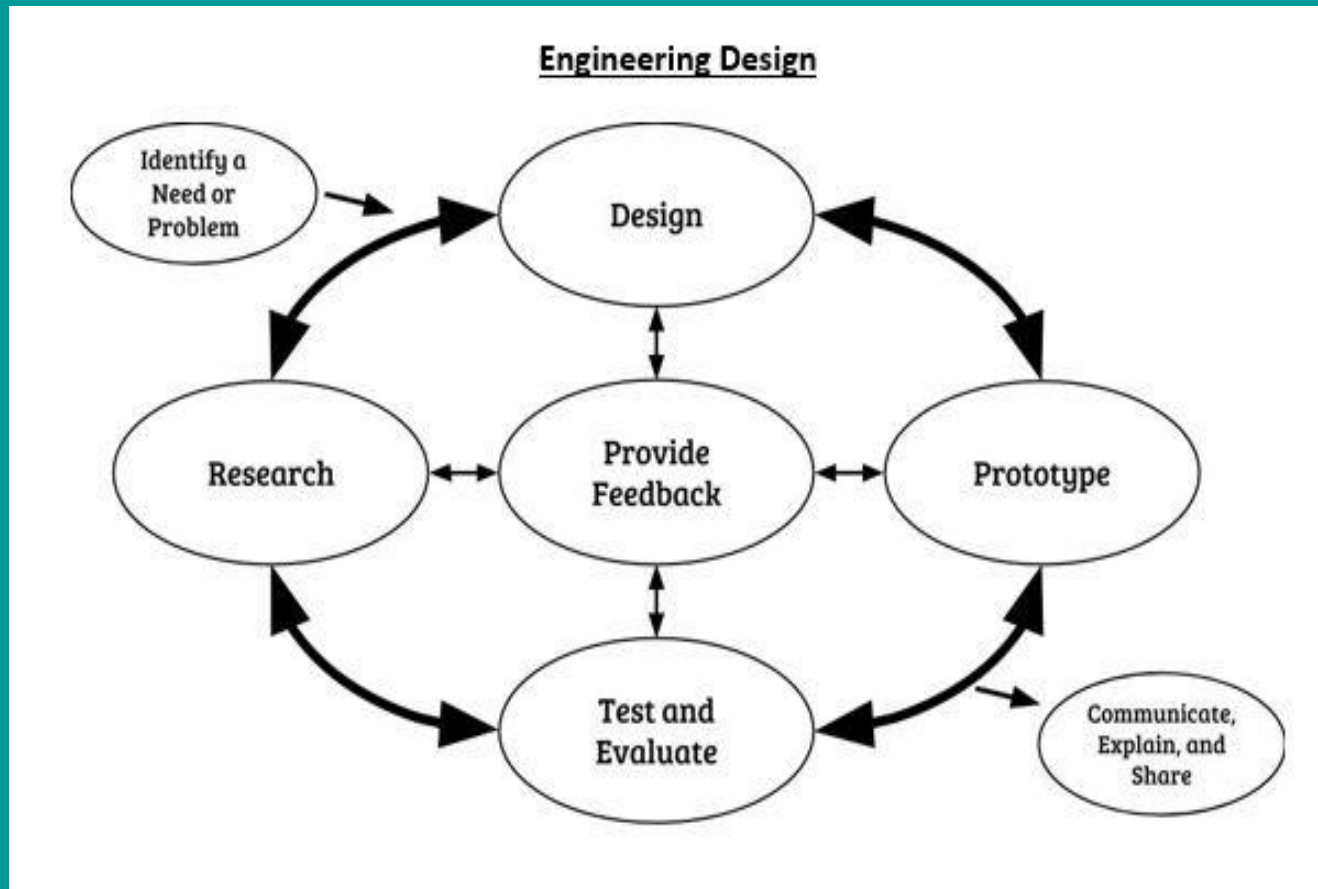
Central Concepts: Engineering design involves practical problem solving, research, development, and invention/innovation, and requires designing, drawing, building, testing, and redesigning. Students should demonstrate the ability to use the engineering design process to solve a problem or meet a challenge.



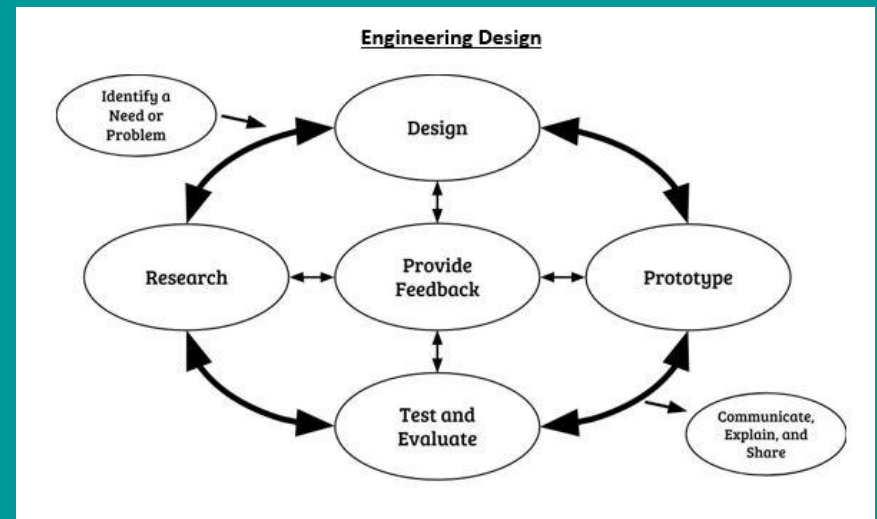
Standard 1.1

Engineering Design Process

2016 Revised Massachusetts State Framework



Identify the need or problem

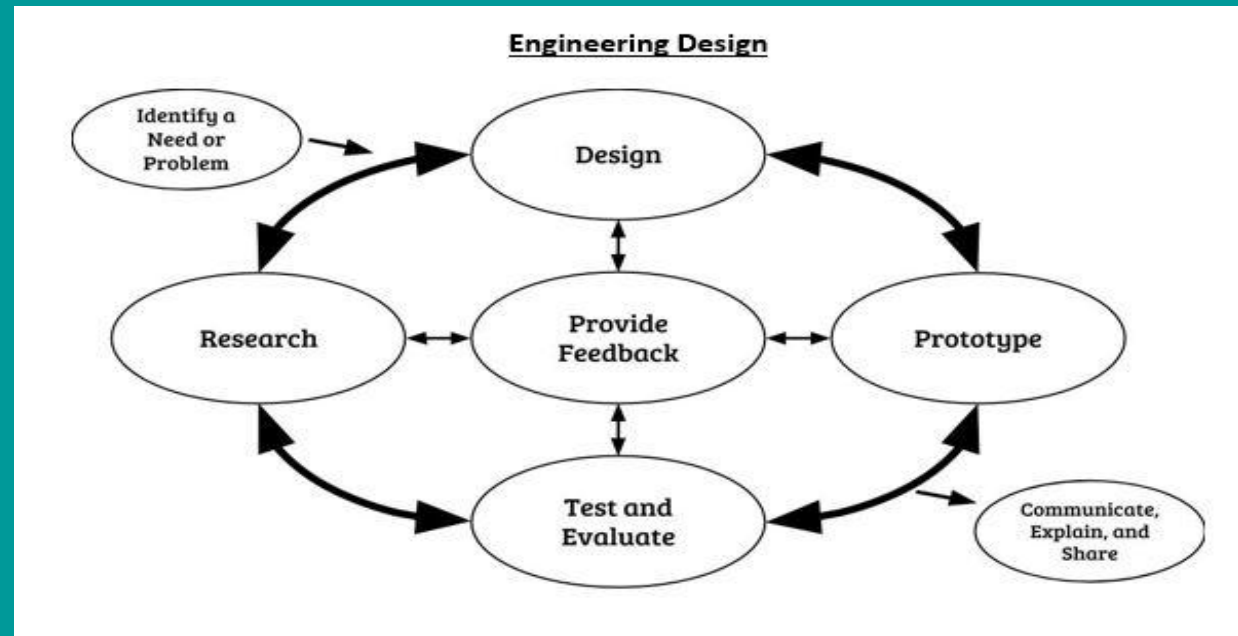


Identify a need or a problem. To begin engineering design, a need or problem must be identified that an attempt can be made to solve, improve and/or fix. . This typically includes articulation of criteria and constraints that will define a successful solution.

STUDENT : COMPLETE THIS SENTENCE

Design, build and program a robot to.....

Research the problem

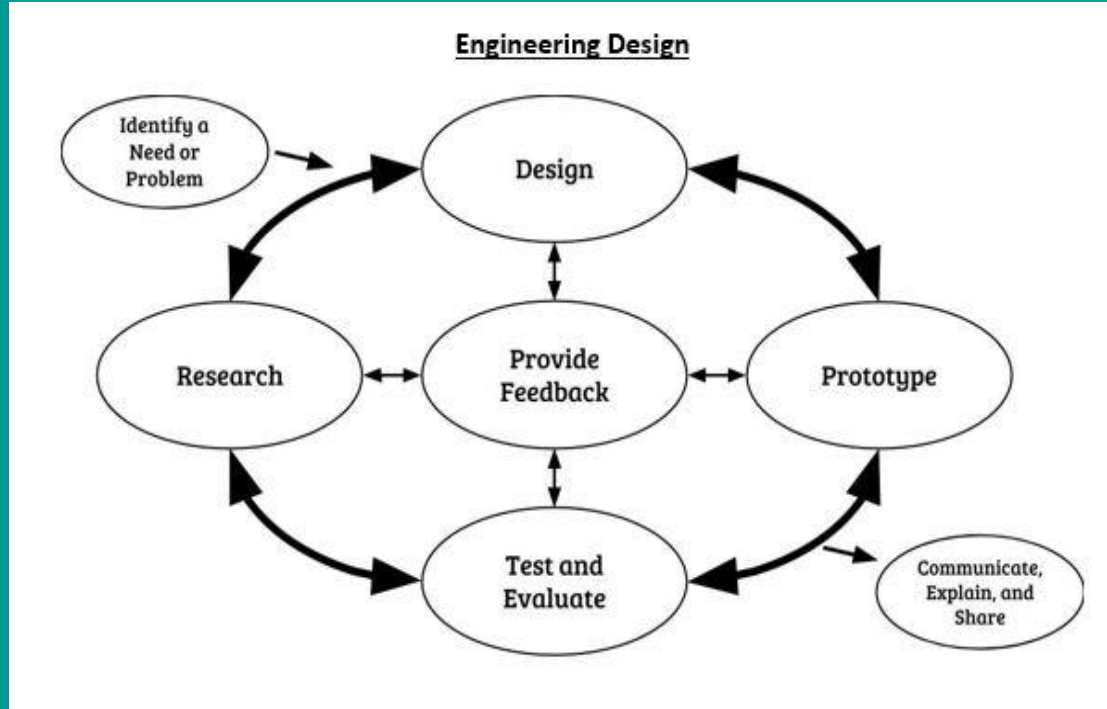


Research. Research is done to learn more about the identified need or problem and potential solution strategies. Research can include primary resources such as research websites, peer-reviewed journals, and other academic services, and can be an ongoing part of design.



Student : Insert a new page and list the websites you have used in your research

Design



Design. All gathered information is used to inform the creations of designs. Design includes modeling possible solutions, refining models, and choosing the model(s) that best meets the original need or problem.

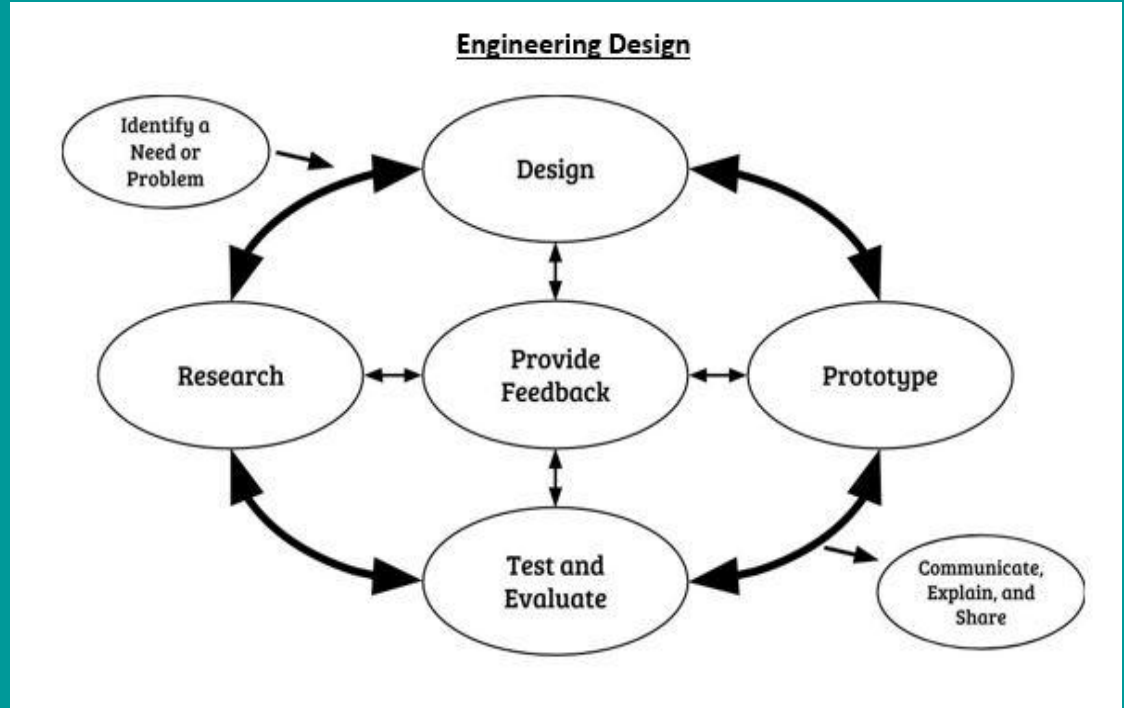
Student : Build your prototype. Insert a new slide and place your robot picture on the slide. Insert as many slides as necessary to capture the entire prototype evolution progression.



Step 3 evidence

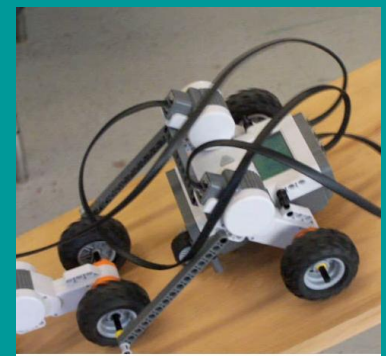
1st Prototype picture and computer program

Prototype



A prototype is constructed based on the design model(s) and used to test the proposed solution. A prototype can be a physical, computer, mathematical, or conceptual instantiation of the model that can be manipulated and tested.

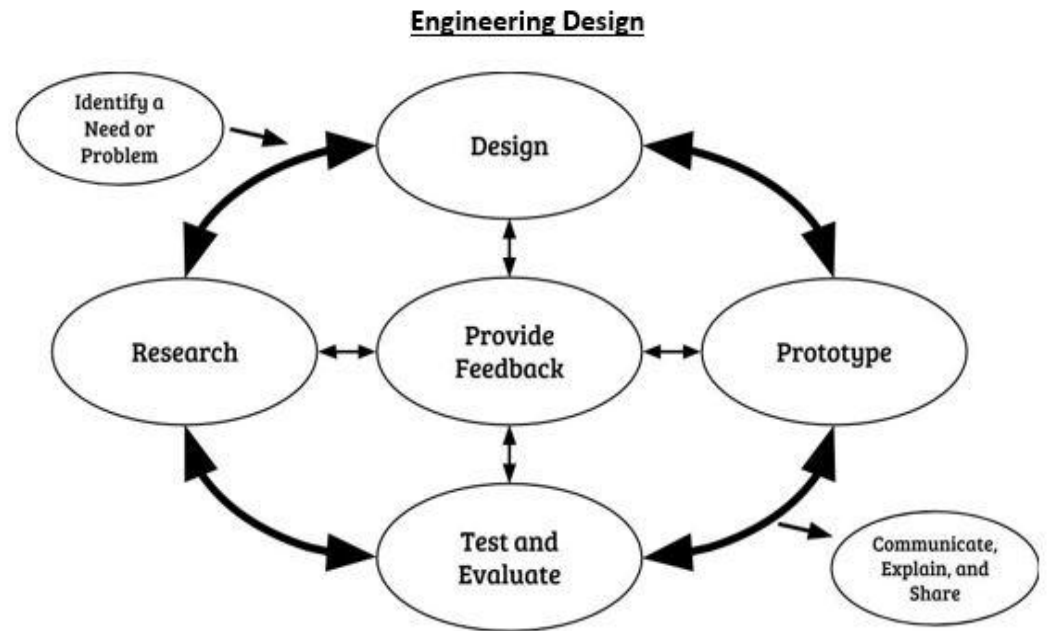
Student : Continue to build/refine your robot prototype.



Steps 3 & 4

1st modified prototype picture and computer program

Test and evaluate



The feasibility and efficiency of the prototype must be tested and evaluated relative to the problem criteria and constraints. This includes the development of a method of testing and a system of evaluating the prototype's performance. Evaluation includes drawing on mathematical and scientific concepts, brainstorming possible solutions, testing and critiquing models, and refining the need or problem

1. Does your robot work?
2. Did it perform as expected?
3. What changes are necessary for the robot and the program?
4. Does it meet the original design constraints?
5. Is it safe?
6. Lab work- Modify your robot project and use the next slide to post a picture of your improved robot project

Test and evaluate responses

Communicate the solution(s)

Provide the YouTube link of your video that shows how your robot meets the challenge.

YouTube video link :

Redesign

Overhaul the solution(s) based on information gathered during testing and self-assessment activity.

Steps for use:

1. First go to file and make a copy.

(Now you should have a copy in your drive that you can edit)

2. Go into the file you copied and edit under Google Slides adding each of the steps you have completed.
3. Then go to file->download file and then choose PDF document (.pdf).
4. Then on your weebly website under Build Media section drag the file option and upload the PDF of your Slides presentation to your website