

Somerset Berkley Regional High School

Robotics Engineering with LabView

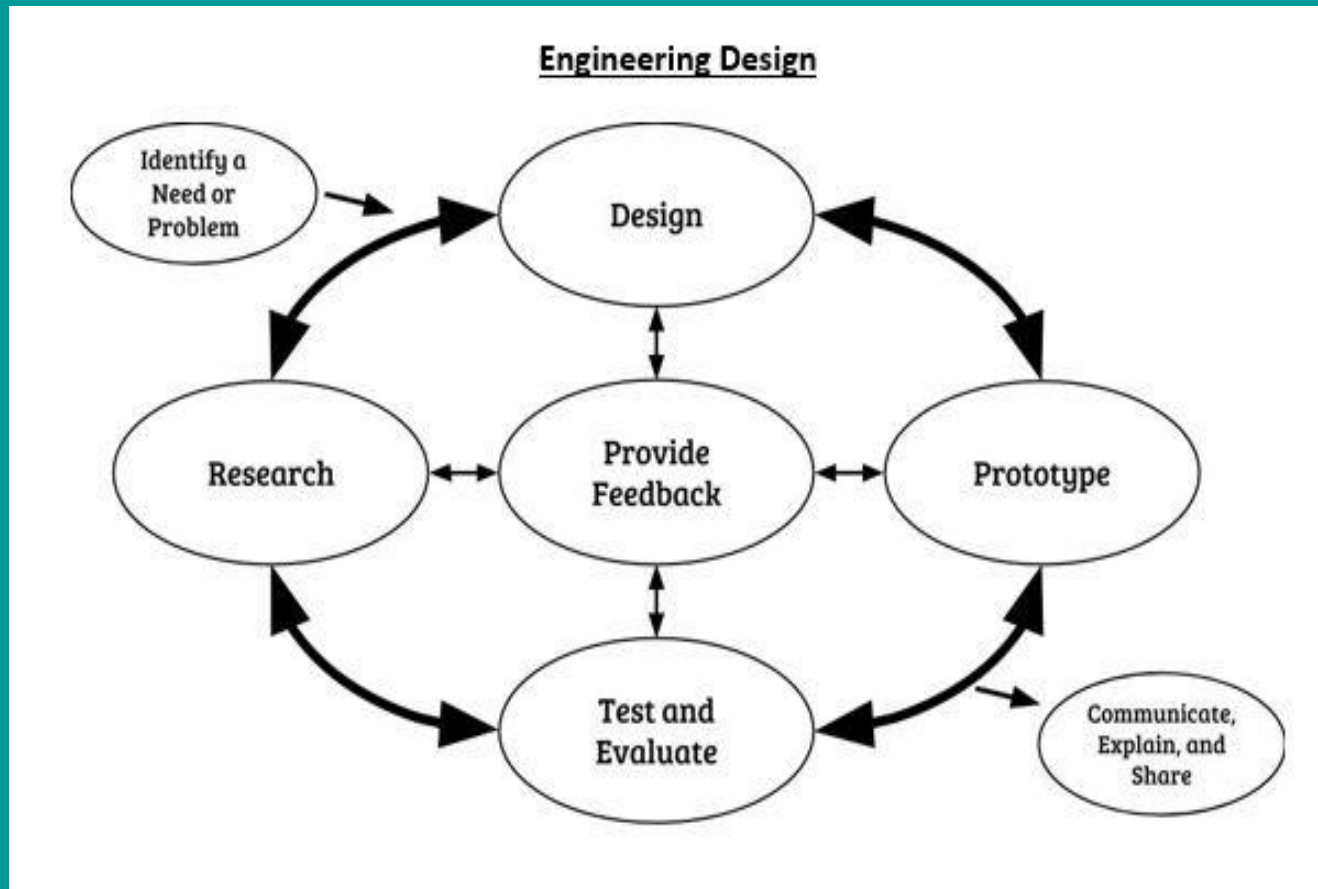
1. Engineering Design

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.

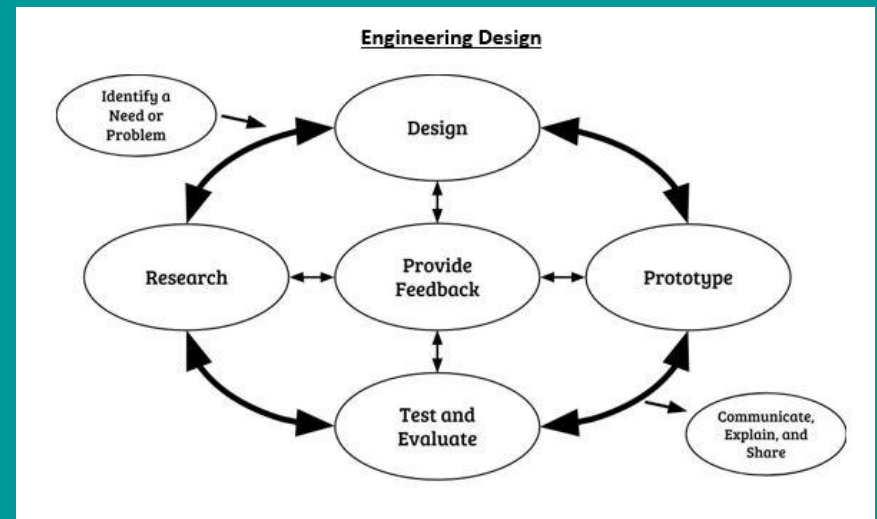


Engineering Design Process

2016 Revised Massachusetts State Framework



Identify a need or problem

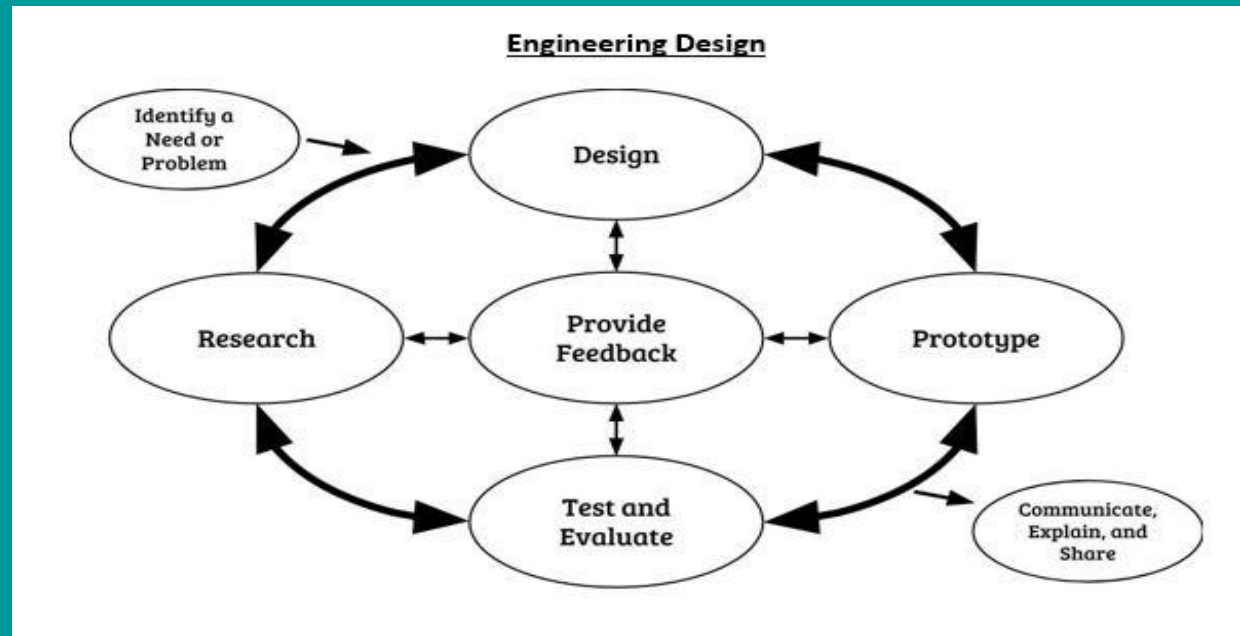


Identify a need or a problem. To begin engineering design, a need or problem must be identified that an attempt can be made to solve, improve and/or fix. . This typically includes articulation of criteria and constraints that will define a successful solution.

STUDENT : COMPLETE THIS SENTENCE

Design, build and program a robot to travel up an inclined ramp and press a touch sensor to make a beep.

Research the problem

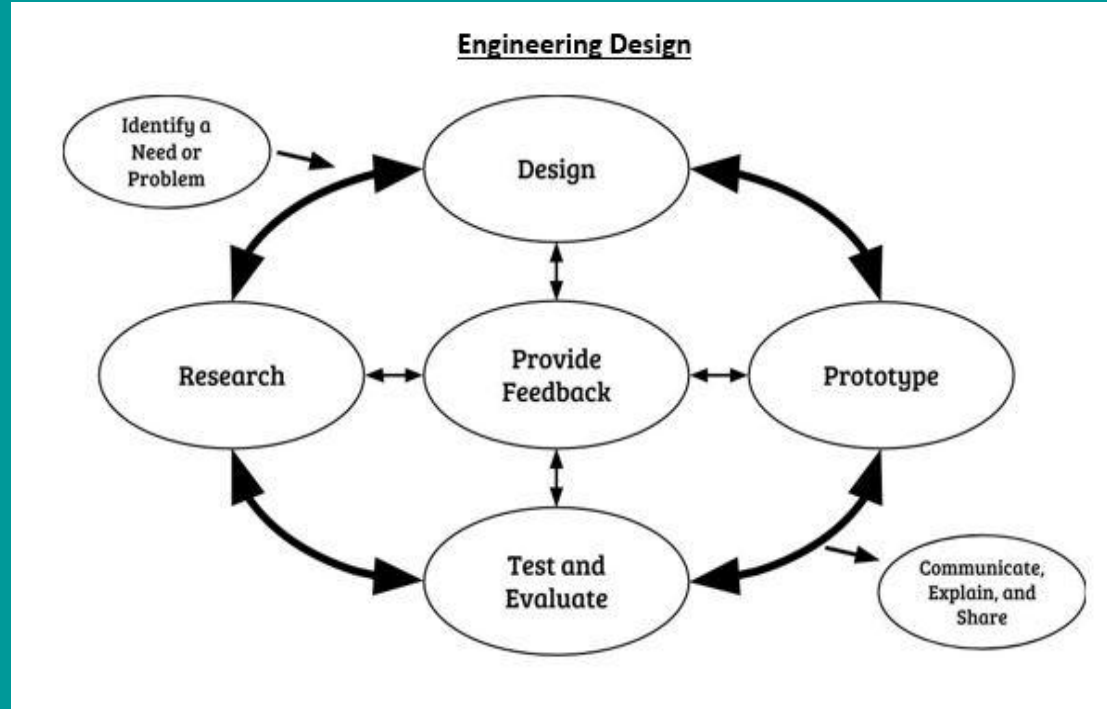


Research. Research is done to learn more about the identified need or problem and potential solution strategies. Research can include primary resources such as research websites, peer-reviewed journals, and other academic services, and can be an ongoing part of design.



Student : nxtencyclopedia.com

Design

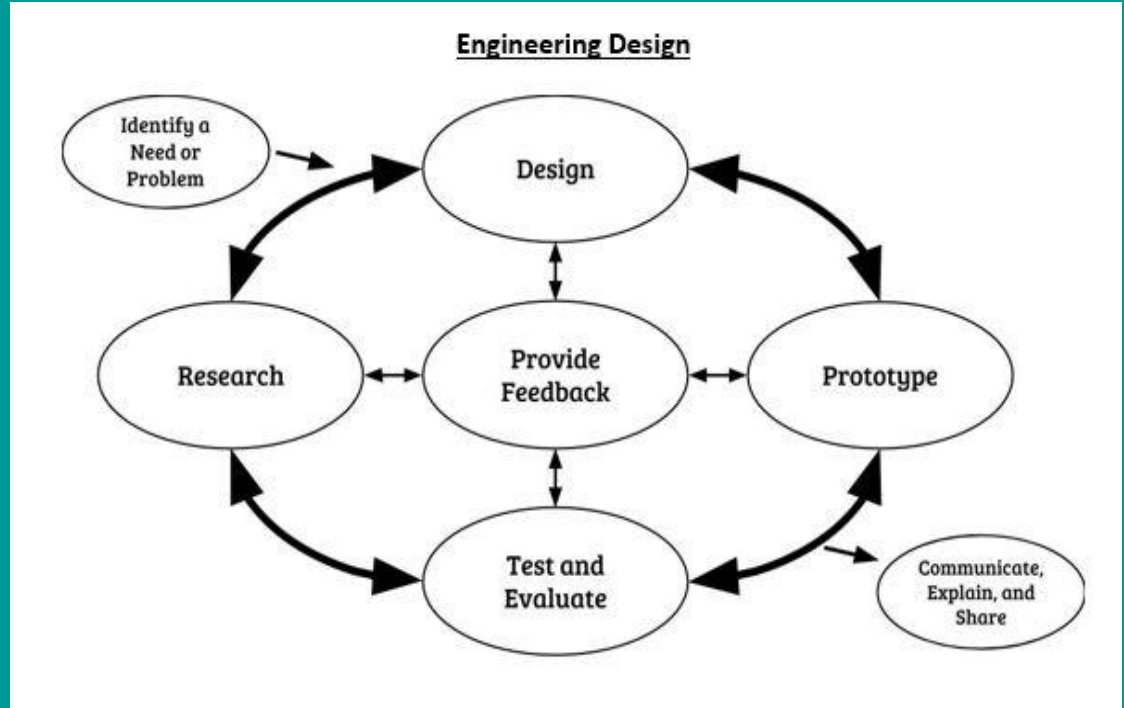


Design. All gathered information is used to inform the creations of designs. Design includes modeling possible solutions, refining models, and choosing the model(s) that best meets the original need or problem.

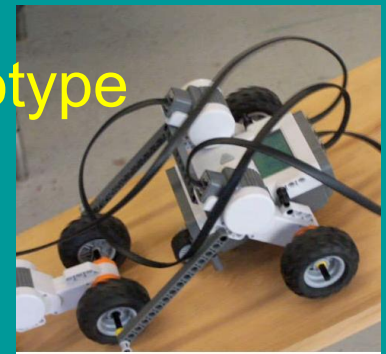
Student : Build your first prototype. Insert a new slide and post a picture of your robot on this slide.

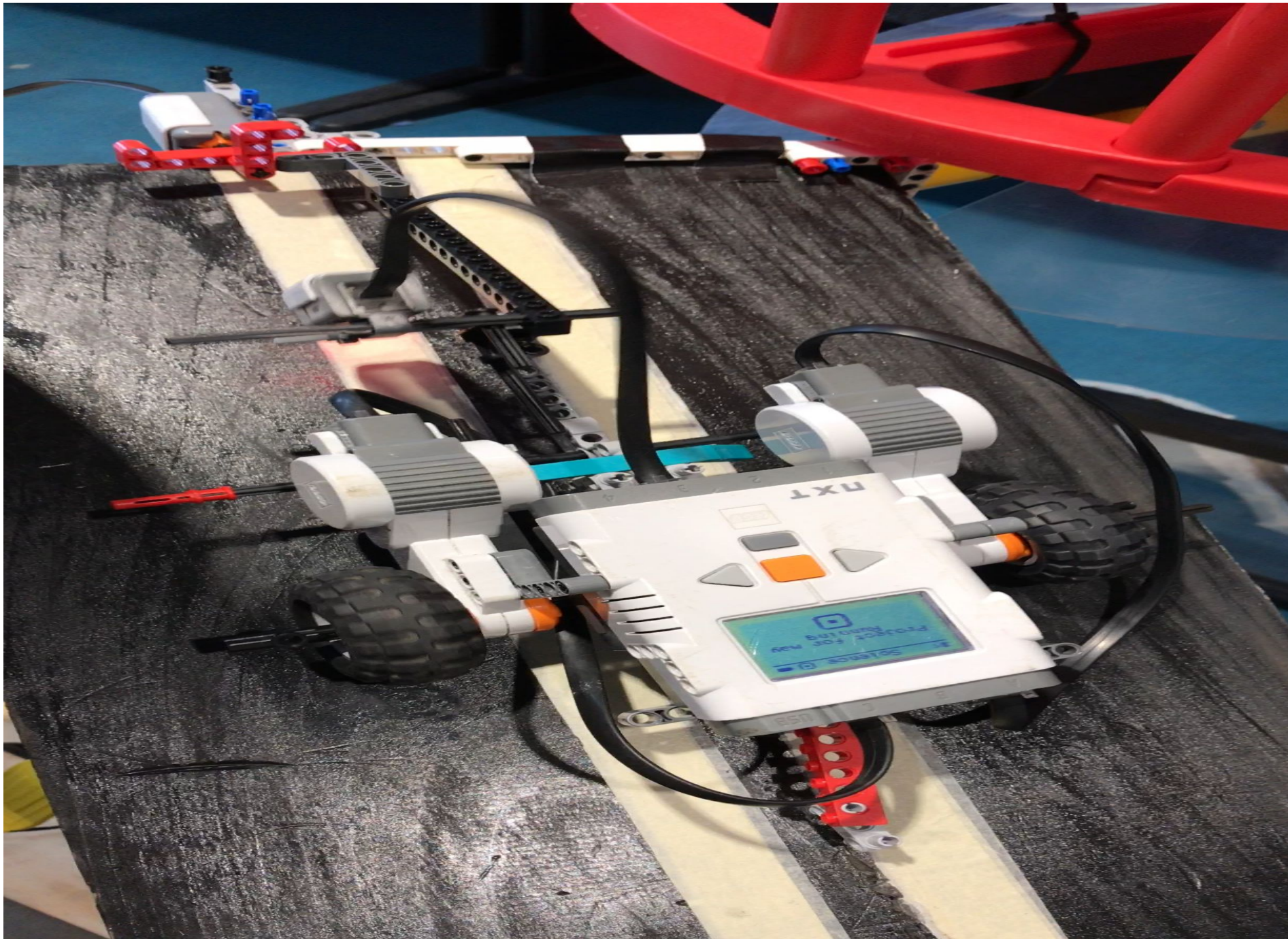


Prototype

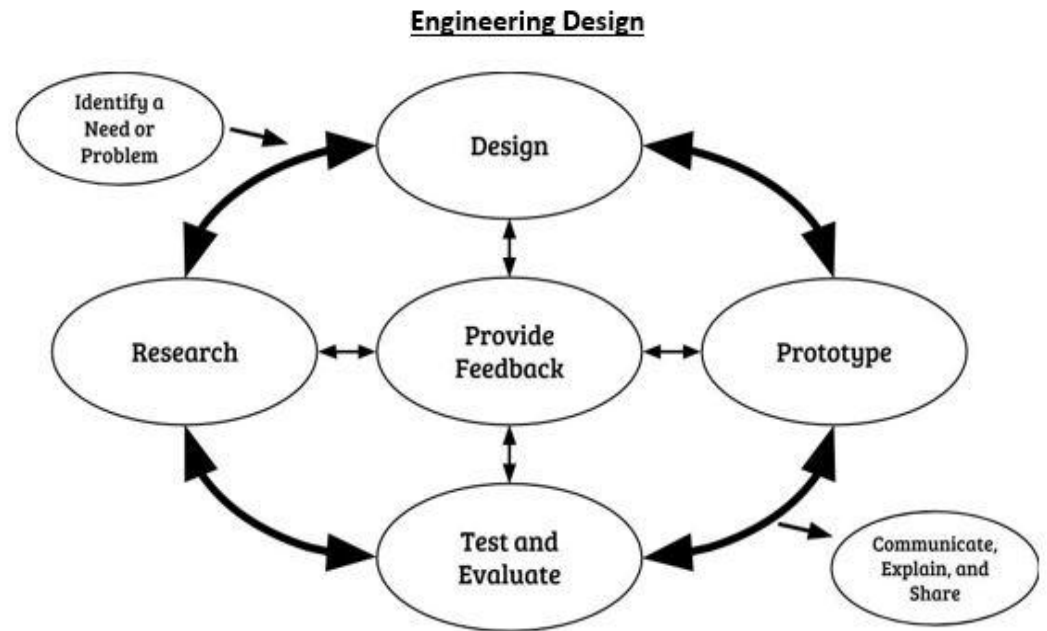


- A prototype is constructed based on the design model(s) and
- used to test the proposed solution.
- Student : Continue to build/refine your robot prototype. **IMPORTANT** - Document the prototype evolution with digital images





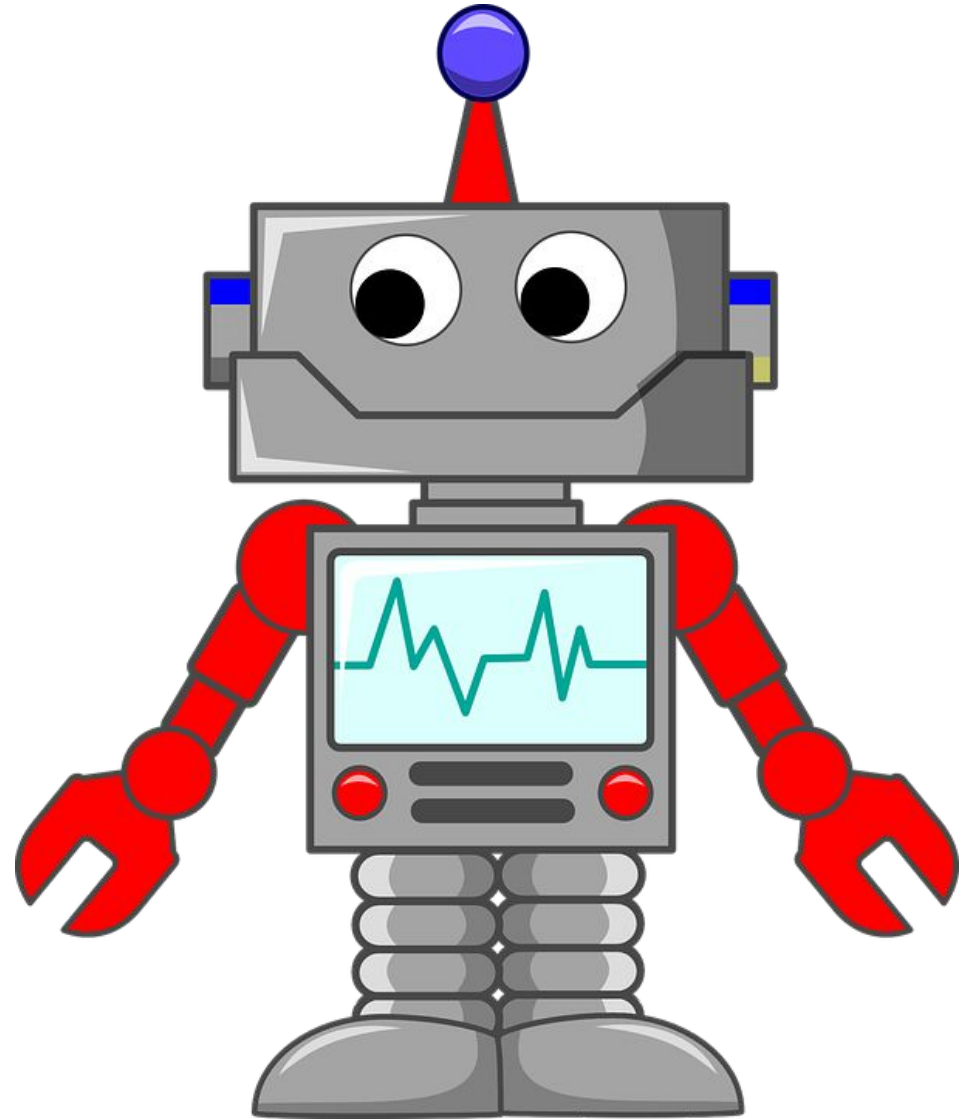
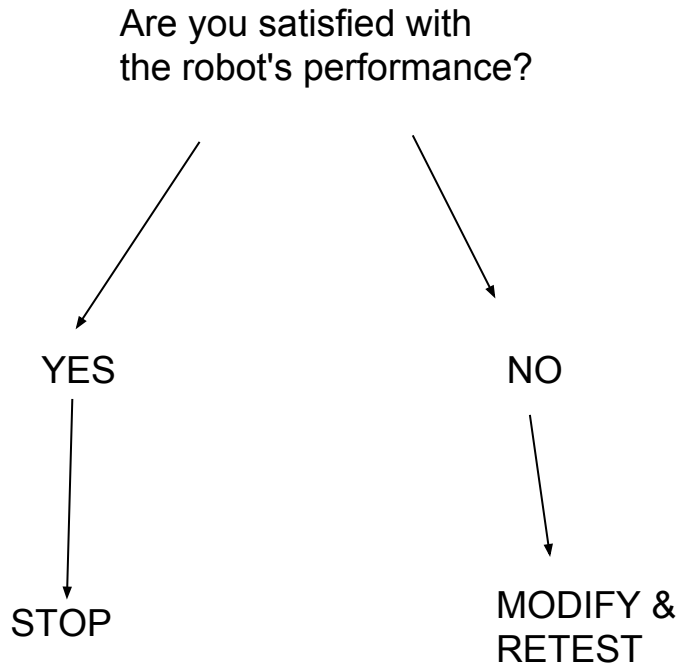
Test and evaluate



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? Yes
2. Did it perform as expected? No
3. What changes are necessary for the robot and the program? A back support piece and a different light amount
4. Does it meet the original design constraints? Yes
5. Is it safe? yes
- 6.

Test and evaluate



IMPORTANT: Show the evolution of your modified prototypes with digital images. Insert slides as necessary.

Step 7
Communicate the solution(s)

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

YouTube video link :

Questions

Having considered the present day application areas for robot use, and technological developments. , now consider the ever increasing roles robots will play in our society in the future. What kinds of changes can you imagine for transportation, communication, domestic and medical systems of the future?

Transportation: with the use of robots in modern day society transportation will prosper. Using robots will mean things will run more fluid so things will be more on time. Also with cars they can be autonomous so it will be more convenient for people to drive if they are tired so in turn will make things safer

**Communication: robots will help us interpret different languages
And also correct speech in kids**

Medical: we can treat people faster and more efficient so if a doctor is busy they can use a robot or if a surgeon can't make it or needs to do emergency surgery then they can control a robot from anywhere

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 modify the interactive Powerpoint show. Rename your file for example Maze bot or Race bot etc.

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

Sources of information

Massachusetts curriculum frameworks 2006

Design and problem solving in Technology

By John Hutchinson & John R. Karsnitz 1997