

Somerset Berkley Regional High School

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Robotics Engineering with LabView

Objective: To support the development of metacognitive skills and habits of reflection for effective problem solving

Planning ; What should step one be? What do I know about the problem?

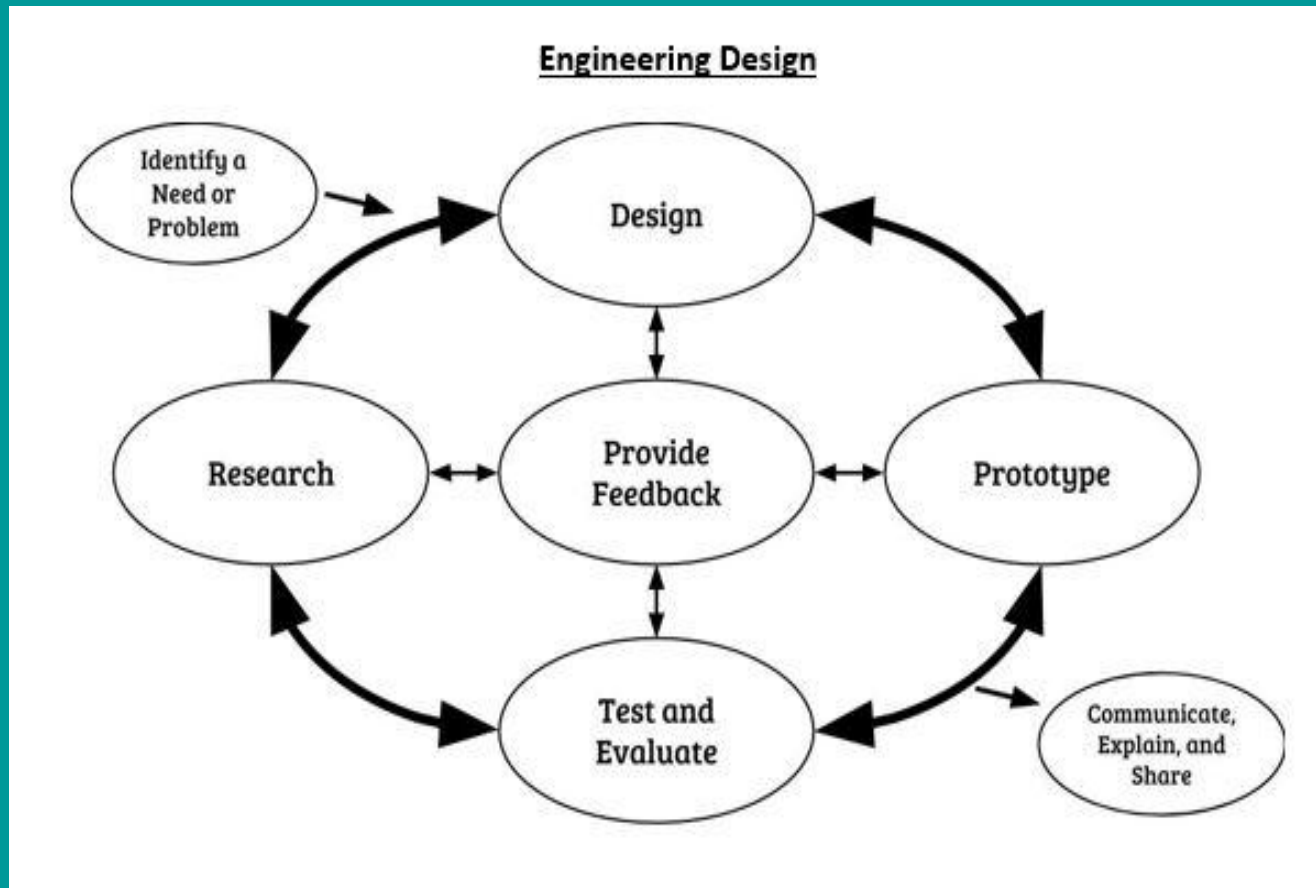
Goal setting Set realistic goals. How much time do I have?

Monitoring progress Am I on the right track?

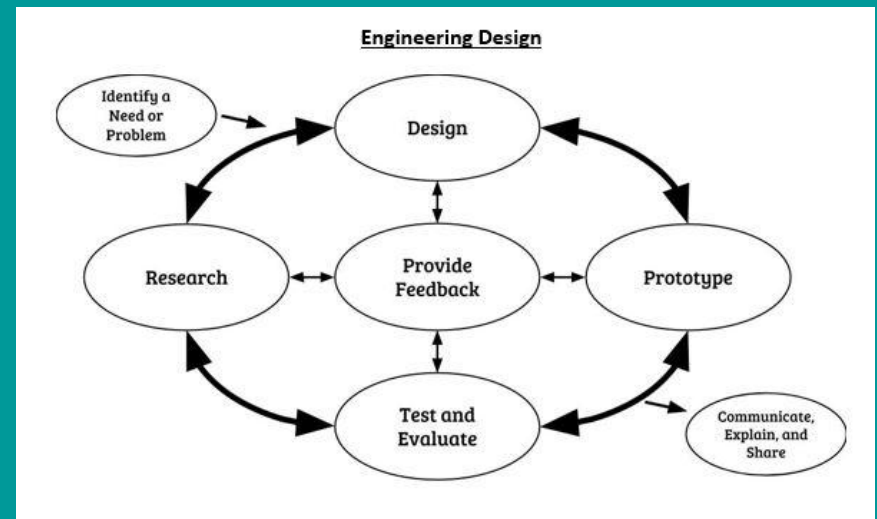
**Adjusting What did I learn. Did I get the results I was expecting?
If I could do this over again I would.....**

Standard 1.1 Engineering Design Process

2016 Revised Massachusetts State Framework



Identify the need or problem



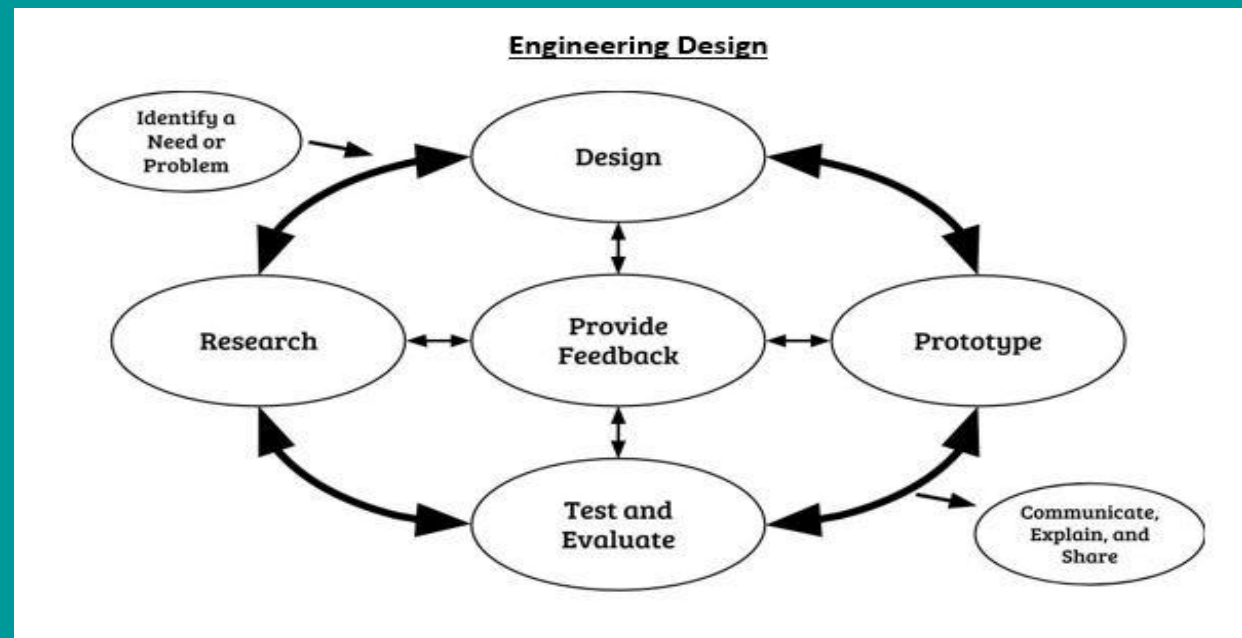
Identify a need or a problem. To begin engineering design, a need or problem must be identified that an attempt can be made to solve, improve and/or fix. . This typically includes articulation of criteria and constraints that will define a successful solution.

Evidence : Add slide and describe what you already know about the problem. This helps to build an understanding of the problem

Describe the knowledge you will need to solve this problem and identify the constraints.

The information needed for this project is to build a program for an autonomous robot that can go through a maze and can detect when there is an obstacle in the way. We would need to know how to write code for a robot that uses a sensor that can back up and turn to avoid running into walls.

Research the problem



Research. Research is done to learn more about the identified need or problem and potential solution strategies.

Decide what information is needed.

What should step one be?

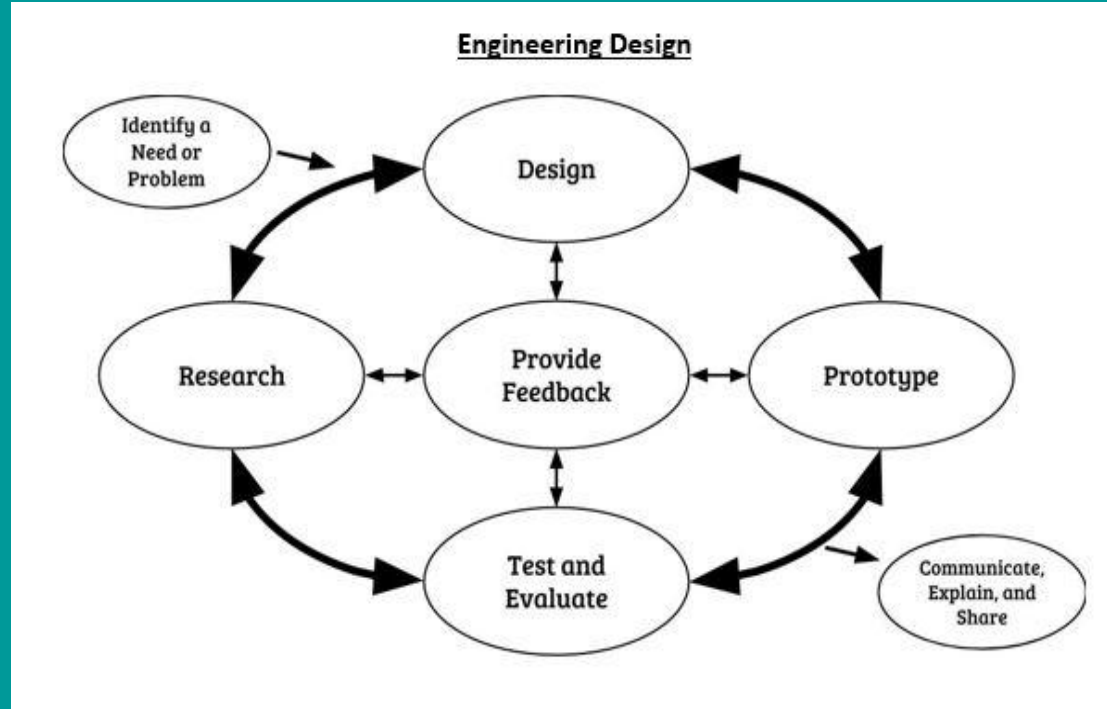
Use appropriate tools and strategies to access the information

Analyze the information gathered and its sources.

If there is more than one good answer to the problem,

*On your PowerPoint file show add a slide to show what you did for research. **Evidence***

Design

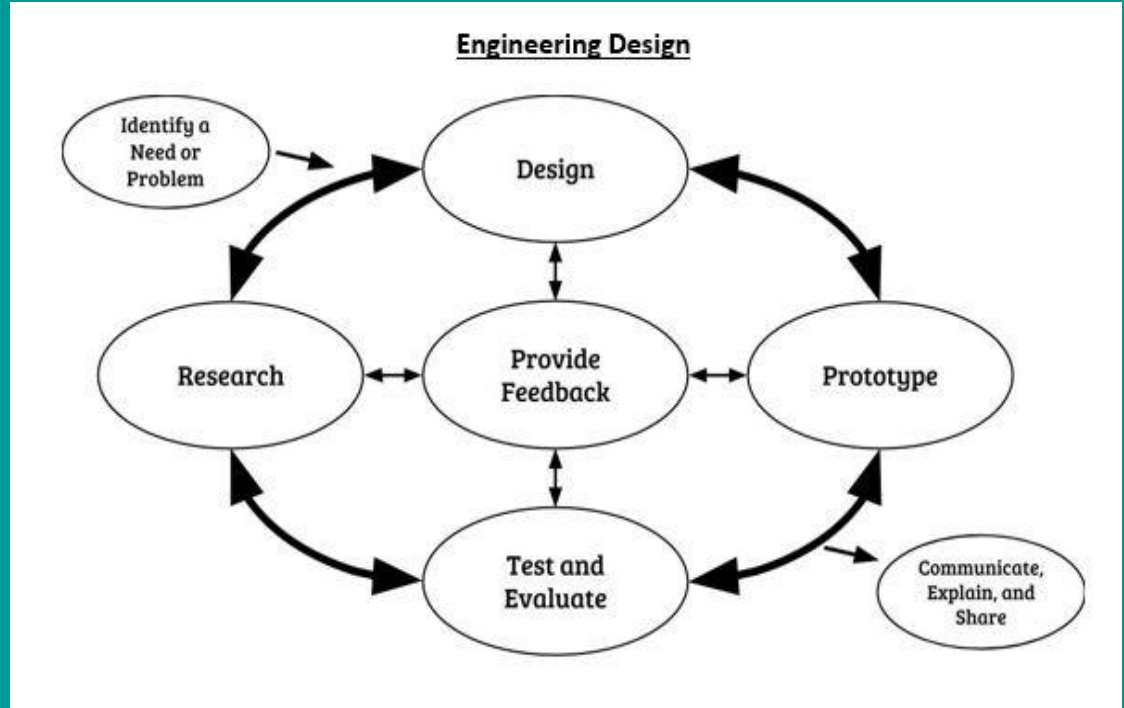


Design. All gathered information is used to inform the creations of designs. Design includes modeling possible solutions, refining models, and choosing the model(s) that best meets the original need or problem.

Evidence: Clarify the roles of each team member, taking advantage of individual strengths.
List the role of each member on the team

- Jacob Carpenter, Programmer
- Andrew Morin, Builder

Prototype

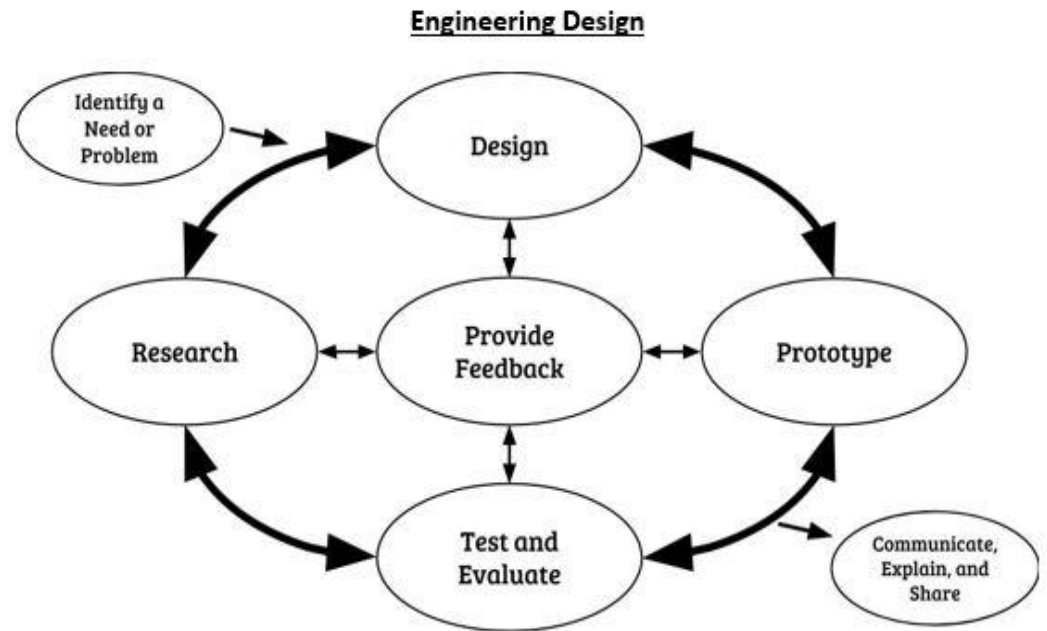


A prototype is constructed based on the design model(s) and used to test the proposed solution. A prototype can be a physical, computer, mathematical, or conceptual instantiation of the model that can be manipulated and tested.

Evidence : Execute the plan, (build your robot) modifying as needed.

Our plan for building our robot is to make a robot that can turn easily with a touch sensor in the front so it can detect when it runs into a wall

Test and evaluate



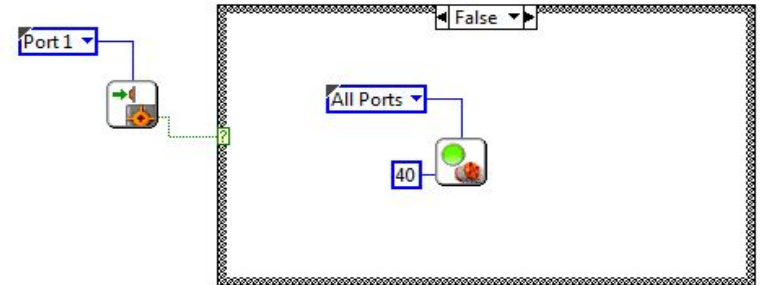
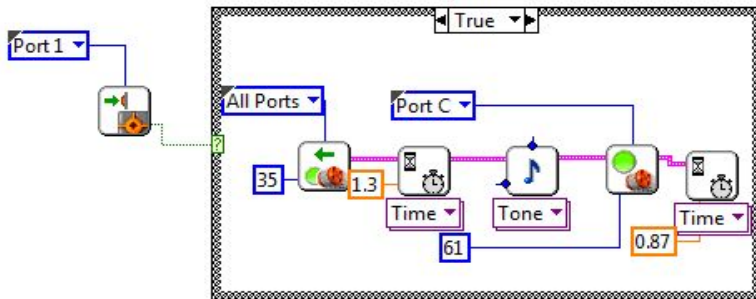
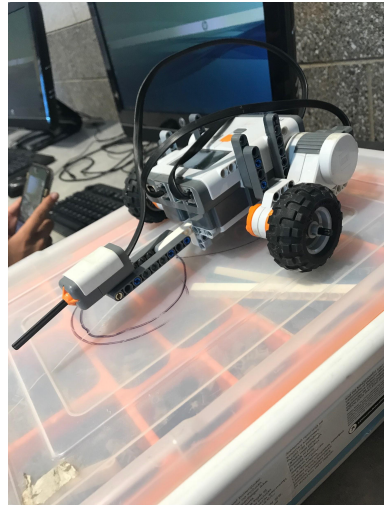
The feasibility and efficiency of the prototype must be tested and evaluated relative to the problem criteria and constraints.

Collaboratively decide whether the solution needs more work and repeat previous phases as needed.

- Does your robot work?
- Did it perform as expected?
- What changes are necessary for the robot and the program?
- Does it meet the original design constraints?
- Is it safe?
- Students present their solution to the other teams and celebrate the work of the problem solvers

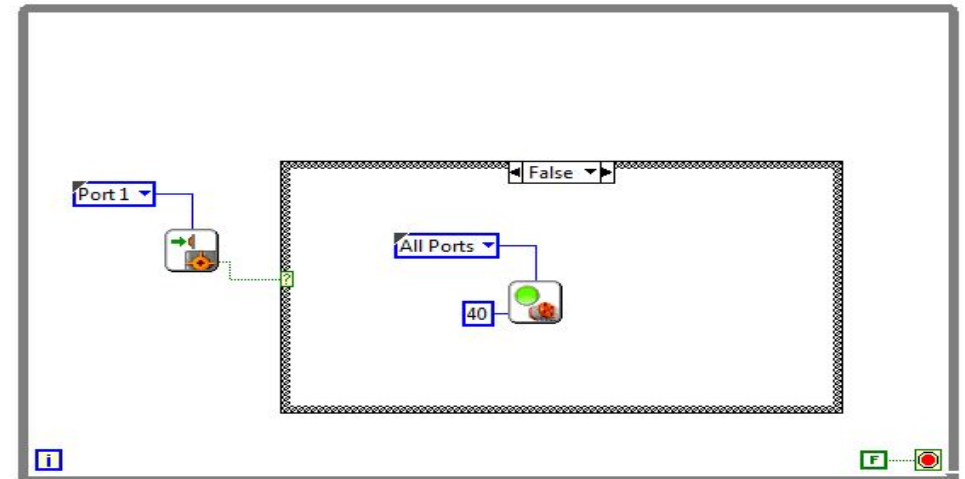
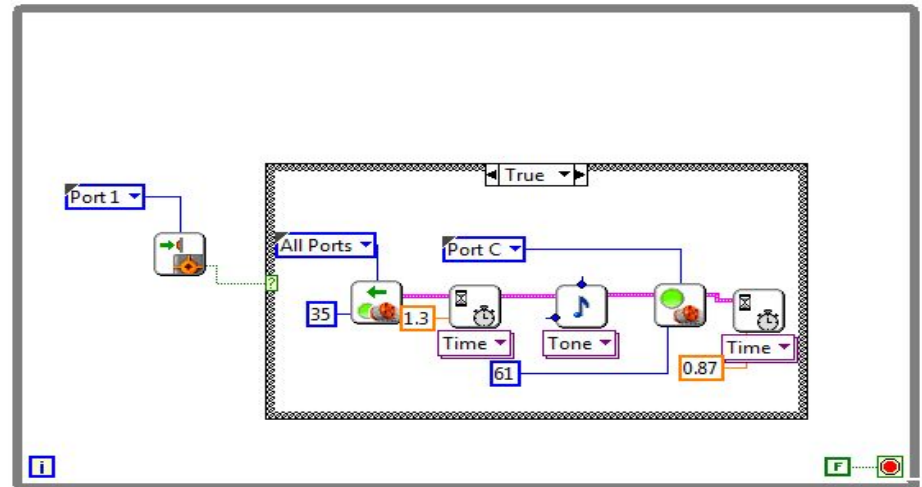
Evidence

Prototype picture and computer program



Evidence

modified prototype picture and computer program



Communicate the solution(s)

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

YouTube video link :

Reflection

Think about your professional destination. What skills and or knowledge are you going to need that you don't have or have enough of. Add a slide and make a list
Reflect on your latest assignment in robotics and describe how what you just did supports what is on your list.

Letter to a future student

Take a few minutes to think of a time when you overcame a struggle in robotics class.

Reflect on the times when you failed at first but through persevering your brain created new neural connections and you eventually became better at the task at hand. Briefly describe this experience in a letter to a future robotics student.

Take a look at your Weebly website. How has your thinking changed as you progressed through robotics engineering?

What metacognitive strategies are you using?

Instructions for posting to Weebly

1. Go to file->download file and then choose PDF document (.pdf).
2. Then on your weebly website under Build Media section drag the file option and upload the PDF of your Slides presentation to your website