Somerset Berkley Regional High School

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?
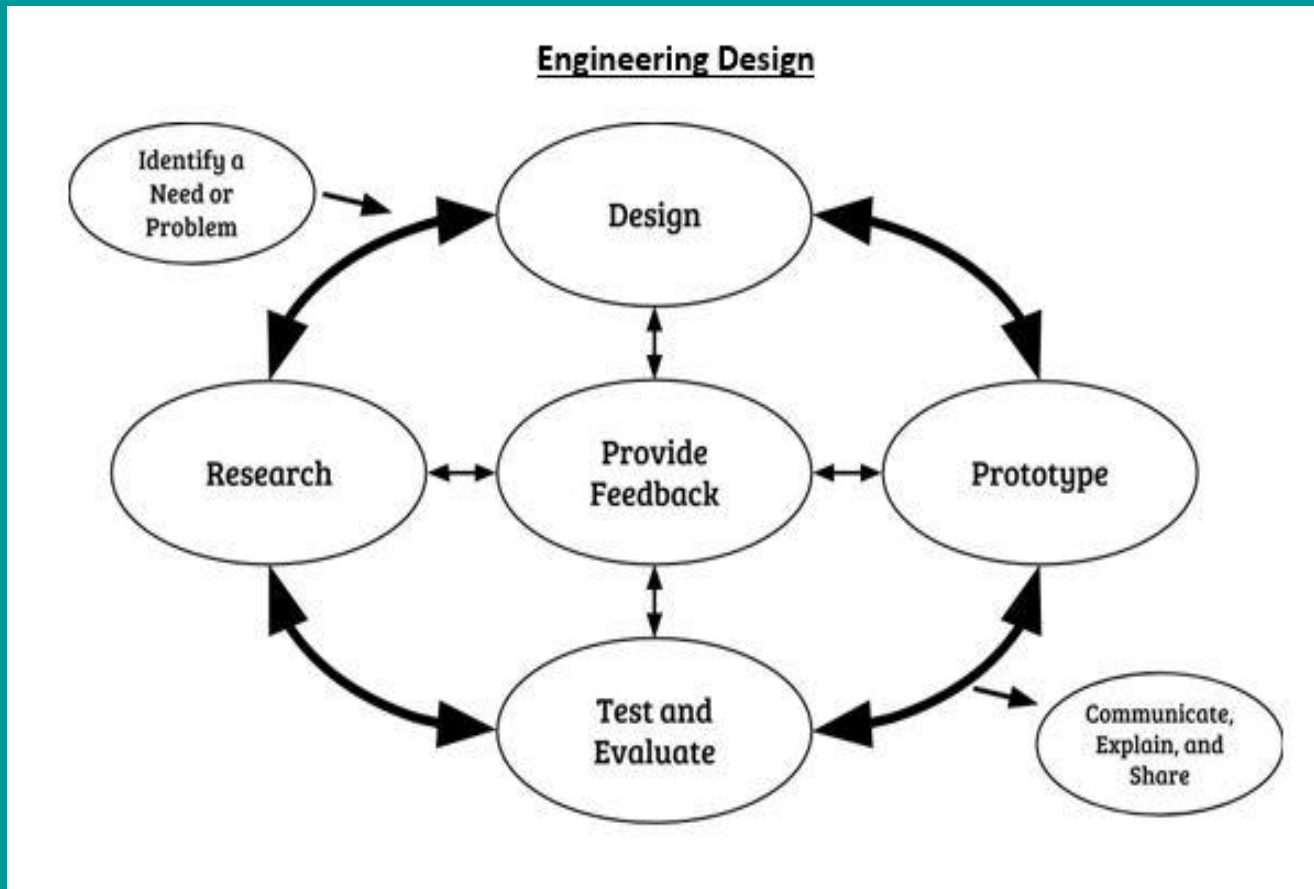
Goal setting Set realistic goals. How much time do I have?
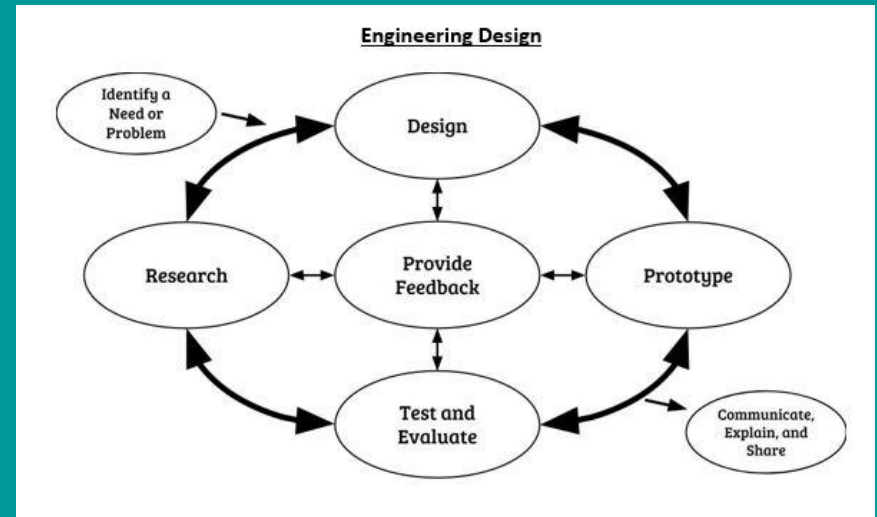
Monitoring progress Am I on the right track?

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

Engineering Design Process

Standard 1.1

2016 Revised Massachusetts State Framework

Engineering Design

- Identify a Need or Problem
- Design
- Research
- Provide Feedback
- Prototype
- Test and Evaluate
- Communicate, Explain, and Share
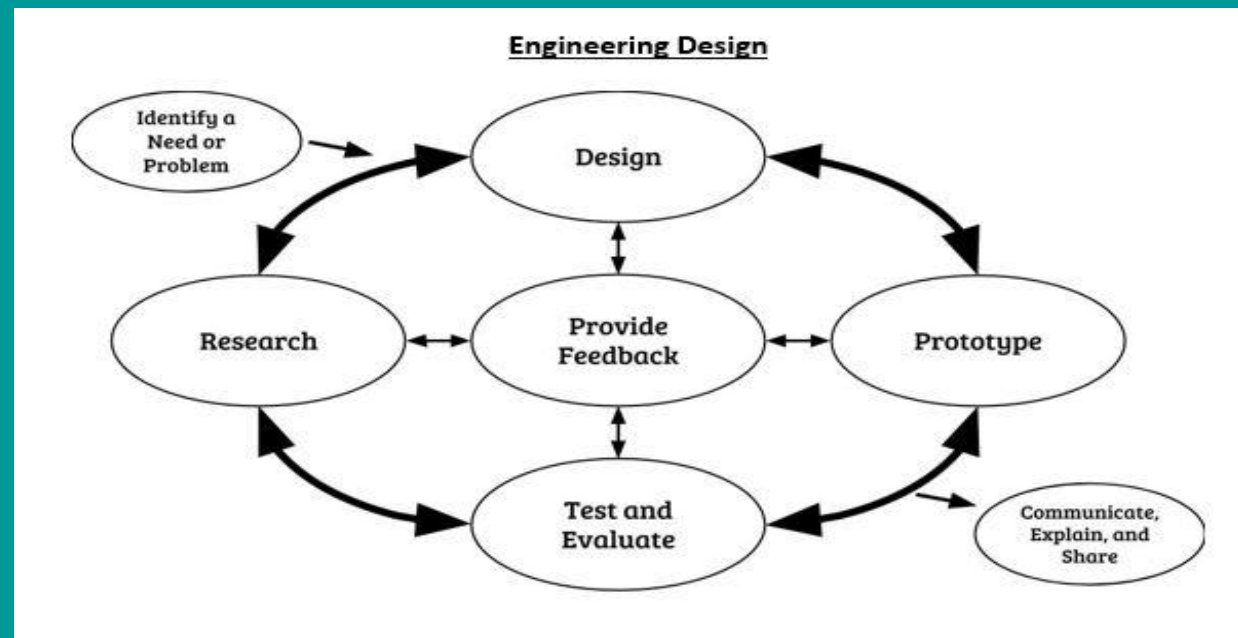
Identify the need or problem

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.

Ma.Science and Engineering Framework 2016

- The problem was that we had to get the ball of a piece of wood.
- so we had to build a gauntlet to throw the ball over
- then we had to work with our partner to help the get the ball over as well

Research the problem

Engineering Design

Identify a Need or Problem → Design → Research → Provide Feedback → Prototype → Test and Evaluate → Communicate, Explain, and Share

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?

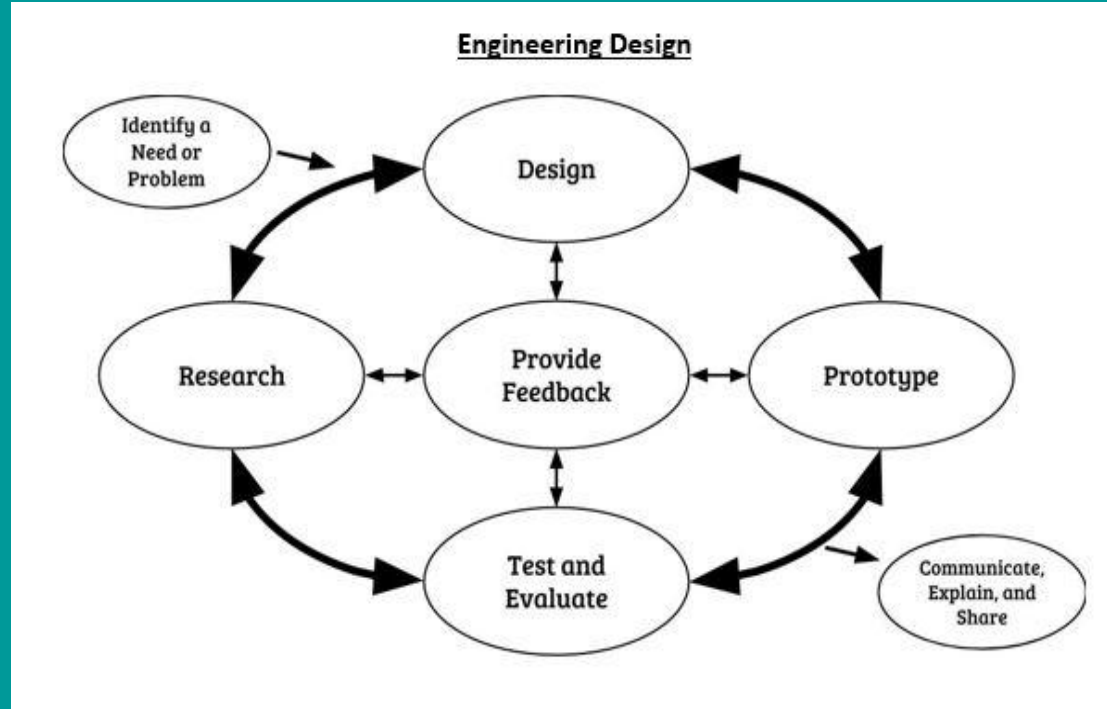Use appropriate tools and strategies to access the information

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__*

- we looked up the old cannons where they throw fireballs or rocks and got our idea of of that

Design

Engineering Design

Identify a Need or Problem → Design → Prototype → Communicate, Explain, and Share → Test and Evaluate → Research → Design

Provide Feedback

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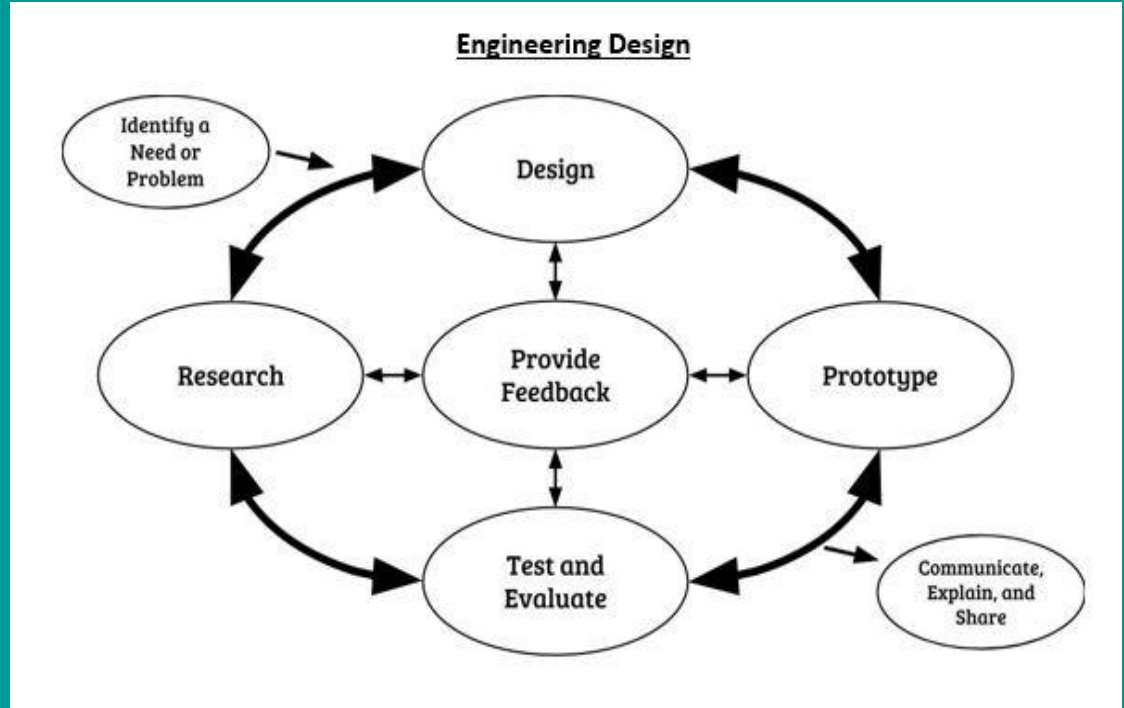
Evidence :Clarify the roles of each team member, taking advantage of individual strengths.
List the role of each member on the team

builders- all team members
drivers- thomas and tyler
programmers- johnny and nick
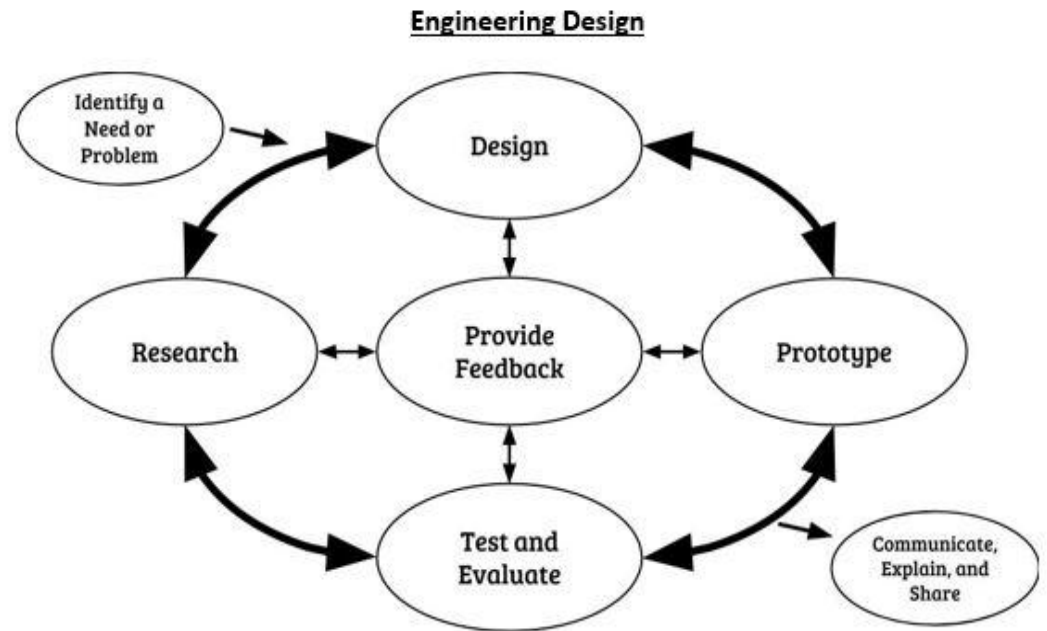
Prototype

Engineering Design

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.

Test and evaluate

Engineering Design
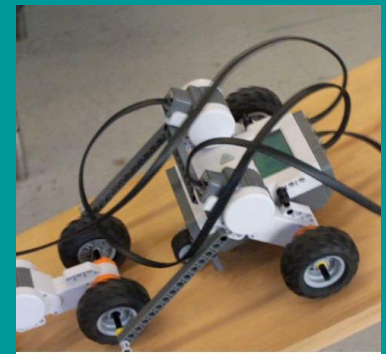
The feasibility and efficiency of the prototype must be tested and evaluated relative to the problem criteria and constraints.
Collaboratively decide whether the solution needs more work and repeat previous phases as needed.
- Does your robot work?
- Did it perform as expected?
- What changes are necessary 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

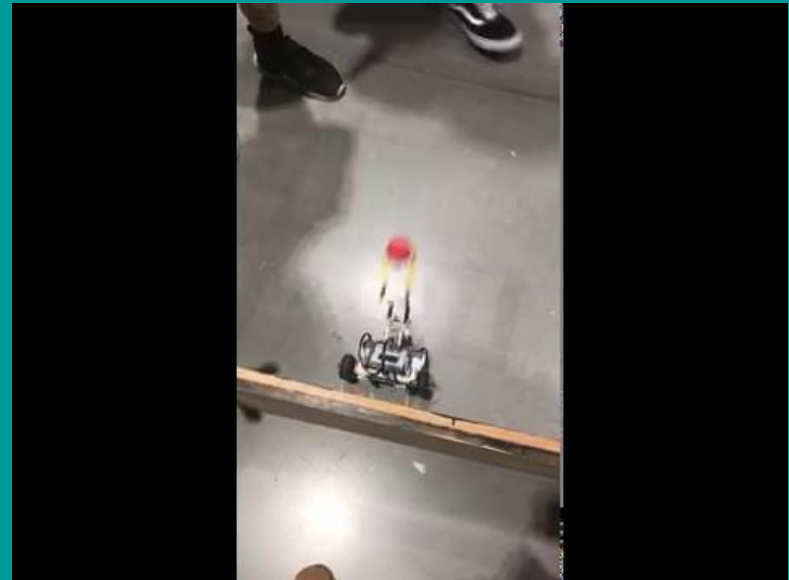Prototype picture and computer program

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? yes it has changed since the beginning of the year

What metacognitive strategies are you using? i learned how to program more and build better

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