

WHERE IS OUR BIODIVERSITY? AN ENGINEERING CHALLENGE



NGSS PE HS-LS2-7. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

In class, you created a comprehensive list of ways that humans are decreasing biodiversity on Earth. Now, you must design a **solution** to this process that is causing a loss of biodiversity (in other words, how will you fix the problem?) The solutions should be realistic.

You may use the tablets, laptops, and textbooks to help guide you to find these processes. Follow the Engineering Design Guidelines provided to help you design, evaluate, and refine your solution. Then, make sure to REHEARSE!

Tasks to Complete (Design Thinking Process)

Step 1: Research what is already being done to try to solve this problem, using appropriate scientific sources

Step 2: Research and identify the stakeholders involved. A stakeholder is a person with an interest or concern in your problem. There can be many stakeholders.

Step 3: Brainstorm all possible solutions.

Step 4: Narrow down brainstormed solutions; identify the best one, based on how it meets the needs of the stakeholders and which will work the best.

Step 5: Build the prototype (an actual model of your invention).

Step 6: Create a PowerPoint presentation that ultimately tries to sell us your prototype (think Shark Tank). The PowerPoint should include the required elements below.

Shark Tank-Like Presentation

-What problem does this fix?

-How does the solution work?

-Who are the stakeholders? Creatively integrate them throughout the PowerPoint and sell the idea!

-Design the solution: a prototype, computer simulation, spreadsheet, app, etc. (include the actual prototype, pictures, simulation, spreadsheet, or app in your presentation). **Describe** how your prototype works. It is okay to take an example and make it better. Just make sure to describe how it is better. You can also use technology or make an app.

-Explain how the prototype solution addresses concerns of all different stakeholders. How would you sell this to your stakeholders?

-Explanation: How could this be modified to be applied to a real-life scenario? What concerns need to be addressed (financial, logistical, etc.)? Make sure to include prices and the overall price. Also, how much profit will be made?

Possible Environmental Problems That Need Solutions

-Air Pollution

-Soil Pollution

-Habitat Loss

-Ocean Acidification

-Water Pollution

-Deforestation

-Salinization

-Littering and Ruoff

RUBRIC FOR THE ENGINEERING CHALLENGE

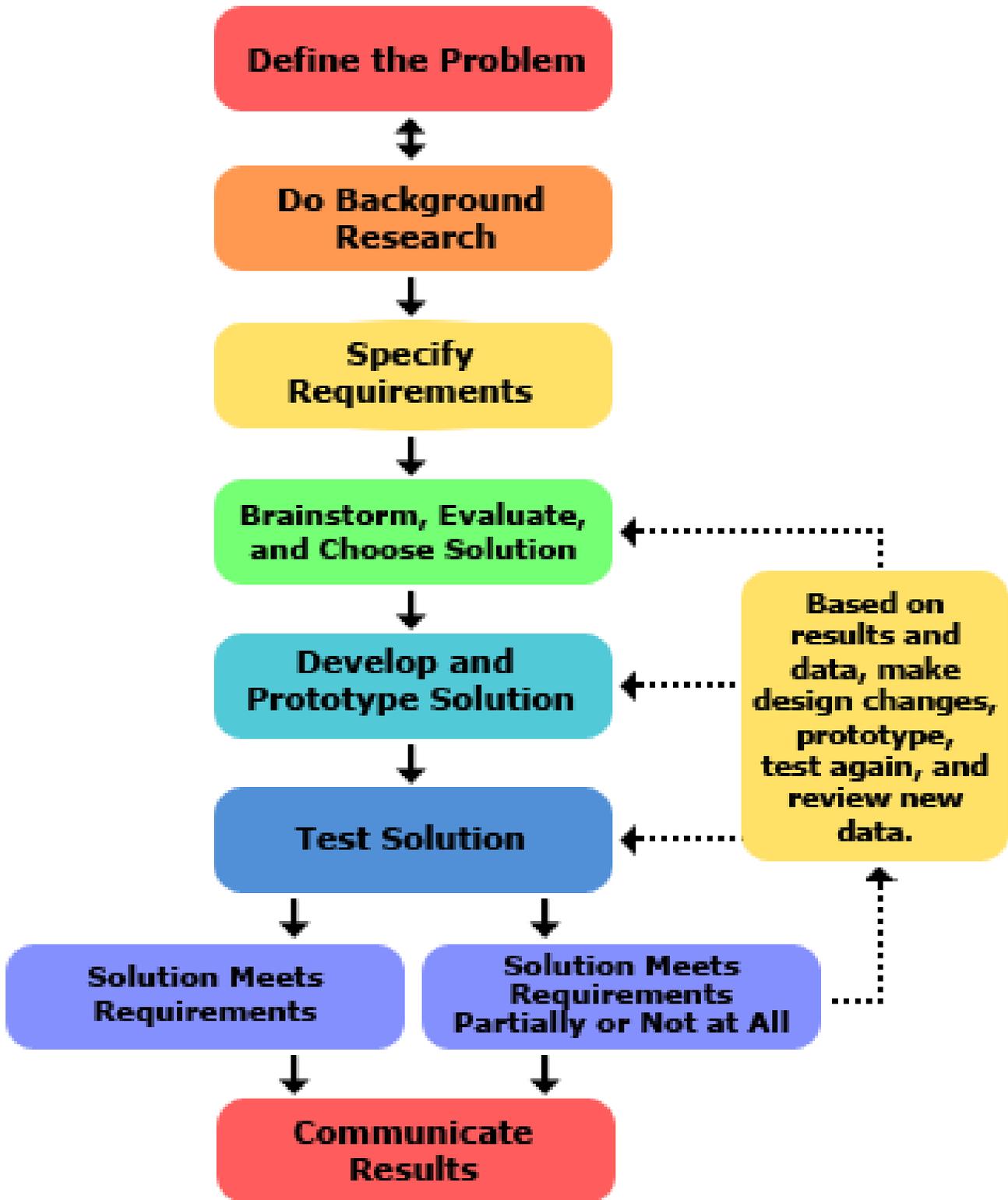


Group Members Name:

Design Name:

Requirement	Points Possible	Points Awarded	Notes
Problem Fixed Identified (Item that causes Biodiversity Loss)	2 Points		
Stakeholders Identified	2 Points		
Prototype Model Shown and Described	4 points		
Sell It to Stakeholders?	2 points		
Real World Explanation (financial and logistically)	2 points		
Presentation: Members were heard, spoke in clear tone, few to none grammatical errors in PPT.	2 points		
PPT was creative, font easy to read, and appealing to audience	2 points		
Total: _____ out of 16 points			

ENGINEERING DESIGN PROCESS



Solutions to Our Environmental Problems

Invention Name	Student Names	Env. Problem Targeted	Innovative Features	How Likely are You to Invest (1-10)?

Engineering Challenge Reflection



Part One Directions: Below are the instructions for the Engineering Challenge Reflection. Each student needs to complete this reflection on a separate sheet of paper. Some sentences starters are provided to help guide you through the writing process. Please see your science teacher if you need clarification or help!

1st Paragraph: Summarize what you did in this project.

"In this project, I"

"My group and I created..."

2nd Paragraph: What did you learn from this project? Describe this in detail.

"Upon performing this project, I learned..."

"The Biodiversity Engineering Challenge can be described as..."

"I experienced by creating the Biodiversity Engineering Challenge."

3rd Paragraph: What would you change about your project if you had to do the project again? Why?

"If I could do this project over again, I would...."

"I would change in my Biodiversity Engineering Challenge project. The reason for this is ..."

"A big improvement to my project would be..."

4th Paragraph: Any suggestions on improving the *Biodiversity Engineering Challenge* project assignment? Explain your reasoning for this.

"I think the Biodiversity Engineering Challenge project needs..."

"The Biodiversity Engineering Challenge project could be improved by ..."

Part Two Directions: Grade your peers. Write what grade you think your peers deserve and why. Provide evidence.

Student Name	Grade Earned	Why did they earn this grade?

