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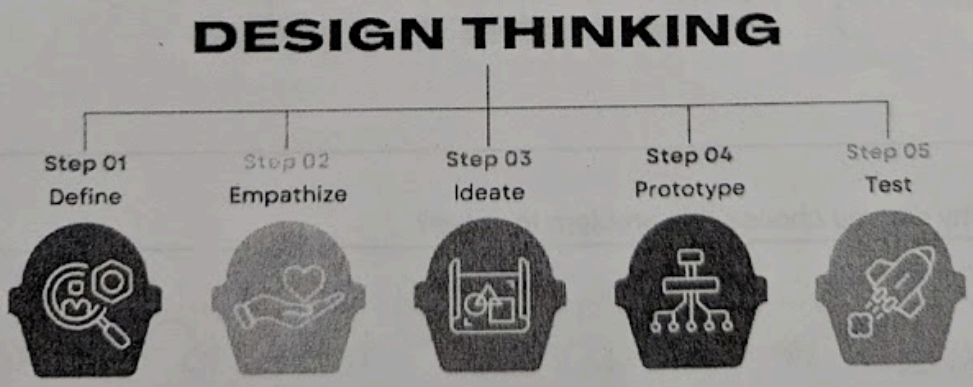
Design Thinking Engineering Notebook

Belongs to

Mrs. Aseltine

When you are finished, make sure you ask yourself these questions:

- Did you collect enough data?
- Do you need to collect more data?
- Do your results seem reasonable?
- Are there any trends in your data?
- What might explain these trends?
- Do you need to do more experimentation?



Define

What are some problems you may want to solve? Brainstorm potential How Might We questions:

- How might we organize our backpacks?
- Chores - How might we design a solution to make dishes more fun?
- How might we get chickens to stop eating produce from a garden?

Choose one How Might We question that you want to research more and design a solution for below:

How might we get chickens to stop eating produce from a garden?

Why did you choose this problem to solve?

My chickens keep eating my figs, I know it is good for them to free range, but I want to protect my fruit.

Gather information about your problem.

- What do you already know about this problem? How do you know it?

Chickens like to free range. They can only jump/fly so high. Fences can keep them contained.

- What else do you want to know about this problem?

- what do farmers who have free-ranging chickens do?
- what products already exist to protect fruit?
- what are chickens afraid of?

Research:

- What information can you find out about your problem?
- Why is this a problem?
- What data can you find about the problem?

Remember to include where the information came from.

Empathize

Who is impacted by your problem? What might the user of your solution say, think, do or feel about the problem?

Who does your problem impact? How does it impact them?

- gardeners with chickens
- neighbors who have chickens fruit, grass seed, etc.

What does the user say, think, and/or feel about the problem??

- frustrated
- embarassed

What is important to include in your solution to help the user?

- chickens cannot get to the plant
- chickens are not harmed
- fruit, cannot be harmed

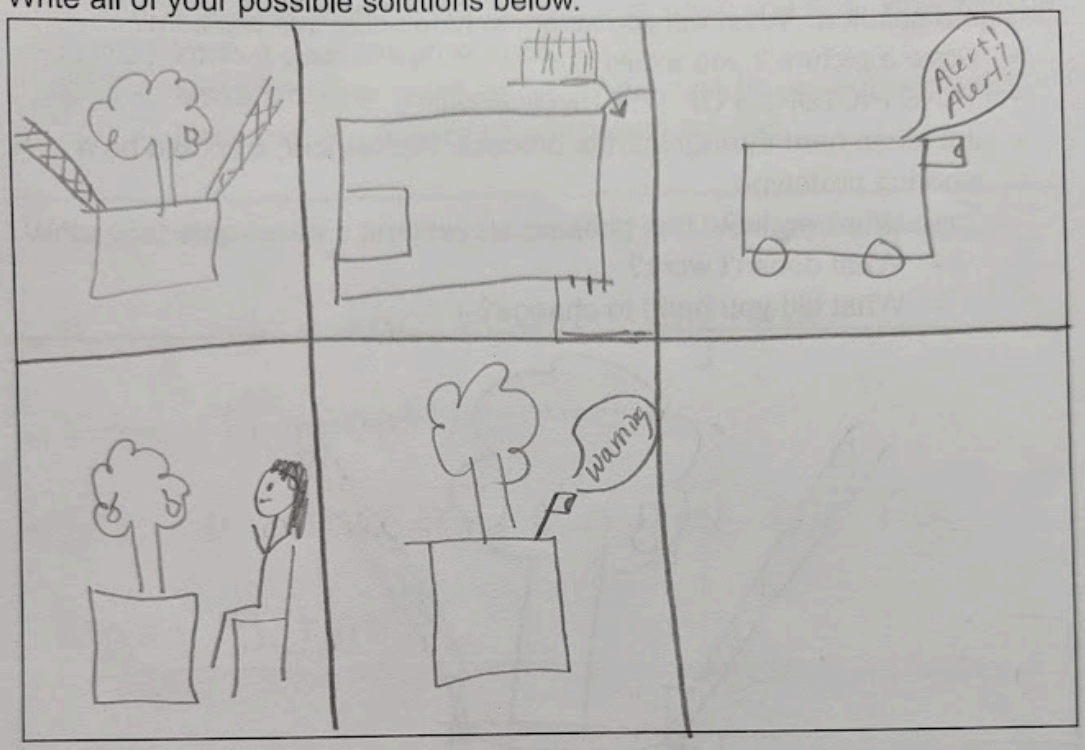
Empathize

What evidence do you have that the user needs your solution?

- I need it
- My neighbors complained
- I asked in my chicken group an 18 of the 21 responses I recieved said they had problems with their chickens eating things they weren't suppored to.

Ideate

What are all the possible solutions you can come up with to your problem? Write all of your possible solutions below.



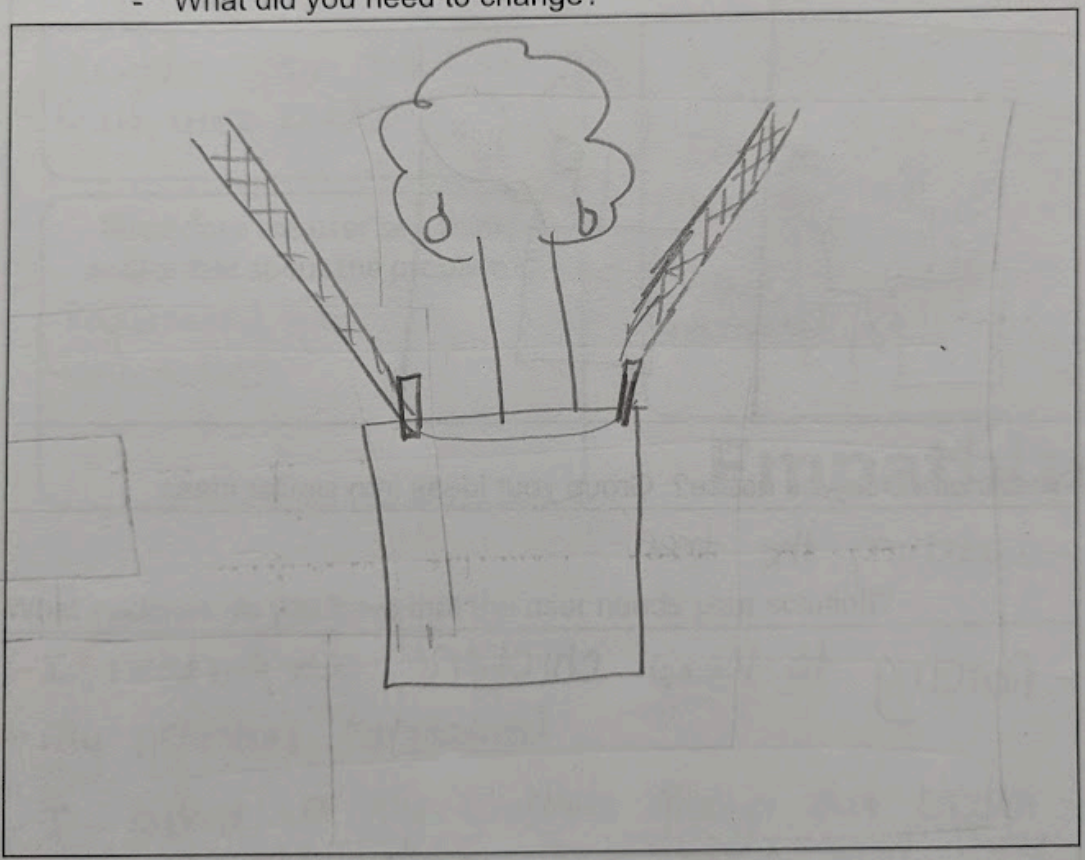
What themes do you notice? Group your ideas into similar ideas.

- watching the tree
- fencing to keep chickens out / in
- robots

Prototype

Design a solution. What will you invent to help solve this problem?

- Draw a picture if you would like.
- TAKE PICTURES OF THE PROCESS!
- Jot ideas here throughout the process. Remember, it should be a working prototype.
  - What works?
  - What doesn't work?
  - What did you need to change?



Materials I have at home.	Materials I need to get
chicken fence sticks /	maybe stakes

Test

Test your design AT LEAST 3 TIMES!

Collect the data in an organized way.

- Think about what you will measure when you test. How will you know if your design worked?
- Make tables or charts to collect the data as you experiment.
- Use units of measure as you collect the data.

Write your step-by-step process for creating and testing your design.

- Bring chickens to the fig tree.
- Time 5 minutes
- See if chickens can get the figs.
- Repeat 3 times.

* If chickens can still get the figs, stop testing and change design.

How will you know if your design is successful? What data will you need to collect?

Chickens will not be able to get to the figs.

I need to collect data about whether or not the chickens can get them.

How will you organize your data? Ex. Tables, charts, graphs. Draw your data collection tool below and fill it in when you test. (You can use more than one.)

Trial	Material	Did the chickens get the figs?
Trial 1	(chicken netting)	Yes
Trial 2	Bird Netting	No
Trial 3	Bird Netting	No
Trial 4	Bird Netting	No

Reflect on Results and Redesign

What went well? (Use data to support your thinking.)

After I switched the netting to the smaller mesh, the chickens could not get to the fruit.

What did not go well? (Use data to support your thinking.)

When I used the larger fencing material, the chickens could still get to the fruit.

What constraints did you have?

I wanted to use materials I already had.

What improvements need to be made in the future? (Use data to support your thinking.)

This only works around a specific plant. If I want to keep my chickens away from more than 1 I'll need to come up with a system to allow them around to eat, but keep them contained.