Engineering Virtual Learning

HS Machine Drafting Design Lesson #7

April 14, 2020

Objective/Learning Target:

Students will build a Catapult, Trebuchet or Sling-shot out of household items.

(Project day 2 of 4)

Bell-work:

Thinking about the “Launch It” machine that you researched and designed yesterday, compare and contrast it to the machines in the video you watched. The videos are on the resource links page if you need to watch them again. Talk about overall size, weight of the item launched and construction materials.

Record this in **Simple Machine, “Launch It!”** activity in our engineers notebook.

Let's Get Started:

Here are some household items that you will need

Experiment Recording Supplies:

Paper or Engineers notebook, Pencil, Measuring Device (tape measure or ruler)

Building Supplies: (these are some ideas, but you can use whatever you find)

cotton balls or paper wads, small balloon, corks, rubber band, paper clips, aluminum foil, grocery store bag, pop sickle sticks, straws, pipe cleaners, cardboard cereal box, paint stirring sticks, string

You can use as much tape (masking, clear, duct) as you need.

Learning Practice:

Activity: You will use items that you find around your house to design and build a machine to throw a cotton ball or small paper wad as far as possible.

Yesterday you Brainstormed solutions to the challenge. You Recorded all your ideas with sketches in your engineer's notebook or on other paper. You Organized your data into a chart listing the pros and cons of your top 4 ideas and narrowed down to the best choice. Finally you drew an Assembly drawing and Parts drawings of your "Launch It" machine.

Today you will gather your materials and build a prototype. Make any adjustments or revisions to your machine to solve problems encountered till you are ready to demonstrate your solution. Make sure you record your revisions in your engineer's notebook.

Check For Understanding:

Do you think you could have done the same job building with less materials?

How would your machine handle a small rubber ball instead of a cotton ball?

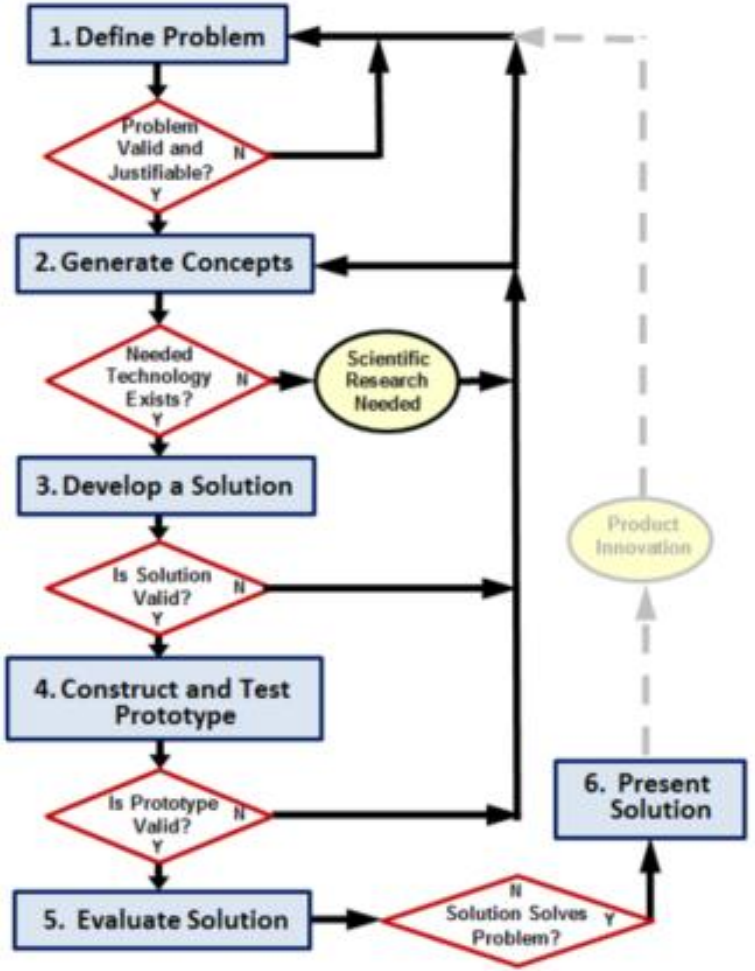
Do you think you could hit a target with your machine?

Learning Resource Links:

https://www.youtube.com/watch?v=9-Hwxw4fgqk
https://www.youtube.com/watch?v=EFxeVO3AfaA
https://www.youtube.com/watch?v=JTDxIBPme_0

Make sure you follow the Design Process.

1. Define the Problem
2. Generate Concepts
3. Develop a Solution
4. Construct and Test a Prototype
5. Evaluate the Solution
6. Present the Solution



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