Catapult Launch Design Challenge

Situation

A catapult is a mechanism used to throw missiles in ancient and medieval warfare. During this time catapults were specifically designed to shoot missiles short distances at low angels. Advances in design over time soon ensured that catapults would hurl stones and missiles over long distances very accurately. During the 20th century catapults using hydraulic pressure were reintroduced to launch aircrafts from warships.

Problem

Design, construct and test an elastic powered catapult that can launch a ping pong ball the furthest distance with accuracy.

Specifications

* Your catapult must be freestanding
* Your catapult can be any size but use only the materials provided
* Your catapult must be powered by elastic band
* Complete a design portfolio

Materials

You may use the following materials:

* Selected sizes of wood stock
* Nails
* 2 elastics
* 2 small screw eyes
* ¼’ dowel

Research

* What is the history of a catapult?
* What is kinetic energy and how does it apply here?
* What is potential energy?

Ideas

* Each person in the group must create at least 2 sketches that demonstrates their ideas
* Each person in the group must create 1 refined sketch
* Create one idea as a group and develop into a final working drawing and have it approved before constructing your catapult

Life Cycle Plan

Consider the materials chosen for this design, where did they come from, and where will they go at the end of their useful life. Fill in the Life Cycle chart attached.

Design

* Construct your solution to the problem

Evaluation

Test your design to see how it performs using 3 trials and the ping pong ball provided. Record your testing results by measuring the distance of your furthest launch and points for accuracy. Take the time to re-evaluate and modify the design if necessary using the remaining materials.

1. Did your design solve the problem? Why or why not?
2. What modifications did you make?
3. What are some positive features of your design?
4. How could the design be improved or innovated?
5. How did you contribute to the group?
6. How did your partners contribute to the group?