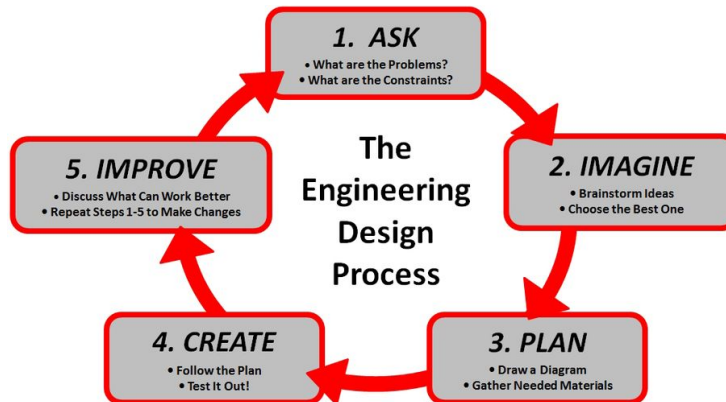


Maker Mindset! Week 6

Day 3: Testing Buoyancy

Teacher/Parent Background:



Featured Story:

What Floats in a Moat by Lynne Berry

- Read Aloud Link:
<https://www.youtube.com/watch?v=fTc-4NtbBpY>
<https://www.youtube.com/watch?v=3sNVhNThxcc>

Key Terms:

- Engineering Design Process
- Challenge
- Buoyancy
- Sink
- Float

Materials List:

- Ruler
- Paper
- Straws
- Scissors
- Paperclips
- Foil
- Cups



- Paper towels
- Popsicle sticks
- Pennies or paperclip
- Tape
- Large bowl with water
- Objects from home to test buoyancy (should be able to get wet)
- Measuring tape
- Journal or Notebook

Activity Description:

- In this activity, students will read/listen to the story; *What Floats in a Moat* by Lynne Berry. After the reading, students will create their own boat using a variety of materials to test buoyancy, then adding weight to investigate if it makes a difference in design.

Activity 1: What sinks, what floats?

- Ask students what the term sink and floats means. Look at the images below with your student and ask which objects they believe sink, and which would float.

Object	Sink	Float
 <p>Penny</p>		
 <p>Cotton Ball</p>		

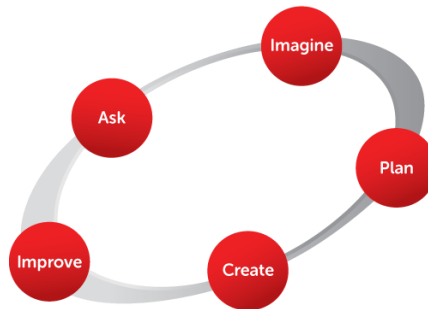
 <p>Pencil</p>		
 <p>Crayons</p>		

- Grab a few items from home that you do not mind getting a little wet. Make predictions about what objects will sink and float. Test your hypothesis.
 - Collect data below as you go.

Object	Sink	Float

Activity 2: Design Challenge

- Read/ Listen to the story; *Floats on a Moat*
 - *What do you think Archie the Goat's process was to build his own float?*
- Introduce the Engineering Design Process below
 - *Ask the student if they can see what parts of the story fit the Engineering Design Process*



- Now introduce the challenge: Build your own float that can carry 100 pennies or paperclips (or whatever other objects you have at home). You will need to start the Engineering Design Process before testing your design.
 - Work with your student to get through the constraints of the challenge. Example questions below:
 - *What materials are available?*
 - *Is there a time constraint?*
 - *How many tries do you get?*
 - In a journal or notebook, have your student draw and imagine what their design could look like.
 - Move onto the planning phase. Make sure your student is checking with the constraints of the challenge as well as their brainstorming to make a plan.
 - Create
 - *Ask your student throughout the process why they chose one material over another?*
 - *How much weight do you think your float will hold?*

- Before testing, fill out the the first three columns in the table below to make predictions:

Test #	What is the design made of?	How much weight will your boat hold?	How much weight did it hold before sinking?	What can you do differently to improve?

- Begin the first test.
 - Have the bowl of water from activity 1 nearby with some paper towels to test.
- After the first test, be sure to have your student fill out the last two columns on the table. Next, let your student work on their design and continue documenting their results. They may want to add materials like additional paper clips, pennies or other materials to test and see if weight makes a difference in whether it sinks or floats.
 - Once they have a final design that they are happy with and feel is most successful, have the student document it in their journal/ notebook.

Closure:

- After completion of the tests and final build ask your student to reflect on the story and how what they did was similar
 - Why do you think the Engineering Design Process is so important?
 - What do you think you would tell Archie the Goat if he was working on this project too?
 - What did you learn from building a float?
 - What would you do differently?

Extension:

Make!

[Make a paper boat](#)