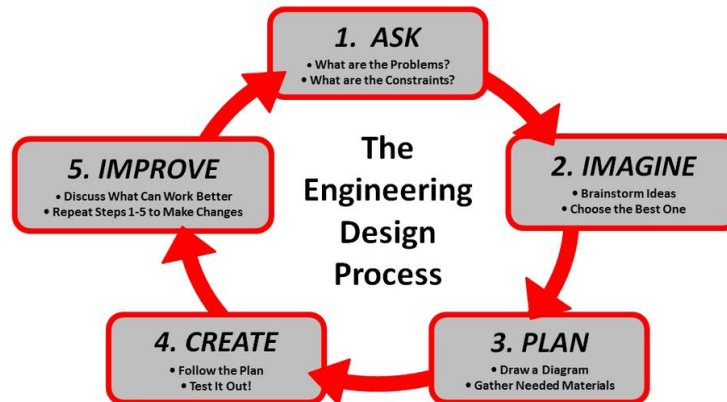


Maker Mindset! Week 6

Day 2: Bridge Building

Teacher/Parent Background:



Featured Story:

The Three Billy Goats Gruff by Jerry Pinkney

- Read Aloud Link: <https://www.youtube.com/watch?v=jj9BjN3PqB8>

Key Terms:

- Engineering Design Process
- Challenge
- Bridge

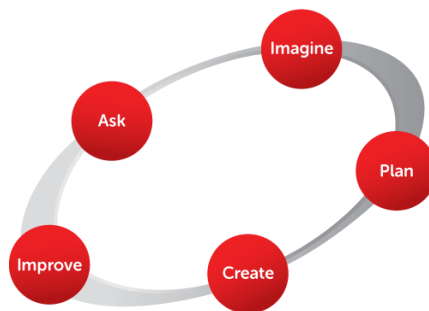
Materials List:

- Ruler
- Paper
- Popsicle sticks
- Paper goods
- Blocks
- Three toys (to represent the goats)
- Scissors
- Paperclips
- Tape
- Measuring tape

- Journal or Notebook

Activity Description:

- In this activity, students will read/listen to the story; *The Three Billy Goats Gruff* by Jerry Pinkney. After the reading, students will design and create their own bridge using a variety of materials to test the structure, function, and weight of their toys.
- Read/ Listen to the story; *Three Billy Goats Gruff*
 - *In the story the goats crossed a bridge. Where have you seen bridges before? What do they look like?*
- Introduce the challenge to build their own bridge that will be strong enough to hold three of their toys all at once.
 - Brainstorm with the student some ideas of toys they could use to represent the goats in the story.
 - Discuss with the student that they will need to go through the Engineering Design Process to get there.
- *Introduce the Engineering Design Process below*
 - *Ask the student if they know what an engineer does?*
 - *Work with the student to get to the connection that in order to build a bridge they will need to go through the Engineering Design Process.*



- 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. If you need a reference for yourself on different ideas for their bridge.
 - *Ask your student throughout the process why they chose one material over another?*
 - *How much weight (in objects) do you think your bridge will hold?*
- *In their journal, work with the student to document their thought process.*
 - *Have sentence starters such as:*
 - *I predict my bridge will hold _____ toys.*
 - *I am choosing to build my bridge out of _____ because _____.*
- Begin the first test.
 - Test one object on the bridge. If successful add additional toys.
- After the first test, ask your student if there is anything they would like to try whether its alterations in materials, or reinforcing their structure.
 - Let your student work on their design and continue documenting their results. They may want to add materials like paper clips or other materials to test and see if weight makes a difference in the support of the bridge or structure.
 -
 - *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 did you learn from building a bridge?*
 - *What would you do differently?*

Extension:

Watch!

Sci Show Kids- [What makes a bridge so strong?](#)

Make!

[Teach Engineering](#)