Design Challenge Planning Template

Use this template as a planning tool to create design challenges to engage children in tinkering, making, and engineering experiences.

Identify a picture book in which the character(s) has a problem to solve.

Example: ***The Three Billy Goats Gruff*, by Mac Barnett, illustrated by Jon Klassen**

What is the problem in the story?

Example: **Three billy goats want to go up a hillside to eat some grass. But they have to cross a bridge to get there, and under the bridge lives a mean, ugly old troll who wants to eat them.**

What materials do you think the children need to solve the problem?

Example: **Craft sticks, drinking straws, toothpicks, paper, newspaper, straw, clay, paper clips, tape, scissors, glue, measuring tapes, and balance scales**

How could you encourage children to tinker with the materials?

Example: **Tinker with making bridges out of materials like craft sticks, toothpicks, straws, paper, rolled-up newspaper, or clay. How will you hold the materials together? Which materials seem stronger than others?**

What is the challenge for children?

Example:

Getting Started. Build a troll-proof bridge that stands on its own so the goats can cross the river.

More Challenging. Build a troll-proof bridge that spans at least 10 inches and supports at least five pounds.

Individualize each step to reflect the book you've selected and the problem that needs to be solved.

Step 1: Think about it.

Example: **Draw, sketch, or talk about your plan before you begin.**

Step 2: Build or create it.

Example: **Use the materials to build or construct the solution to your problem.**

Step 3: Try it.

Example: **How can you test your idea? Does it do what you want it to do?**

Step 4: Revise or improve it.

Example: **What could you do or change to make it better?**

Step 5: Share it.

Example: **Show your project to other people and demonstrate how it works. Ask them what they might do to solve the problem. Listen to their ideas.**

What questions or comments might you use to scaffold the children's ideas?

What additional challenges might help children think more deeply about the problem?

Which STEM concepts are supported by the design challenge?