

Make It Monday: Fairy Tale Mash-up Engineering Challenge

Overview

What do three goats and one gingerbread man have in common? They both need to cross rivers immediately! Can you use everyday materials to help these familiar fairy tale characters get to the other side of a tray of water without the characters getting wet?

Suggested Materials

Use your imagination! This list is just to help you brainstorm possibilities!

- Bowl-Like Container(s) → This could be a plastic cup, bowl, or empty & clean container from the recycling bin (ex. yogurt or applesauce cup)
- Stick-like object(s) → This could be a popsicle stick, chopstick, pencil, straw or even a stick from outside!
- Paper-like material(s) → Paper, Craft Foam, Newspaper, Aluminum Foil, Wax Paper
- Fastener(s) → Yarn, string, rubber bands, clothespins, pipe cleaners/chenille stems, twisty-ties [We recommend challenging yourself to NOT use tape!]
- "Pretend" River → A bathtub full of water, a bowl of water, a piece of paper, a "river" of Legos, At least 3 shallow tubs of water
- "Pretend Goats" or Gingerbread men → Small plastic animals/toys, Lego people, a crayon

Safety Alert:

Make sure an adult is with you if you're using sharp tools (like scissors) or containers of water.

Identify the Problem

- Read or talk about the following stories:
 - The 3 Billy Goats Gruff
Free Online Version: <https://www.storyberries.com/fairy-tales-the-three-billy-goats-gruff-by-katharine-pyle/>
 - The Gingerbread Man
Free Online Version: <https://www.enchantedlearning.com/stories/folktale/gingerbreadman/story/>
- In each story, the character has the same MAIN problem. There is a river that they need to cross. Can you think of another problem faced by these characters?
 - *Possible Answers from The Billy Goats Gruff*
 - *If they don't cross the river, they will not have any grass to eat and they will go hungry!*
 - *There is a troll under the only bridge that crosses the river & the troll wants to eat them!*
 - *Possible Answers For the Gingerbread Man:*
 - *If he doesn't cross the river, all the people and animals chasing him will catch him & eat him!*
 - *If he tries to swim, he'll dissolve in the water b/c he's a cookie!*
 - *If he goes with the fox, the fox will eat him!*

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Try to Solve the Main Problem (How to Cross the River Without Getting Wet):

- **Brainstorm Possible Solutions:** In your family or friend group, decide which character you are going to help cross the river. Talk for 2 minutes to imagine possible solutions to your character's problem
- **Make a Plan:** Making a plan involves choosing the best idea from your list of possibilities.
 - Did your list include teaching goats how to fly or teaching a gingerbread man how to hypnotize a fox? Those ideas are cool, but maybe not the easiest things to do!
 - Brainstorm and find materials to help you build your solution.
- **Build and Test Your Design:** Finding a solution that works the very first time is almost impossible. Here are some things to remember as you build and test your design...
 - Engineers are people who solve problems and anyone can be an engineer.
 - There is more than one way to solve a problem
 - Engineers know that learning and designing new things takes a lot of time! Engineers don't give up when an idea doesn't work. Engineers ask themselves, "How can I improve this..." or "What could I try instead?"
- **Solution Sharing:** Share your designs with us on
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