



Think Make Create

LABS

The Makerspace Playbook

Issue #6: February 2022

TMC ON THE MOVE: LIABILITY

Liability is defined as *"the state of being responsible for something, especially by law"*. However, we all know real life isn't as clear cut.

Whenever you are hauling, storing, parking, and using your utility trailer, better known as our TMC mobile makerspace, make sure to know your responsibilities. The best places to start are with the insurance for the driver and the insurance for the trailer owner. From there, you may need to even include insurance from the educational program, site location, staff, etc.

However, if you need to start somewhere keep these two things in mind: when hauling a trailer, responsibility first falls on the driver; when storing a trailer, responsibility first falls on the trailer owner. You can never be too cautious or too prepared.

~ Claire Sponseller, University of Idaho
Extension 4-H



Spotlight on You: Stanley County GOLD

The TMC Trailer was a summer highlight for the GOLDkids and staff of the Stanley County Greater Opportunities for Learning & Development Program in Fort Pierre, SD.

"Our kids plus our staff and interns all benefited from the Think, Make, Create Trailer visit to our site." Said Kristie Maher, SC GOLD Director.

The GOLDkids were able to engage in a wide-variety of STEAM activities throughout the trailer's two-week stay. All were activities that GOLD had not used before, mostly because of the unique supplies required or the amount of time it would take to assemble the supplies. Having the supplies & directions close at hand allowed us to use more than 10 activities in 2 weeks from Scribblebots to weaving studies. Many of the kids were able to enter their TMC projects into our county Achievement Days.

GOLD hosted two Dakota Seeds Science Education Interns during TMC's time the site. The interns were tasked with selecting activities, preparing the materials and then planning and implement STEAM lesson plans. These hands-on teaching experiences, plus the online TMC educator training, provided valuable lessons for these future teachers.

The wide-variety of STEAM activities available allowed GOLDs to share their interests with the GOLDkids. "I gave staff members time to explore the activity guides and the trailer. They enjoyed selecting activities that fit with their particular skills and interests. This strategy resulted in our kids being exposed to a nice wide variety of technology and art topics." said Maher.

~ Christine Wood, SDSU Extension 4-H STEM Field Specialist

Give It A Try: Engineering Day Popsicle Stick Bridge Challenge

For Introduce a Girl to Engineering Day 2021, Northshore STEM hosted an event that challenged girls to construct a functional bridge out of popsicle sticks and quick dry glue. Each builder was supplied with large and small popsicle sticks, a bottle of glue, a sheet of parchment paper (in case of glue spills), and a pack of info cards about the engineering design process and several different engineer career paths to explore. After designing, building, and testing the bridges, winners were selected in different categories, such as the bridge that held the most weight, the most cost-effective bridge that used the least popsicle sticks, and the fastest built bridge. With a few simple materials, you can create an impactful STEM activity that engages youth and strengthens their engineering and critical thinking skills. Linked below are the engineer careers and design process cards that were used at Northshore STEM's event. Please feel free to incorporate them into your own version of the Popsicle Stick Bridge Challenge this year for Introduce a Girl to Engineering Day!



2021 Engineering Day for Girls Career Cards.pdf

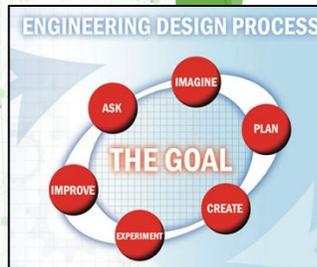


The Engineering Design Process.pdf

Put it Into Practice: Engineering Design

What is engineering? What do engineers do to solve problems? Engineering is a branch of science that concerns design, building, and use of engines, machines, and structures. Engineers use the Engineering Design Process to solve all types of problems. Elements of the Engineering Design Process include: defining a problem, brainstorming ideas, developing a plan, constructing a model, testing and analyzing performance, and improving the design. This process is iterative, meaning we can repeat the steps as many times as necessary. When facilitating EDP activities we want to build an engineering mindset. Some components of developing an engineering mindset are:

1. Exploring the properties and uses of materials – selecting materials most appropriate for task
2. Envisioning multiple solutions – brainstorm and analyze multiple solutions
3. Evaluate and iterate – test designs and collect data to analyze and revise and improve



To learn more about developing an engineering mindset visit: <https://stemnext.org/engineering-mindset-toolkit/>

~Julie Boyle, Nebraska Extension

Tips and Tricks

Although it may seem daunting, afterschool programs are a great place to teach about the Engineering Design Process (EDP). Some may think the EDP is a step by step process but youth can actually move fluidly from one step to the next and back again. To help facilitate learning through the Engineering Design Process try these tips:

1. Discuss the task/problem and what materials the youth think would be the best and why?
2. When youth are brainstorming and making plans, ask open ended questions about their designs.
3. After testing the model/prototype, talk about why something did or did not work.
4. Encourage youth to go back to different steps as they evaluate and redesign.

~Julie Boyle, Nebraska Extension

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