



WE CU VOLUNTEER

#GivingTuesday

Think of 4-H as you plan your End-of-Year Giving



This week:

- Thursday is Thanksgiving
- Friday is Black Friday
- Saturday is Small Business Saturday
- Monday is Cyber Monday
- Tuesday is Giving Tuesday

This #GivingTuesday, be an inspiration. Join South Carolina 4-H in inspiring kids to get the hands-on learning they need today, and to become the leaders we

need in the future. Inspire kids to do. Donate today to our statewide annual fund **OR by donating directly to your local 4-H program.** Contact your local Extension office or view their social media page to find local giving options. No amount is too small when it comes to growing #TrueLeaders.

Give to Annual Fund

Upcoming Statewide Programs:



Horse Project Kick Off
Saturday, January 4, 2020
 Youth and adults gain knowledge about the 4-H Horse Project!

Register by December 9



4-H Pinckney Leadership Program
Summer of 2020

Middle and high-school youth invited to apply for camp and conference.

Applications open December 11



Miss 4-H Pageant
Friday, January 18, 2020

All youth open to all SC 4-H members between the ages of 5-18.

Register by January 9



Leadership Roundup
Saturday, January 25, 2020
 Changing the narrative on youth leadership! Join interactive workshops

Register today!



Junior Weekend
Fri-Sun, February 7-9, 2020
 Explore opportunities in 4-H through a weekend at camp (ages 9-13)

Register by January 24



Senior Teen Weekend
Fri-Sun, March 6-8, 2020
 Explore opportunities in 4-H through a weekend at camp (ages 14-18)

Register by February 24

"4-H has helped me to prepare for many of life's challenges and joys!"
 ~ South Carolina 4-H Alumni



Monthly 4-H Club Activity Idea

a 4-H STEM Lab Activity,

adapted from *Building Bridges* (c) 2016 University of Tennessee



Building Bridges

Objective: To learn about the engineering design process and the basic mechanics behind building bridges while designing their own bridge.

Age Range: All ages.

Hands-on Activity: To design, construct, and test a bridge.

Life Skills: HEAD – learning to learn, problem solving, decision making
HEART – communication;
HANDS – responsible citizenship;



Introduction

The Engineering Design Process is a stepwise process that people use in engineering solutions to problems. First, you gather information; brainstorm possible solutions; make a prototype; test the prototype; finally, improve the design. The process that engineers use for building infrastructure, like bridges, is very similar.

Materials

Gummy candies (gumdrops & orange slices work well)
Toothpicks
Books (or other heavy object to test bridge)

Activity Instructions

1. Start by asking the kids, "How many of you had to cross a bridge to get to school in the morning? Have you ever thought of what would happen if all the bridges were closed?"
2. Take a look at the pictures in the Lab Notebook (in resource links) of three of the most common bridge types. Spend 2-3 minutes discussing how the bridge design may contribute to the purpose of bridges - supporting weight. Look at the similarities



Figure 1. Materials needed to conduct the Building Bridges activity.
Image credit: National 4-H Council.

3. between the bridge types and discuss why these choices might be the most common.
3. Have kids sketch out a design for their own bridge on paper and share why they made certain design decisions with you.
4. Now get building using the toothpicks and the gummy candies! The goal is to build a bridge

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that can hold the maximum weight possible and the final structure must be portable! *For older youth, check out the bonus fun.

5. Once everyone has finished their designs, place the bridges so that they span the gap between a stack of books or between tables.
6. Place one book at a time onto the bridges to see how much weight they can withstand. If comparing two or more bridges, be sure to use the books in the same order.
7. Show kids the graph of the engineering design process in the Lab Notebook and recap each of the steps they did in this activity, explain that they just followed the same steps real engineers use when creating bridges!

Bonus Fun: Challenge older youth to complete their bridge(s) using different requirements, such as only 25 toothpicks, in 15 minutes, or so they can hold 5 books!



Figure 2. Pictorial examples of additional content from the Building Bridges Lab Notebook. *Image credit: National 4-H Council.*

Reflective questions

- After testing your bridge, what would you change about your design?
- What are some things you learned about the engineering design process?
- In what ways can you use the engineering design process in your life?

Conclusion

Bridges have been built for centuries utilizing many different designs, but they all have one thing in common. In order to not fall down, the bridge must balance two different kinds of force: compression (a pushing or squeezing force, acting inward) and tension (a pulling or stretching force, acting outward). By balancing these forces, bridges channel the weight or load of the bridge onto the main supports. By balancing these two forces there is no overall force to cause motion and do damage.

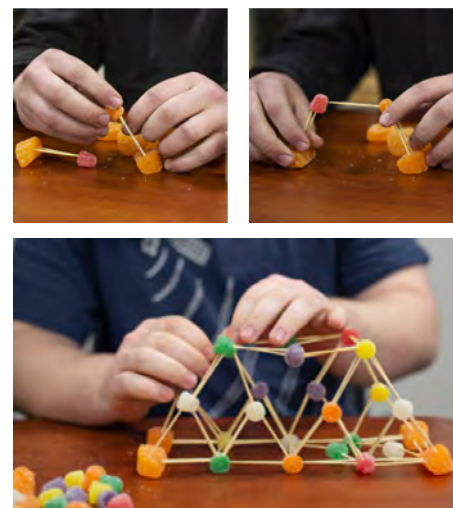


Figure 3. Building Bridges in action using truss-style construction. *Image Credit: National 4-H Council.*

Additional Resources:

4-H STEM Lab. 2019. Building Bridges. <https://4-h.org/parents/stem-agriculture/youth-stem-activities/building-bridges/#!the-experiment>

Little Bits for Little Hands. 2014. Gumdrops Bridge Building Engineering Activity STEM. <https://littlebinsforlittlehands.com/gumdrop-bridge-building-engineering-activity-stem/>

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