



Teacher Resource

Bio Medical Engineering

Grades 3-5

We are so excited to have you utilize our Stem with Storm videos in your classroom! Innovation One and Education One have partnered together for some fun with our campus mascot, Storm, to share his love of learning with STEM- Science, Technology, Engineering and Mathematics with students near and far demonstrating some fun experiments directly aligned to Indiana State Standards!

The enclosed follow-up activities can be utilized for extended hands-on learning for your scholars. Our goal is to get those young brains thinking and spark the imagination and love of learning of future professionals!

Let's Learn Together with Storm!



A partnership of:



Indiana Standards Connection:

Science Standards:

- 3-5.E.1: Identify a simple problem with the design of an object that reflects a need or want. Include criteria for success and constraints on materials, time, or cost.
- 3-5.E.2: Construct and compare multiple plausible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5.E.3: Construct and perform fair investigations in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Classroom Extension:

Name: _____

The World Needs



What product or machine do you think you can make or improve to help doctors? Define the problem by stating why you chose it. Draw your item and provide answers to the questions asked.

Draw your plan here

A large, empty rectangular box with a light blue border, intended for drawing a plan or sketch.

Name your project

A rounded rectangular box with a light blue border, intended for writing the name of the project.

The problem- What made you chose this?

A rectangular box with a light blue border and horizontal teal lines, intended for writing a description of the problem.

Describe your project

A large rectangular box with a light blue border and horizontal teal lines, intended for writing a detailed description of the project.

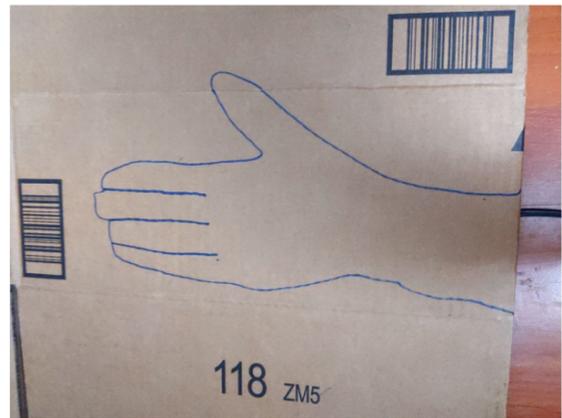
Age: 7+

Materials: Cardboard, scissors, straw, string, markers, hot glue (or liquid white glue).

Introduction: Learn how to make a synthetic hand that you can control the individual fingers of! It's easier than you think and this activity will give us a deeper understanding of how our own hands work as well. By using tension, on one side of something flexible, we can get it to curve. Now let's build a hand!

Activity:

- The first thing you will need is to cut out a hand from your sheet of cardboard. You can trace your own hand to get the shape or ask an adult so you can have a larger surface area to work with.
- Once traced, carefully cut it out, making sure to cut the fingers out as well.
- Now, take a look at your actual fingers, see how there are 3 creases on each finger? Fold the cardboard fingers in 3 different spots along each finger, if you need to, draw them in so it's a bit easier to find the fold. Look at your hand for a reference.



- Fold the cardboard fingers in 3 different spots along each finger, if you need to, draw them in so it's a bit easier to find the fold. Look at your hand for a reference.



- Next cut 4 pieces of string about 13 inches long. Then take the straw, and cut it into twelve one-centimeter pieces. Then thread the pieces onto the string.



- Once you have it threaded, Glue one end of the string to each fingertip (excluding the thumb).
 - Next, glue a straw piece in the middle of each finger segment.
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- If you are using Elmer's glue, make sure to apply pressure to each piece of straw and to allow time for the glue to dry, or ask a grown-up to help you use hot glue. Make sure to not get glue on the string!



Repeat this step for each finger, for a total of 4.

Give yourself a thumbs up! You are done! By pulling on the strings, you can control each finger. What kind of poses can you make it do? Try picking things up by wrapping the fingers around a lightweight object. Did you know that this is very similar to how your hands work too? The muscles we use to close our hands are actually in our wrists, and strings called tendons carry the tension up to our fingers so we can grab things. Try grabbing your wrist, and then open and close your hand. Can you feel it?

