

Using Cardboard in STEM (Attachment Techniques)

[teachersareterrific.com/2019/02/using-cardboard-in-stem-attachment-techniques.html](https://www.teachersareterrific.com/2019/02/using-cardboard-in-stem-attachment-techniques.html)

February 15, 2019

Do your students need help with attaching pieces of cardboard or cardstock together? I have some ideas for you!

I know cardboard attachments seems like a boring subject, but let me explain. There are two materials we use in STEM class every day. **Cardboard and masking tape.**

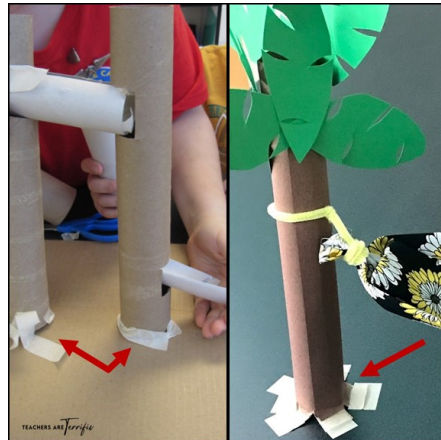
Mind you, the cardboard can be cardstock or brown cardboard, or even foam board. The masking tape is a heavy-duty, very sticky brand that works well. We prefer thin tape.

So, you would have to think that we (I mean, myself and the students) have mastered these two materials. We should be experts by now, right? Well, a little. Let's see if we can share some tips with you about cardboard attaching!



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Did you notice all those really interesting connections in the picture above?



Those connections were created when I realized students needed an easy reference to remember attaching methods that could help them make a structure work. There is a little story behind this. Take a look at this photo to the left.

On the left you can see a group struggling to get those tubes to stand upright. The way they are using the tape is the problem. On the right this team is using a flange made of *tape*. This is one way to solve that taping problem. But, now take a look at the next photo.



What if you make the flange along the bottom of the cardboard tube? Now, you have little tabs that fold out and those can be taped in place. What a great support system all the way around.

HOW TO: Cut short lines all the way around the bottom of a tube, about an inch apart. Fold the tabs out and tape each tab in place.

So, okay, are there more of these tricks?

Actually, yes. Now, I cannot take credit for inventing these. I found several different posters on Pinterest and then made my own. (The complete poster is at the end of this post.)

Let's start with these four!



Inserts are great for creating bridge supports or cranking devices. A gusset resembles a wall shelf but can be laid sideways to create a wall that won't fall down.

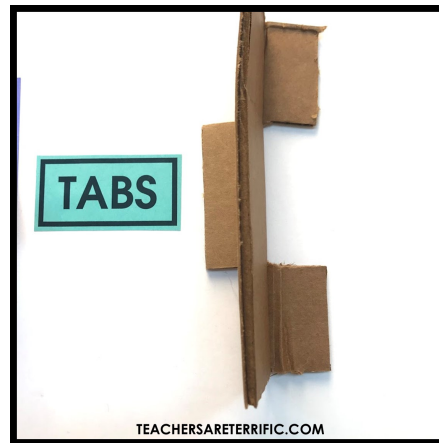
The flange is great for making tubes stand upright.

Notches are great for holding several lines of something- maybe straws or craft sticks.

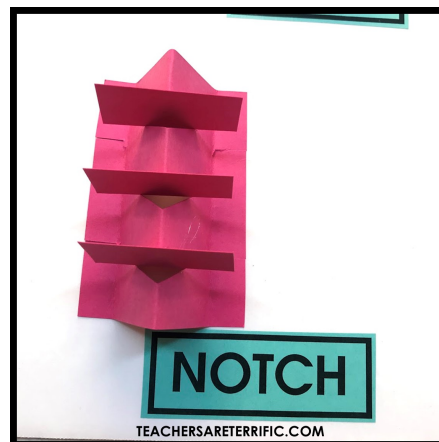
So, how do you make these?



How to make an insert: Fold a flap at each end of the cardboard. Fold the cardboard in half. Cut a slit in the location you need to use for threading another material through the shape. Tape the bottom flaps in place. This could be used for creating a cranking device. The inserted object would be the material you would turn to make the crank work.



How to make tabs: Cut one-inch long slits in two places along one edge of the cardboard. Fold the two spots on each end in one direction and the middle spot in the opposite direction. Now, you have three places to add tape. This is perfect for creating walls.



How to make notches: Fold each end of a piece of cardboard making flaps. Fold the cardboard in half. Along the top of the triangle you just made cut notches. Now another piece of cardboard can lay in those notches. This is perfect for creating space between two floors of a house.



How to make gussets: Cut three small triangles the same size. Glue one edge to a piece of cardboard to make the “shelf”. Glue the back side of the shelf and the back of each triangle to another piece of cardboard. The bottom cardboard is now attached to your structure. This would also be a great wall.

Are you ready for 4 more cardboard attaching techniques?



The fastener is a way to have a structure turn.

Another form of an insert is a way to have one piece of cardboard standing upright.

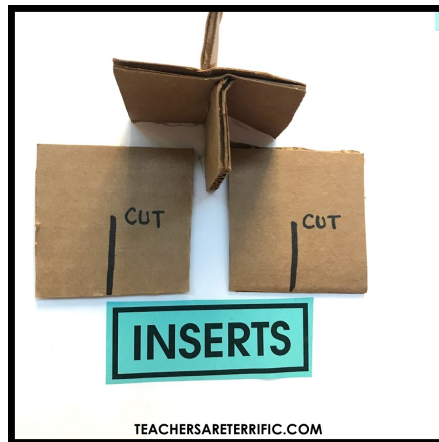
One more form of insert is a way to slide two pieces together and have them stand upright.

The wrap is a way to join two pieces without tape- just a rubber band!

Let's learn how to make these!



How to make a fastener: Use a hole puncher to make a hole through your larger piece of cardboard. Cut the spinning part and punch a hole in one end of it. Use a metal fastener to thread through both pieces and you have a spinner!



How to make an insert: Cut two pieces of cardboard the same size. Cut a slit in the center of both. Now just slide them together using the slits you just made. This makes a shape that can be a support for a tower!



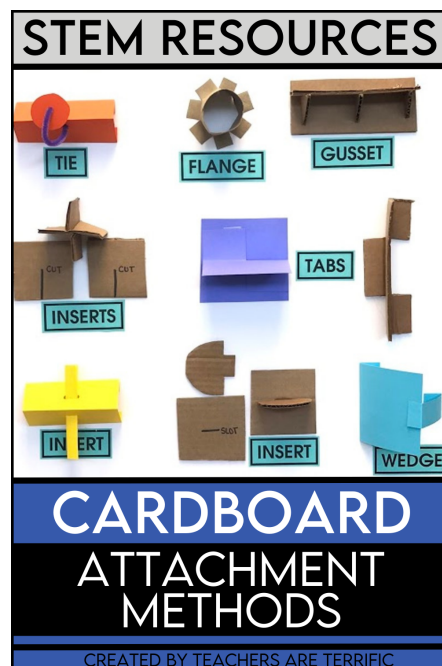
How to make an insert: Cut two pieces of cardboard the same size. Then cut a slit in the center of each piece. Do NOT cut all the way across.

To connect these just slide the two cut spots together and adjust. This will stand upright.



How to make a wrap: Cut two narrow cardboard pieces and wind a rubber band over and over the center until the band is tight. You can also use string or yarn for this.

The Attachment Display Poster

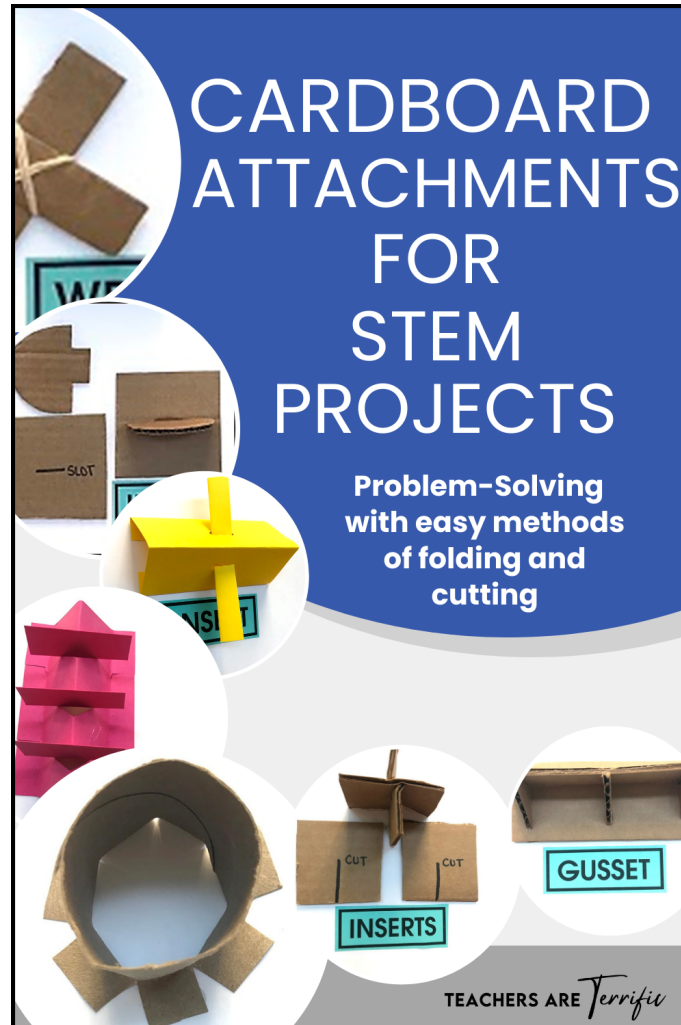


I created models of 12 different cardboard techniques to use as a reference when students need an idea. The backing is a piece of white foam board (buy this at the Dollar Tree). I created all the attachment models and hot-glued them to my foam board. I want them to stay in place! The labels are just an easy-to-read font printed on Astrobright's paper. My poster has a larger matching title: Cardboard Attaching Techniques. Finally, I hot glued it to my wall – low enough for kids to see it and make use of it!

Have fun making your version of this very useful poster! Idea: Teach one team how to do one of the techniques and let them teach others!

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A few of my favorite STEM Books!
