

## Epic Literature/STEM: Week 33

Welcome to week 33 Epic Literature and STEM. This week we're going to talk about industry and we're going to read a book about all of the people and materials it takes to make one little pencil. You'll never look at that one little pencil the same again! Then we'll do a project using the simple machine, the pulley.

### Lesson:

Now let's read this week's book. [“The Tuttle Twins and the Miraculous Pencil” by Connor Boyack](#)

### Activity:

Now let's watch today's STEM video: [Pulleys](#)

### Materials in your kit:

- String
- Sturdy paper towel tube (for the tower)
- Paper clips
- Straws
- Pipe cleaners
- Rubber bands
- Clothes pins
- Craft sticks

### Other:

- Ruler
- Hole punch
- Tape

### Discuss:

Were you able to build the pulley? What did you learn about simple machines today that helped you? If you were to do this again, what would you do differently?

### Video Transcript:

The Industrial Revolution was a time of new advancements and new technology. Before this time period, most of the work people had to do had to be done by hand. If you wanted to plow the fields, you had to go out with some oxen and a plow. If you wanted to make some clothing you had to do it by sewing by hand. As the Industrial Revolution progressed, a lot of the jobs people used to do by hand became machine assisted. In other words, you'd still have to do part of the work, it wasn't like today's robots that create entire things by themselves. But the work was much, much easier.

A good example of a machine assisted product is a sewing machine. It's not as if a robot's doing the entire process, you still actually have to sew the object. But the sewing machine makes it much, much easier because you don't have to sit there and make each individual stitch by going up and down with the needle. The Industrial Revolution saw all sorts of new machine assisted inventions that made people's lives much, much easier.

For today's STEM project, we're going to be taking a look at one of the most important machine assisted inventions ever made. Have you ever heard of a pulley system? A pulley system uses force and how it redirects it, to make things easier to move. How many of you have ever tried to roll a stone instead of picking it up and holding it over your head? Which one's easier? After a while, if you're picking it up, your arms are going to get really tired and it's going to be harder. But if you're constantly moving it to the side, it's going to be much easier.

A pulley system uses that same idea. Instead of lifting something up from the bottom, or trying to pull it directly up from the top, a pulley will redirect the force with a cable attached to a long part at the end. This allows you to pull sideways, making it much, much easier to lift a heavy object. Today, we're going to be making our very own pulley system. Let's take a look at all of the different resources we have for this project. You're going to have a tall paper tube - like a Pringles can or paper towel tube - you will also have some straws, rubber bands, craft sticks, string, clothespins and pipe cleaners.

Because this is a STEM project, we're going to focus on the engineering process. The first step in the engineering process is to ASK. Our question today is: *How can I use my resources to build a pulley system to carry an object from the bottom to the top of my cardboard container?* Step number two, it's time to IMAGINE. So let's come up with some different ideas of how we can use these resources to make a pulley. After you've thought about it for a little while, it's time for step number three: PLAN. So grab a piece of paper and a pencil and jot down some of your ideas.

Now that we've created our plan, it's time for step number four: CREATE. Let's get to building our pulleys. And here I have my finished pulley. If you notice, as I pull outwards with the string, it lifts up my object. Now if you notice, I'm not choosing something too heavy to lift, and I still have a lot of resources left over. So we now want to move onto step number five: IMPROVE. I want you to think of how you can use your remaining resources to reinforce your pulley system and see how heavy of an object you're able to lift with your pulley.

I hope you have fun with this project and best of luck with it. I'll see you all again next week.

