"In the Construction Zone" Module 10, Adventure 1

EXPLORE iT

Prompt:

Engineers are people who work with others to find solutions to problems. They use creativity, math, science, and many other skills. They often have to create, test, and improve designs many times before they are ready to be used.

It's your turn to be an engineer and complete different challenges using only straws and one other simple material!

Materials:

- 50 Straws (paper or plastic)
- One of the following:
    - Tape (1 roll)
    - Paper clips (50)
    - Playdough or clay (1 can - about 4oz.)
- 1 Piece of paper to be a river
- 1 Small ball (like a tennis ball)
- 1 Weight (books, notebooks, or something similar)
- Ruler or measuring tape
- Scissors
- *Optional: Explorer Notebook*

Instructions:

1. Today, you are going to be an engineer and use simple materials to engineer solutions to a few different problems.
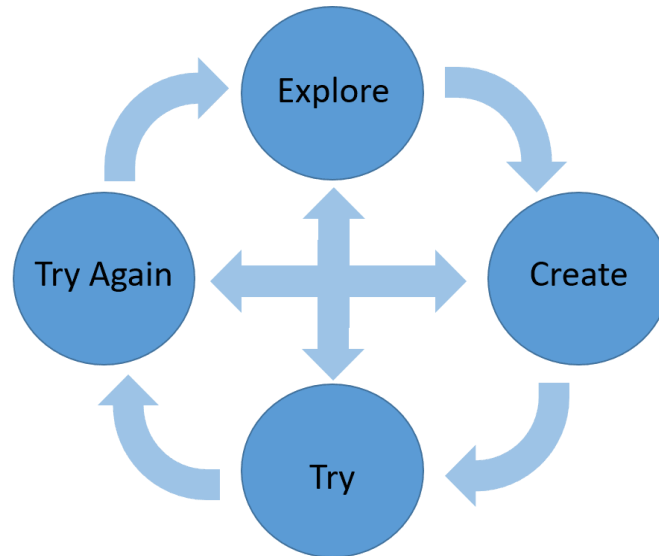
2. Decide which material you will use to complete the engineering challenges with. You will use straws and either (**just pick one!**):
   a. Tape
   b. Paper clips
   c. Playdough or clay
3. Find a surface that is level, like a table or the floor (no carpet!), to work on.
4. Complete some or all of the following challenges.

NOTE: For each challenge use 12 straws and **one** of the following:
- 12 inches (31 centimeters) of tape
- OR 12 paper clips
- OR playdough/clay

Challenge 1 Build the tallest structure you can.	**Challenge 2** Build a structure that supports as much weight as possible.
Challenge 3 How many flat shapes can you make?	**Challenge 4** How many 3D shapes can you make?
Challenge 5 Build a structure that will support a small ball at least 6 inches (16 centimeters) off the table or floor.	**Challenge 6** Build a bridge over a "river" that does not touch the water.

5. As you design, remember that engineers often explore what materials can do, create a design, try it out, then make improvements and try it again. It can take a lot of time and trials to get to a design that works. Keep improving your designs until you think they are the best they can be!

Explore

Create

Try

Try Again

6. Share your designs with someone at home. Tell them which design is your favorite, which was the easiest for you, which was most difficult, and why!

For explorers using an Explorer Notebook:
1. Sketch any of your designs before you start building.
2. After the challenges, write about which was your favorite, which was the easiest, and which was the most difficult.

Check out the last page for an idea about how you might set up your notebook page. You can use this or set up your page however you want!

Extensions:

The following are optional steps you can take if you want to extend this adventure:

1. Using 12 straws and just *(6 inches / 16 centimeters of tape OR 6 paper clips OR half a container of playdough/clay)*, build any type of structure you can.
2. Create your own engineering challenge!
3. Go to the "In the Construction Zone" topic on Flipgrid and share your creation!

Explorer Notebook
You can use this to help you set up your Explorer Notebook!

Straw Structures
Module 10, Adventure 1

Design 1:	Design 2:	Design 3:
Design 4:	Design 5:	Design 6:

My own challenge:

_____

_____

_____

My favorite challenge was _____,

because _____.

The easiest challenge for me was _____,

because _____.

The most difficult challenge for me was _____,

because _____.