

Zip Zip Hooray!

Activity Rundown:

Today our objective is going to be delivering a piece of precious cargo from one room to another using ziplines! Ziplines are used all over the world to transport different items from space to another without disturbing any inhabitants below. We can use ziplines to zoom between high places while also using a lot less material than a bridge. Start to think about where you might want your zipline to span from!



You will need:

- + String, yarn, tooth floss, or any similar material
- + Popsicle sticks
- + Rubber bands
- + Paper clip
- + An item to transport (Lego pieces worked great for us!)
- + Paper
- + Scissors
- + Aluminum foil



Let's do it!

1) Before we begin we would like to suggest that you take the necessary steps to planning out a thoughtful plan for your zipline. This can be done through what we call the "Engineering Design Process":

1. Identify the problem

a. How are you going to transport an item of your choice (Marble, rock, etc) from one room to another?

2. Generate Ideas - Brainstorm

- a. Which direction or route will you take?
- b. What obstacles will you run into?
- c. What materials can be used for this project?
- d. How can you make your idea exciting and innovative?

3. Design

- a. Brainstorm with those in your household or area and decide on what you think is the best idea for this.
- b. Draw out your design on paper
- c. Plan out the budget needed for this, what does each material cost, and how much will you need?
- d. Confirm drawn out design with a friend, teacher, supervisor, parent/guardian.

4. Build and Test

a. Create design and test it to see if it solves the problem

5. (Optional) Redesign

- a. Find the problem with the design and try another design to get around it
- b. This is kind of like going back to step 1

6. Final Demonstration

a. Show your design once it works by tagging us on social media!





Zipline Directions:

- 1) Pick a start and finish point for your zipline.
- 2) Then you will want to choose exactly what you will be transporting.
 - To make this portion more difficult once completed, try picking something heavy for an additional challenge. (Something small but heavy like a marble would be perfect!)
- 3) Plan out your design using the engineering design process above. This will give you a better idea of what problems you may run into and where you can be creative.
- 4) After this is complete you may begin building your zipline!
- 5) Paperclips, a loop of string or anything of the sort act as a good hook that will allow your item to slide down the zipline!
- 6) Test our zipline! Did it work as you had hoped? Could you make any changes to the design?



Background:

While there's not much historical record of when the first zip line came along, there is ample evidence that people living in mountainous regions, particularly the Himalayas and the Alps, strung up zip lines quite early in their culture to both traverse dangerous countries and to receive and carry supplies more efficiently.

Of course, mountain climbers have also been partial to the zip line for some time. While a Tyrolean traverse is a common mountaineering practice (shimmying across a line to cross



between two steep points, sometimes without a pulley at all), the zip line one-upped the Tyrolean by using the gravity of the slope to make the process a little quicker.

Resources:

http://adventure.howstuffworks.com/zip-line2.htm

Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please <u>click here</u> to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

Twitter: **@MyMindsInMotion** Facebook: **@mindsinmotion2014 & @ucactiveliving** Instagram: **@ucalgaryactive**

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