

Straw Maze

STEM QUICK Challenge

- ~ Easy Prep
- ~ Engaging Design and Construction
- ~ Lab Sheet or Interactive Notebook Graphic Organizer

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A Little Background...

Are you ready for a QUICK STEM Challenge?

The intent of this package is to provide you with an idea, a materials guide, task criteria for your students, a recording method for students, a few photos, and a few helpful hints. Detailed instructions are not included, although you will find that in STEM Challenges and STEM Activities from *Teachers are Terrific!* Rather, this exploration is just that—an exploring time with limited supplies and spectacular results!

Here's why this type of challenge came to be!

I found myself needing something quick one recent afternoon and did not want to have classes spend time with research, creating background schema, or needing to discuss at length with me. I just needed a quick challenge. You can read more about this on my blog: [Teachers Are Terrific](#).

Thus, Quick Challenges were born! This challenge will be great for:

- Substitute Days- Quick Challenges can be assigned without a lot of prep.
- Creativity Challenge- What can your students do when given a box of supplies and specific criteria?
- Rewards- What a great idea! Let your students earn a STEM challenge day!
- Small Group Session- Do you have a small group of early finishers that need a quick challenge?
- Gifted Class- Perfect for a group of TAG students that need a challenge!
- After School Science Club- perfect for a quick session!
- Homeschool Science and Engineering Tasks
- Homework- send home a Quick challenge in a brown paper sack!
- Science Night with Parents- leave a box on student desks for parents and kids to solve together!

•• The Task, Materials, and Prep ••

THE TASK: Students will use supplies to design and build a maze through which a marble can travel. It should include dead ends and half walls to impede traveling of the marble.

MATERIALS:

- Boxes- like shoe boxes, lids to boxes, gift boxes OR sturdy cardboard for bases
- Straws- any kind
- Clear tape or white glue
- Marbles
- Containers for group supplies- The container can be anything- a brown paper sack, plastic shoebox, large zip lock bag, or just a tray.

PREPARATION:

For each group prepare a container of the following:

- 50 straws
- 1 marble
- Roll of clear tape or dispenser of clear tape
- Drawing paper to sketch – in addition to the lab sheet

Also, have a box lid or shallow box for each group. I tried a box with some classes and flat, sturdy cardboard with some. Both worked!

Also, copy and laminate the criteria card for each group.

BEGIN: Explain the task to students with a read through of the criteria card. Answer any questions students may have. You may want to have them consider the following: What are some of the features of a maze? What is the point or goal of a maze?

Let them get to work!

OPTIONS: Giving students a time limit for building is your choice. The method of recording the planning, designing, and reflecting is also your choice. Two versions of recording are provided in this package. One is a folding graphic organizer and the other is a lab sheet.

SHARING: Do consider a sharing time after building so each group can present their maze and talk about how it works. Also, allowing groups to trade mazes and try them is fun!

HINTS: We used gift boxes and flat cardboard for our straw mazes. I also provided a roll of clear tape to attach the straw pieces to the box lid. You can have students use white glue to attach straw pieces, but clear tape is more easily removed if they need to change the maze and you don't have to wait for glue to dry. I purchased colorful straws to use for our mazes. We spent time talking about turns and half walls and actually drew an example on the board. Fifty straws was more than enough for each group to build their maze.

Design a Straw Maze

THE TASK: Design and assemble a straw marble maze.

MATERIALS: The contents of your box are the supplies you may use. You will have a base on which to build and you may also use scissors.

CONSTRAINTS: The maze should have dead ends, walls to block the marble, open spaces, a beginning, and an ending spot. Use a marble to test as you build.

RECORDING: Track your thinking, designing, and construction. Your final design will be presented to the class. A reflection of this design challenge is also part of the task.

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STEM Challenge ~ Straw Maze

Name _____

Date _____

ASK and IMAGINE: How can you use the given supplies to design and assemble a straw maze?

PLAN and CREATE: Work with your group to track your thinking. Jot down ideas and sketch them.

IMPROVE: What changes did you make as you created? What worked best?

REFLECTION: Describe your success, or lack of success, with this challenge and why it occurred. Explain what you learned.

CONCLUSION: Diagram of Final Maze

Folding Graphic Organizer: Copy page for each student. Students cut on the solid lines and fold on the dotted lines. Place Glue dots on the back of the bottom section only (the one labeled Reflection). Title for the INB is also provided. This organizer folds nicely, leaving space on the page for additional writing or drawing.

STEM Lab- Straw Maze

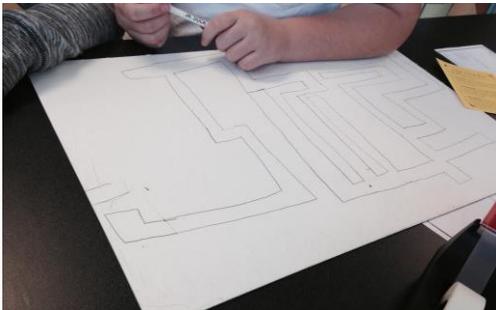
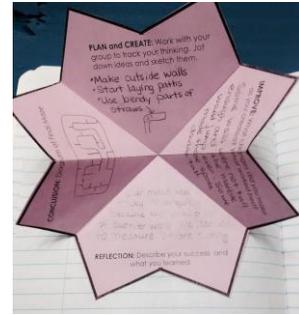
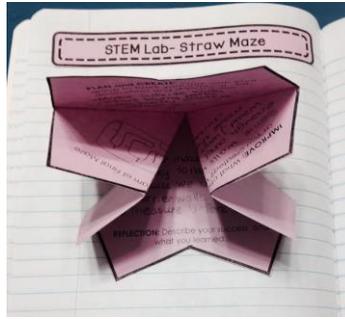
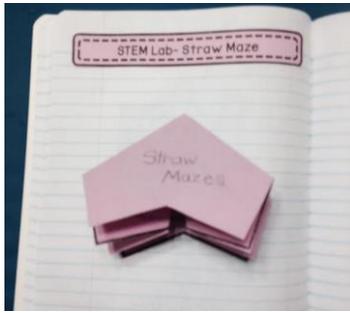
PLAN and CREATE: Work with your group to track your thinking. Jot down ideas and sketch them.

CONCLUSION: Diagram of Final Maze

IMPROVE: What changes did you make as you created? What worked best?

REFLECTION: Describe your success and what you learned.

Photos

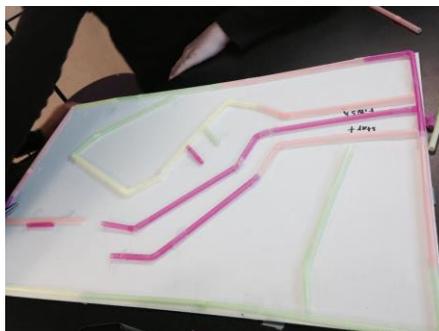
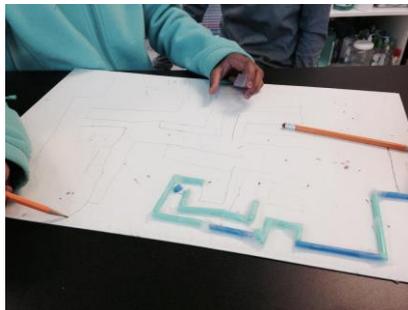
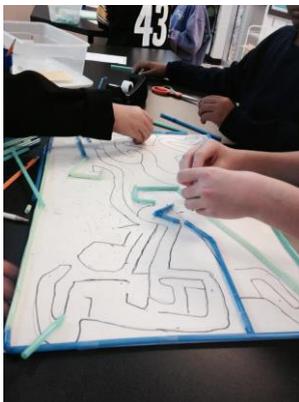
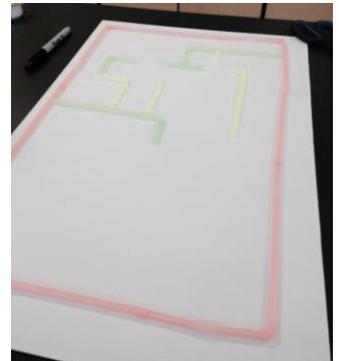


Several groups wanted to draw on the cardboard we used and then place the straws. They actually were able to follow those paths they drew pretty well- although many of their drawings were too small.

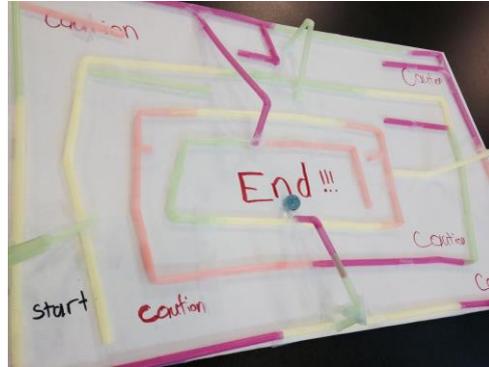


Cardboard Versions

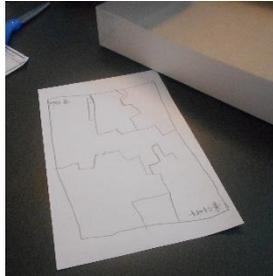
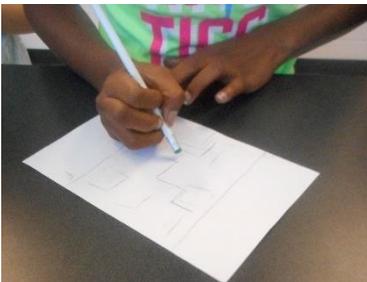
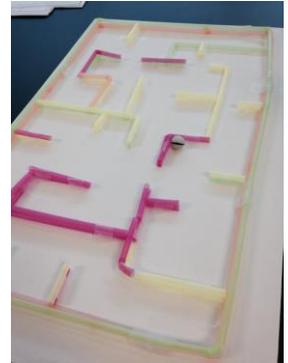
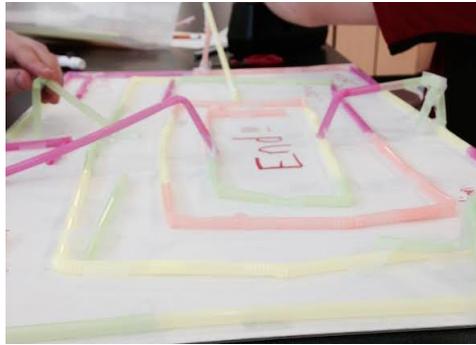
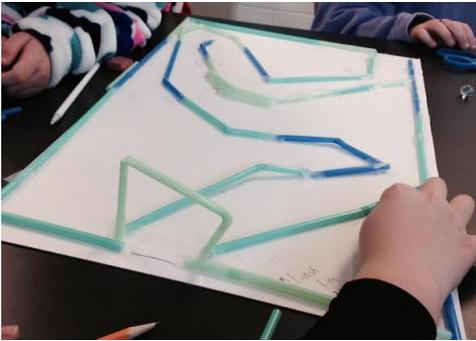
This class used a flat piece of cardboard as the base so students also had to build the outside walls. Another class used boxes that already had walls and this made the task completely different! Photos on the next page!



Photos

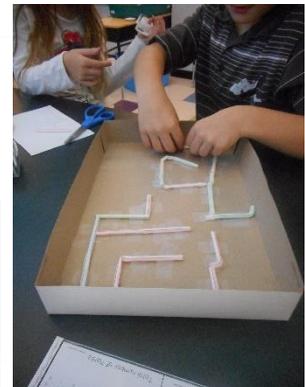
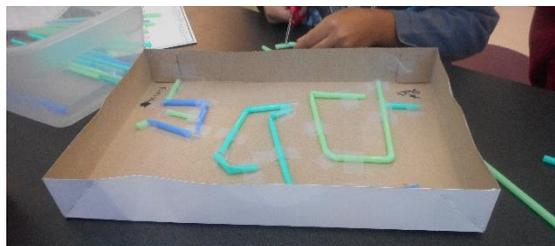
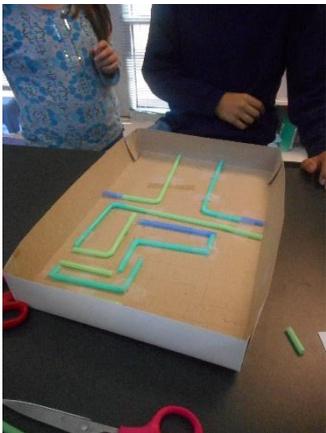
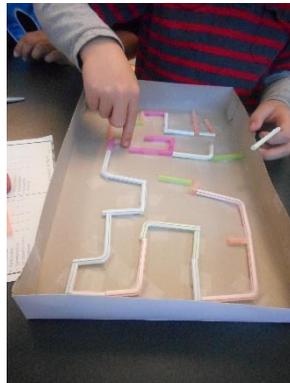
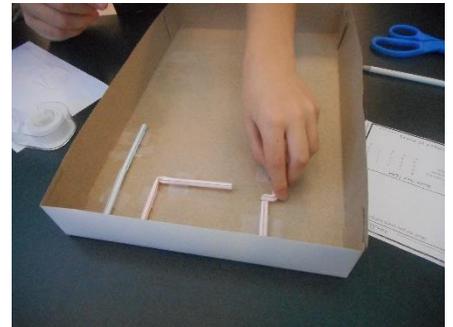


Love how this group added dimension!

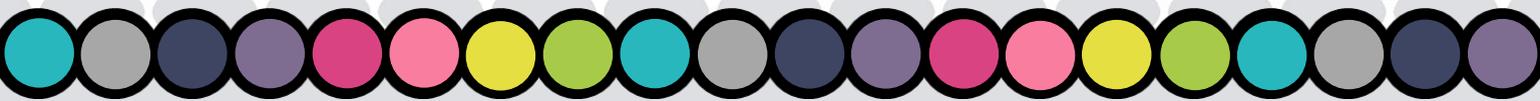


Box Versions

Students that used boxes for the mazes also drew plans first!



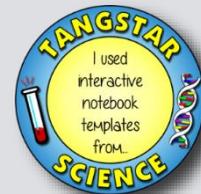
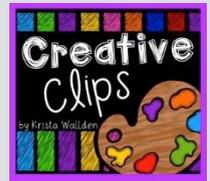
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