Classroom Experiment: ENGINEERING

Objective: Introduce students to engineering using **action-focused language** to increase their engagement and persistence, and confidence in doing science.

Materials needed to do science:

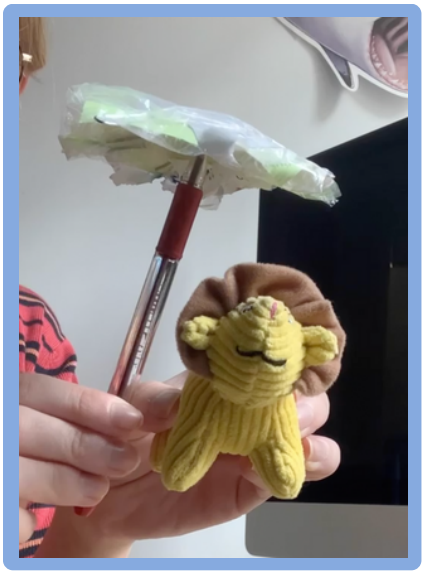
- For this activity, you can use any leftover materials you may have laying around the classroom. Some examples are paper clips, post it notes, cardboard, sponges, tooth picks, glue, tape, popsicle sticks, coffee filters, dried markers etc.
- This activity can be more or less challenging based on the materials students are provided with.

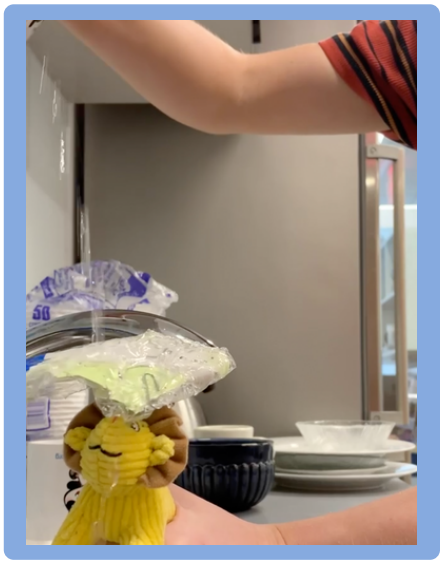
IMPORTANT NOTE

Students will benefit most if action focused language is repeated throughout the science lesson. Introduce each step by saying "We're going to do science and..." and explain to students that "Doing science means learning about the world." You can incorporate action focused language into any science lesson, so feel free to change the experiment as you see fit. Have fun doing science!

Introduce new concept "**Today we will be doing science**!"

Explain to students that "today we will be doing science to learn about engineering! Inventing solutions to problems by building something is called engineering. We engineered trains to get to far away places quickly and umbrellas to keep us dry when it rains. We can have lots of fun and learn a lot about engineering by trying to make a good umbrella using items we have laying around the classroom! Ask students to brainstorm some inventions that used engineering (bridges, buildings, cars, etc.)





Have students do science and build

Explain to students that **"part of doing science is building!"** Instruct students build a small scale model of their design. When they have finished have them consider how the model they built matched up with their blueprint. Did they change their plan when building? What changes were made? This may be a good opportunity to ask students to form groups to discuss their models.

Have students do science by **predicting**

Explain to students that **"part of doing science is checking your work!"** Have the students line up at a sink one by one. To test their mini umbrellas, you can put a toy underneath and pour water over for 3 seconds. Then, check to see if the toy stayed dry. Explain to students that it is okay if their umbrella did not pass the test. Setbacks are an inevitable an important part of science and they help us find get closer to solutions. Students who are not satisfied with their mini umbrellas can return to the blueprint stage and brainstorm again.

Our research has found that action focused language can increase science engagement, persistence, and confidence in kids from diverse backgrounds. It is our goal to increase the amount of action focused language children hear about science to reduce disparities in STEM. We know how hard teachers work, so we wanted to ensure that implementing action focused language in the classroom was as easy as possible. If you have any questions, comments, or concerns, please contact us at www.kidconcepts.org. Thank you for reading!

Best,
NYU Science Initiative

ACTION-FOCUSED LANGUAGE EXAMPLES

- "Today, we're going to do science"
- "Doing science is the process of discovering new things
- "If we practice, we will get better at doing science."

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