

Paper Airplanes

Grades: 2nd grade - 4th grade

NGSS: K-2-ETS1-2 Engineering Design, 3-5-ETS1-1 Engineering Design

Materials: *Women in Engineering / Las mujeres en la ingenieria*, paper

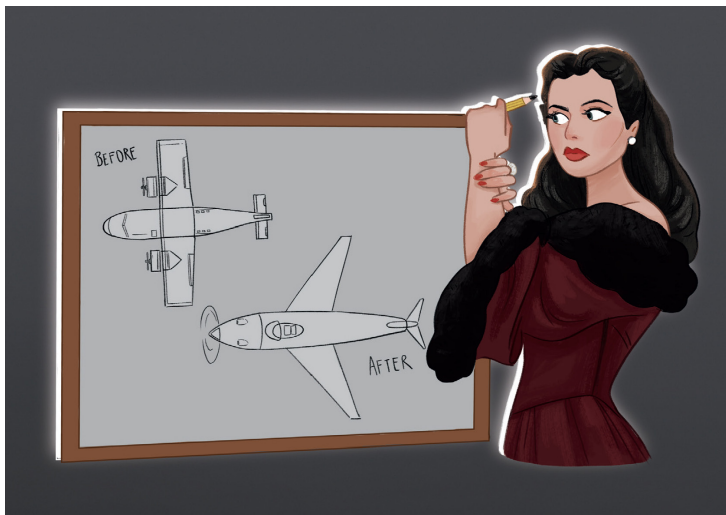
Skills: critical thinking, experimentation, prototyping, building

Subject: Biomaterials, biomedical engineering

BACKGROUND

At its core, engineering asks us to be creative problem solvers. Trial and error is crucial, and one must often start at the smallest, simplest iteration of a greater invention. Get your students in the headspace of an engineer by trying different designs of a very basic, but ingenious device: the paper airplane. Though today they may start with a blank sheet of paper, someday, they may launch rockets into space.

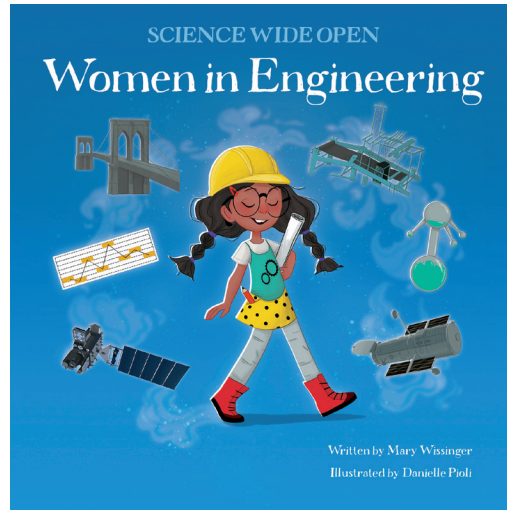
ACTIVITY



1. Read *Women in Engineering / Las mujeres en la ingenieria* out loud to your class.
2. Discuss Dr. Sandra Cauffman's work in aerospace engineering with the class. Highlight how her projects refined and improved satellites, and how engineers are always working to improve existing designs. Ask the students how many times they think Dr. Cauffman tested different ideas before finding the best one.
3. Like Dr. Cauffman, we can design and test our own aeronautical inventions, by trying different paper airplane designs!
4. Either individually or in small groups, have students fold different designs of a paper airplane. Encourage students to try their own designs, or improve upon the classic design.
 - a. For younger students, feel free to walk through one design together as a class.
5. Have the students try flying the paper airplanes! Observe the different distances and different flight paths. For a competition, consider marking out a "flight path" on the ground, and marking where planes land with tape.

DISCUSSION

Discuss takeaways from the activity as a class. What worked best? What did you enjoy most out of the whole process? What would you do differently? What kind of factors affected how far the plane could fly, and do you think those factors affect real airplanes and spacecraft? Mention the shape it was folded in, the type of paper, the angle you throw it, the force you put into the throw, the wind speed and direction. All of these are things engineers consider when designing an invention or machine. Ask your students: if you could invent anything, what would you invent? If you could make something work more efficiently, what would it be?



This activity was excerpted from the Teacher's Guide to
Women in Engineering / Las mujeres en la ingenieria

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