



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Explore the science of flying, learn about the Wright Brothers invention and build your own amazing flying machine.



Supplies Required:

- Mini wood craft sticks
- Roylco antique paper
- White glue
- Scissors
- Pencil

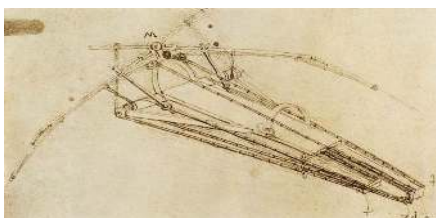
Video

Follow along as the passage is read aloud: <https://tinyurl.com/ycj638bs>

Learn how to construct a flying machine: <https://tinyurl.com/y9b42r65>

Overview

Leonardo Da Vinci's is most famously known as a painter, but among his paintings, he also sketched hundreds of journal entries on flight. In fact, his designs for a so-called flying machine – carefully sketched out in his notebooks – were modeled after the anatomy of birds and bats. Da Vinci's designs featured a pair of enormous wings connected to a wooden frame, inside of which an intrepid pilot could lie facedown and move the wings up and down by turning a crank that moved a series of rods and pulleys. Unfortunately, da Vinci never built the device. The world would have to wait another 400 years or so for a machine that could really fly. It wasn't until 1903 that brothers Wilbur and Orville Wright made their first successful flight in a powered aircraft. In the passage, you learned about the Wright Brothers' invention – the amazing flying machine, that looked like a "box kite with an engine". The Wright Brothers' design and building took years, but their hard work paid off. Look at the planes we have now!



Instructions

1. Watch the video as many times needed
2. Gather materials to construct a base
3. Ask an older sibling or an adult if you need help--cut your mini wood sticks
4. Start by making a square and glue the pieces together
5. After making your square, you can make your own design by placing the wood sticks in place and gluing them down
6. 3 design examples are show in the video that you can use, or come up with your own
7. To make the wings, fold a piece of the antique paper in half
8. Draw half a tail design on the fold and one wing but not on the fold
9. As shown in the video, cut your wings then draw lines where the wooden pieces will go for more stability or strength
10. Cut your mini craft sticks to the lengths drawn on the paper and glue them down
11. Glue the wings and tail to the base structure
12. As shown in the video, your design can be as simple or as fancy as you like
13. Your machine is ready for flight!

Additional Resources

Think About It! What is the most important part of your design? Compare and contrast the DaVinci and Wright designs; how are they similar and different?

1. Listen to this student explain the first flying machine: <https://tinyurl.com/yb9yw7t7>
2. Learn more about how planes take flight: <https://tinyurl.com/ya2dchuc>
3. Find out more about different types of aircraft wings: <https://www.aircraftcompare.com/blog/types-of-aircraft-wings/>

Share It Out

What fun facts could you share with someone about different types of wings and how they affect flight? Take a photo or have someone take a photo of you and your design! Or record a video of your design in flight! Tell others about what your dream flying machine would look like. Share with friends and on social media using the hashtags:

#FlyingMachineReadAlong
#ProjectExploration
#StemAtHome

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 110. Learn more at www.projectexploration.org/explore-store

Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at: www.projectexploration.org/character-contest.



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