

First Flight

Lesson 1: First Flight

Introduction

Owls are quiet flyers and produce very little noise due to their unique feathers and wings. Other birds learn to fly with a combination of natural instincts and lots of practice. NASA engineers study sound to help design aircraft that are quieter to benefit everyone and everything on the ground and in the sky. In this module, explore flight and with an airplane adventure activity and build a harmonica to explore sound.

Focus Storybook

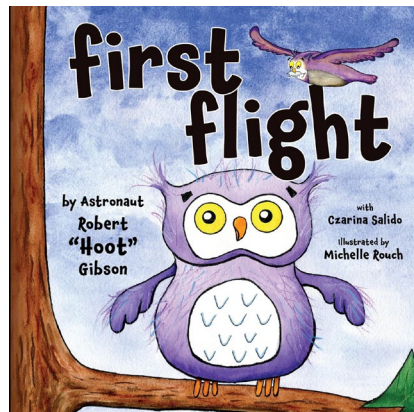
First Flight

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Czarina Salido

Illustrated by: Michelle Rouch

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Czarina Salido

Learning Goals

Language	• Vocabulary: roll, pitch, yaw, landing gear, fuselage, slats, spoiler, aileron, flaps, elevator, rudder, vertical stabilizer, horizontal stabilizer, wing, jet engine, flight deck window • Writing: Practice writing letter Q
Science / Engineering	• Identify parts of a plane and what they do
Fine / Gross Motor Skills	• Fine: cut a straight line • Gross: Marching, shrugging, moving side to side, bending knees up and down

Key Q's

How do vibrations cause sound? How does an airplane fly? What types of animals fly without making sounds?

Primary Materials

2 Tongue Depressors (or large craft sticks).

1 Thick rubber band

2 Thin rubber bands

Straw

Scissors

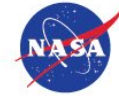
Resources

High Flyers e-Book

Activity One: [Tongue Depressor Harmonica](#)

Sound is produced by vibrating molecules. Objects, made up molecules, create a variety of sounds, quiet and loud. The sound that is heard depends on the strength and speed of the vibrations and how the sound travels such as through air, water, or solid objects. In this activity, explore the vibrations of sound with a harmonica made with craft sticks, rubber bands, and a straw. Click the link above to start exploring sound with homemade music.

National Aeronautics and Space Administration



Tongue Depressor Harmonica

Suggested Grades: 3–8

Activity Overview

In this activity, you will build a harmonica using tongue depressors (or popsicle sticks) and rubber bands. You will explore how vibrations create noise.

Time: 15 minutes

Materials:

- 2 Tongue depressors (craft sticks will also work)
- 1 Thick rubber band
- 2 Thin rubber bands
- Straw
- Scissors

STEPS

1. Cut two pieces off the straw so that they are each about 1 inch (2.5 centimeters) long as shown in Figure 1.



Figure 1. Gather supplies and cut two 1 inch long pieces off the straw

2. Stretch the thick rubber band lengthwise across one of the tongue depressors as shown in Figure 2.

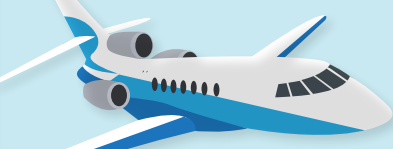


Figure 2. Tongue depressor with a thick rubber band stretched lengthwise across it

FLIGHT LOG
ENDORSEMENT
CODE:
TDPHRMN

Activity Two: Getting on an Airplane

Learn how an airplane moves and discover the joys of flying. Young learners will mimic the movements of an airplane and identify the parts that help it carry passengers and cargo. Use a simple, but necessary tool like a checklist to make sure the airplane is ready to fly. Click the link above to get started!



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NASA Office of STEM Engagement Next Gen STEM

Our Airplane Adventure

Grades K-2

As young students play, they develop an understanding of science and engineering concepts. "Our Airplane Adventure" provides an opportunity for students to imagine being a pilot and getting ready to fly, as they use a checklist to make sure the airplane has all the needed parts and is ready to fly, just as actual pilots do each time they fly.

Through music and movement, students can discover how the different parts of an airplane help make it fly, as well as what those movements look and feel like. Through this learning experience, students will begin to explore and develop language describing an airplane, its parts, and how the whole plane works together as a system.



Next Generation Science Standards (NGSS)

Science and Engineering Practices

- Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.
- Develop a simple model based on evidence to represent a proposed object or tool. (K-2-ETS1-2)

Educator Notes

Overview

The "Our Airplane Adventure" learning experience was designed for formal and informal educators at museums, science centers, and schools. Join NASA to learn about how different parts of an airplane work together to help the plane fly. Students will begin with a preflight inspection of a model airplane. With the checklist complete, students will be ready to fly! Utilizing the song, I'm Gettin on an Airplane and its accompanying video, students can use simple choreography to understand how the different parts of a plane work together to help a plane fly!

Learning Objectives

Students will:

- Develop the vocabulary to describe different parts of an airplane using a model
- Discover ways individual components of an airplane work together to help a plane fly
- Explore the movements of an airplane using simple choreography
- Begin to visualize the different parts and movements of an airplane model

Quick Start List

Decide

- Airplane model/diagram for preflight
- Decide on chalk, masking tape, or paper

Print

- Airplane model diagram (one for each student or a large version in chalk or tape on the ground for the whole class)
- Pilot checklist (one for each student)
- Gear pin flag (one for each student)

Materials

- String or yarn for flag (four inches per student)
- Red crayons (one for each student)
- Hole punch
- Materials to make an airplane model for preflight
- Safety scissors
- Writing utensils
- Optional: Clipboards

Plan

- Room to dance and move
- Music player
- Access to I'm Gettin on an Airplane song
- Video player
- Access to I'm Gettin on an Airplane video

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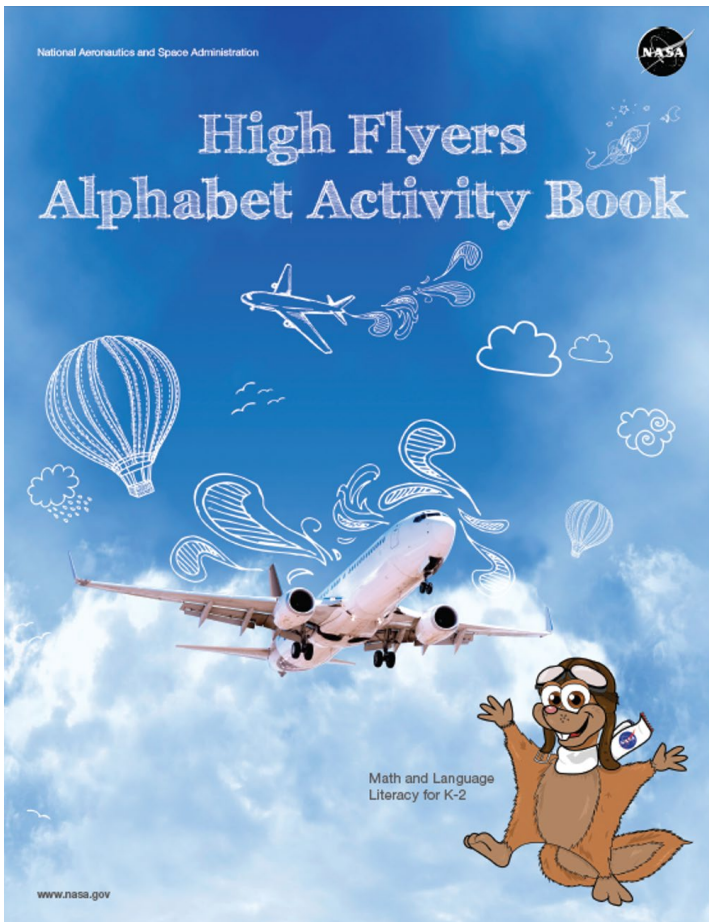
Activity Three: [Orville the Flying Squirrel Coloring Page](#)

Orville D. Squirrel is a flying squirrel. Unlike other types of squirrels, flying squirrels have a furred skin membrane that goes all the way from their wrists to their ankles. When they leap from the top of a tree, they can stretch out that extra skin and catch the wind to glide. Just like an airplane, their tail helps provide stability. Click the link above to bring Orville to life with your favorite colors!



Activity Four: High Flyers Alphabet – Letter Q

Practice letter writing and complete activities with the High Flyers Alphabet Activity book. In this module, focus on the letter Qq representing quick and quiet flying. Click the link above to complete the letter Qq on page 22 and continue exploring the rest of the alphabet book.



Qq Qq

quick

Your family is going on a trip far away. Under each picture is the time it will take each vehicle to get there. Circle the vehicle that will get you there the **quickest**.



2 weeks



2 hours



1 day



3 days

Storybook Connection

Since the beginning, humans have wanted to fly and have tried many different ways to do so. Some have even tried to use kites and strapped manmade wings to their arms. For more than 100 years, humans have used machine-powered aircraft and gliders. In nature, flying animals learn to fly by trial and error with the help of their family and fellow flyers. In this module, explore flight and sound with an airplane adventure activity and build a harmonica to explore sound.

Consider the following strategies to engage learners before and after reading the book:

- Talk about quiet flyers in nature, such as owls and flying squirrels.
 - Q's to ask: How do those animals fly so quietly? How can airplanes fly more quietly?
- Make noise to explore the vibrations of sound. Whistle, clap, talk, any kind of noise you can tolerate.
 - Q's to ask: How did you make that sound? Did you feel any movement when making noise?
- Make a change to the noise to explore changes in the sounds.
 - Q's to ask: What differences did you notice?
- Talk about flying for the first time.
 - Q's to ask: Have you flown in a plane before? If yes, what was your experience? Where did you fly to? If no, what do you think it will be like to fly? Where would you like to fly to?
- Discuss words that start with Qq. Words we have talked about that start with Qq.

Robert “Hoot” Gibson Bio

Captain Robert “Hoot” Gibson graduated with an Associate Degree in Engineering Science from Suffolk County Community College and a Bachelor of Science Degree in Aeronautical Engineering from California Polytechnic State University in San Luis Obispo, California. He entered the United States Navy and served as a Fighter Pilot in F-4 “Phantom” and F-14 “Tomcat” Aircraft and flew combat missions in Southeast Asia, making more than 300 carrier landings aboard the Aircraft Carriers “USS Coral Sea” and “USS Enterprise”. After attending the Navy Fighter Weapons School “Topgun”, and the Navy Test Pilot School, he served as a Flight Test Pilot prior to being selected as an Astronaut in 1978 in the first Space Shuttle Astronaut selection.



In 18 years as an Astronaut he flew 5 Space Flights, 4 of them as the Mission Commander, aboard the Space Shuttles “Challenger”, Columbia”, “Atlantis”, and “Endeavour”. His final Space Flight was the first mission to rendezvous and dock with the Russian Space Station “Mir” in 1995.

In his career with NASA, he held the positions of Deputy Chief of NASA Aircraft Operations, as the Deputy Director of Flight Crew Operations, and as the Chief Astronaut.

In a flying career covering over 60 years, he has accumulated more than 14,000 hours of flight time in more than 160 types of military and civilian aircraft. He is an accomplished air racer having raced in the Reno Air Races in the Formula One Class, the Jet Class, and the Unlimited Class for 18 years, and won the Unlimited Championship in 2015.

He has received numerous honors, awards and decorations including the Defense Distinguished Service Medal, the Legion of Merit, the Distinguished Flying Cross, the Vietnam Service Medal, and has established 6 Aviation World Records and 3 Space World Records. Captain Gibson was inducted into the Astronaut Hall of Fame in 2003, the Long Island Air & Space Hall of Fame in 2011, the Space camp Hall of Fame in 2012, The Tennessee Aviation Hall of Fame in 2015, and was enshrined in the National Aviation Hall of Fame in 2013. He was named a “Living Legend of Aviation” in 2025.

Czarina Salido Bio

Executive Director, Time in Cosmology
Program Director, Taking Up Space

Czarina Salido is the co-author of *First Flight*, a children's book written with astronaut Capt. Robert "Hoot" Gibson and illustrated by space artist Michelle Rouch. An advocate for Indigenous STEM education, she is dedicated to breaking barriers and fostering empowerment.

Born in Nogales and raised in Tucson, Arizona, Czarina's journey reflects resilience, determination, and a lifelong commitment to inclusivity in STEM. She holds a Bachelor of Arts in Philosophy with a focus on Physics from the University of Arizona, where she also served as President of the Philosophy Club. A NASA Social alumna and participant in national conferences, she brings a unique blend of academic passion and community engagement to her work.

As founder and director of Taking Up Space, she empowers Indigenous girls by weaving Indigenous stories into STEM education. Her Mestiza identity connects her to her Purépecha and Yoeme Indigenous and Mexican heritage, inspired by her grandparents, Felix and Dolores Avalos. This cultural foundation drives her mission to create opportunities for young women, especially those from underrepresented communities, to pursue science with confidence and pride.

She continues to advocate for a more inclusive future in STEM while sharing her passions as an amateur violinist, Space Camp alumna, and dedicated foodie.



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