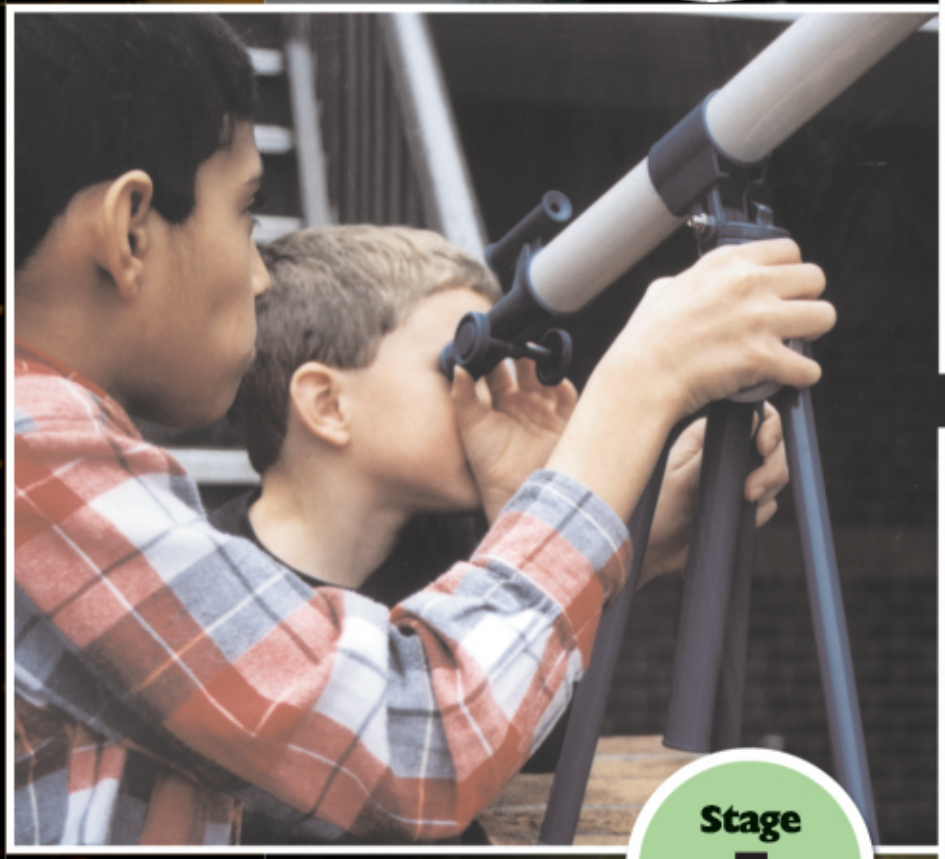
National 4-H Curriculum
BU-06842

Aerospace Adventures

Pre-Flight



Stage 1

Grades 1–3
Aerospace Activity Guide

Name _____

County _____

REVIEWED & RECOMMENDED
National 4-H Curriculum

Note to the Project Helper

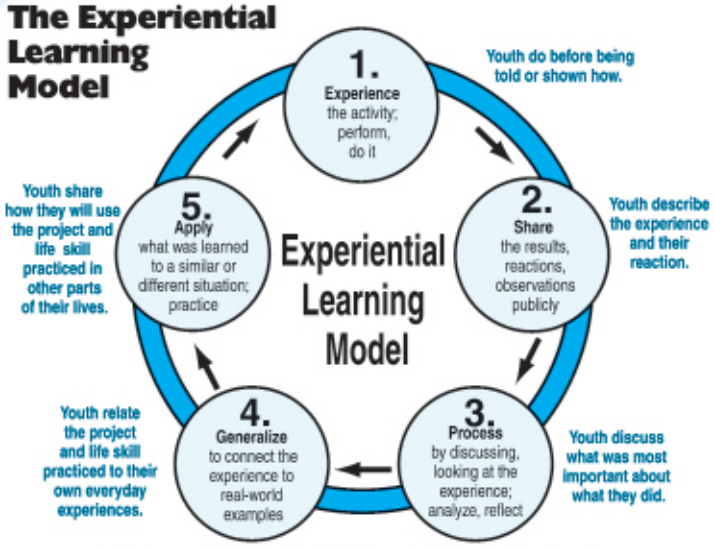
Congratulations, a young person has asked you to be his or her helper. You have an exciting and challenging role as the helper of a young person interested in exploring Pre-Flight of Aerospace Adventures. Not only will you be providing encouragement and recognition, you will also be the key person with whom the young person shares each of the experiences outlined in each of the Aerospace Adventures activity guide.

By encouraging the young person to set goals and work to complete them, there will be many opportunities to help them develop important life skills they will use each day These skills include creative thinking, decision making, problem solving, accepting responsibility, managing time, participating as a member of a team. How you are involved will often determine how successful the youth is in developing these critical skills.

The *Aerospace Adventures* Series

A total of five pieces is included in this series. The first four activity guides, *Pre-Flight, Lift-Off, Reaching New Heights* and *Pilot in Command* have been designed to be developmentally appropriate for grades 1–2, 3–5, 6–8 and 9–12 respectively but my be used by youth in any grade based on their project skills and expertise. The fifth piece, Flight Crew, has been designed to provide group activities that can be organized very quickly and conducted with a group of usually three to forty youth.

The Experiential Learning Model



Pfeiffer, J.W., & Jones, J.E., "Reference Guide to Handbooks and Annuals" © 1983 John Wiley & Sons, Inc. Reprinted with permission of John Wiley & Sons, Inc.

Acknowledgments

2003 Aerospace Revision Design Team
Judy Rice, Coordinator and Writer, AL; Tony Cook, AL; Walter Barker, KS; Wade Crouch, MT; Tony Foster, KS; Ann Grimm, CO; David Herzig, MN; Robert Horton, OH; Tom Zurcher, Liaison

1997 Curriculum Design Team
Judy Rice, Coordinator, WI; Tony Cook, 4-H Missions in Space; Gordon Hoff, Office of Aeronautics; Alton Greenfield, Department of Education; Stan Meinen, MN; Sandy Stedman, Jeppesen Sanderson; Ina McLain and Carol Parmenter, Liaisons; and Tom Zurcher, Educational Coordinator. Youth members Laura Binkley, Erin Duffy, Matt Franklin, Heather Harding, Ryan Kivisko, Ted Knight, Kyra Mangold, Jason Mell Benjamin Rice, Taylor Tappan, Kathryn Thatcher, Bart Werness, Drew Yeager, Mike Zebill.

Supporting Universities, Organizations and Businesses
Academy of Aviation; AMA; Air National Guard; CAP NCR/DAE; Estes Industries; Flying Cloud ATC; 4-H Missions in Space; Helicopter Flight, Inc; Honeywell; IA E-SET; Jeppesen Sanderson; MN Department of Education; NASA; 99's; National Weather Service; NC First Flight Centennial; Pitsco, Inc; Starbase Minnesota; Strand Air Service; Tri-State Aviation; Vermilion Community College; Northwest Airlines; Newton's Apple.

Design and Production
Northern Design Group, Minnesota.

Copyright 2003 National 4-H Council. All rights reserved. Reproduction without permission of National 4-H Council is strictly prohibited.

Launch Pad

Stage 1 Pre-Flight

Introduction

Note to the Project Helper . . . . . Inside Front Cover
Launch Pad 1
Achievement Program 2
Completion Certificate 3

The Activities

5...4...3...2...1... 4
Wonderful Wings 6
What Do You Do? 10
Space Buggy 12

Glossary and Resources

Hangar Talk (Glossary) 14
Prop Shop (Resources) 16

There looks like a lot of fun things to do here!

Stage 1 Pre-Flight

5...4...3...2...1...
Wonderful Wings
What Do You Do?
Space Buggy

Stage 2 Lift-Off

Rockets Away!
Gnome of Your Own
I Want to Be…
Airfoil Magic
From Here to There!
Follow That Shadow
Can I Fly Today?
Which Way is Up?
Angle of Attack!
Up, Up and Away
Round and Round
Charlie Oscar Delta Echo
From Nose to Tail

Stage 3 Reaching New Heights

Rippin' Rockets
Fly'n Show
Let's Go Launching
Attitudes, Altitudes and Airspeed
Rudder Away
Follow That Shadow
Flying My Way
Star Gazing
Powerful Payload
Flying Fighters
Mustangs to Zeros
Copters and Robbers
Just Blowing Through

Stage 4 Pilot in Command

Versatile Viking
Altitude Advisors
Future Pilot
Ace Instructor
Cross Country
Knowledgeable Navigators
Astronaut Aerobics
Brouhaha Box Kite
Care in the Air
Elevator Magic
Circle of Power
My Personal Qualities

Flight Crew Helper's Guide

Aerospace Quiz Bowl
Aircraft Fire Rescue
Afterburner
Top Gun
Far Out!
Community Airport Field Day
Flight 777
Aerospace Experts
Traffic Cop in the Sky
Space Station Skillathon
Aerospace Alphabets Games
Touring An Airport
Full of Hot Air

Wonderful Wings

What To Do: Compare birds and airplanes

Aerospace Skill: Comparing birds to airplanes

Science Skill: Inferring

Materials: Bird and airplane pictures, crayons, scissors

Hummingbirds, robins, eagles, gliders, jets, helicopters and airplanes. What do all of these have in common? In this activity you will discover how birds and airplanes are alike.

Blast Off !

1. Color the birds and the airplanes on pages seven and eight.
2. Cut out the fourteen picture boxes.
3. Arrange the boxes in order with the birds facing up.
4. Staple the boxes together on the top left corner. **Helper note**: Be sure edges are trimmed evenly.
5. Flip through the pictures and watch the bird take off, fly and land.
6. Turn your booklet over, flip through the airplane pictures and watch an airplane take off, fly and land.
7. Then draw and color a picture of your favorite airplane and bird.

My favorite airplane.

My favorite bird.

1

2

3

4

5

6

7

8

9

10

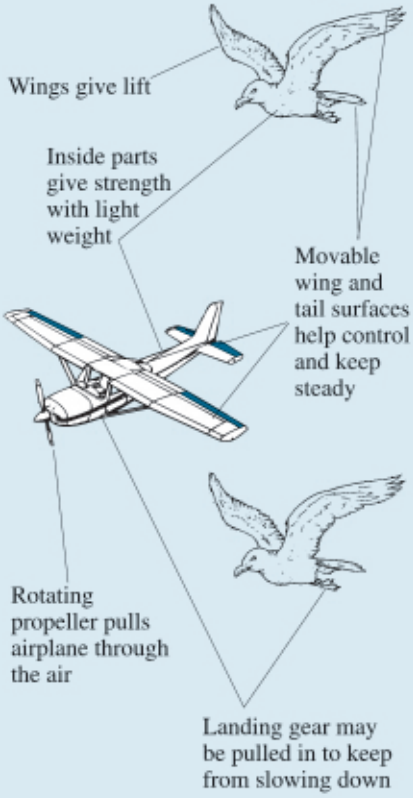
11

12

13

14

How Birds and Aircraft Fly



How Airplanes Fly

You can try this experiment to see how the wings of an airplane lift in moving air.

1. Hold one end of a sheet of paper close to your lips. Let the other end flop. Blow hard across the top.

2. The paper lifts because air is moving faster over the top of it. This lowers the pressure or weight of air above the paper. Because the air pressure underneath is greater, it lifts the paper.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.

14.

Debriefing

Ground to Ground (Share)

- What did you see when you flipped through the cards?
- Share with your helper how the bird took off, flew and landed compared to the airplane.

Climb Out (Process)

- How do the feet, tail, wing and light weight body of a bird compare to the parts of an airplane?

Level Off (Generalize)

- How can comparing two things help you learn about them?

Cross Country (Apply)

- How can comparing things help you do something else in your life, like:
  - **a.** decide which bike to buy?
  - **b.** choose a meal at a restaurant?
  - **c.** decide if you would rather have a dog or a cat for a pet?

Aerospace Facts

- Pilots must have licenses to fly, just like drivers have licenses to drive. When people pass the tests to get their pilot's licenses, we say they have earned their "wings."
- A special department of government called the Federal Aviation Administration sets the rules for pilots. It also works hard to make sure flying is safe for everyone.

Federal Aviation Administration, aviary.
See Hanger Talk, page 14.

Solo Flight

1. Visit an aviary, zoo or your back yard feeder and watch how different birds take-off, fly and land.

2. Take a discovery airplane flight through the Young Eagle's Program.