

National Aeronautics and
Space Administration

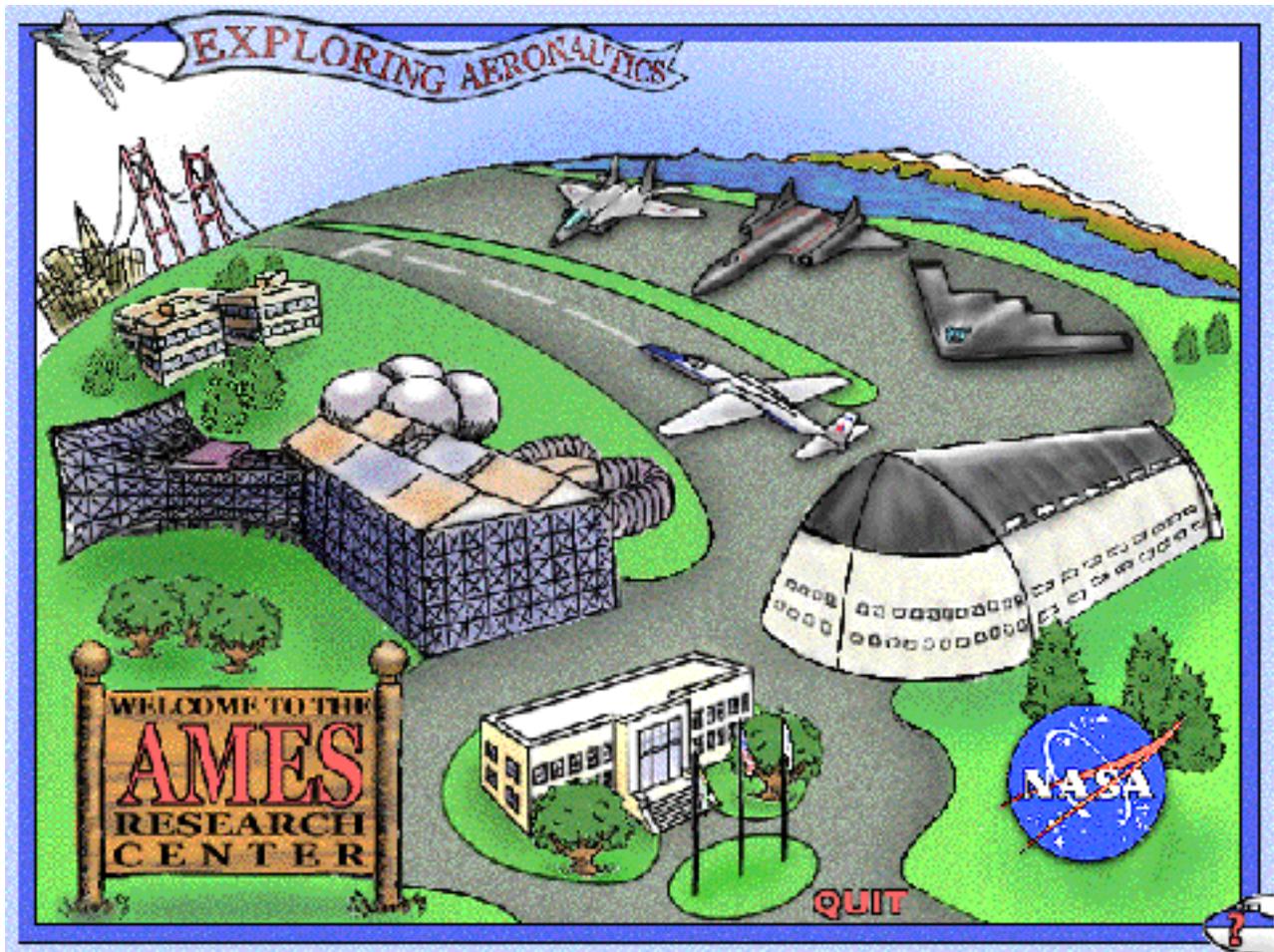
Educational Product

Educators Grades 5-8

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Exploring Aeronautics: Multimedia CD-ROM and Student Logbook Educator Guide

An Educator Guide with User Reference and Student Logbook



Part 3

aero-nau-tics \-iks\ n pl but sing in constr 1: a science of dealing with the operation of aircraft 2: the art or science of flight



Exploring Aeronautics: Multimedia CD-ROM and Student Logbook Educator Guide is available in electronic format through NASA Spacelink--one of NASA's electronic resources specifically developed for the educational community.

This publication and other educational products may be accessed at the following address:

<http://spacelink.nasa.gov/products>

Exploring Aeronautics: Multimedia CD-ROM and Student Logbook Educator Guide

Part III of the Three-Part Series



National Aeronautics and Space Administration
Office of Education

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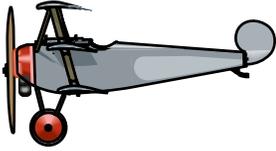


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EXPLORING AERONAUTICS

Part III

Section 1

Multimedia CD-ROM



Introduction

Welcome to **Multimedia CD-ROM and Student Logbook**, the third part of the NASA series **EXPLORING AERONAUTICS**. **Multimedia CD-ROM and Student Logbook** is meant to provide instructions on how to use the CD-ROM **EXPLORING AERONAUTICS** and to provide a student workbook for use in conjunction with the CD-ROM.

We hope that **Multimedia CD-ROM** will provide you with enough information to use the CD-ROM effectively. If not, please do not hesitate to contact the offices listed under Assistance.

Each section of the CD-ROM has accompanying worksheets and exercises in the **Student Logbook**. Teachers can pick and choose the worksheets that are most appropriate for their students' grade level, aeronautics background and interests. Keys for all exercises are also included.

We hope that you enjoy using these instructional materials!



Overview

Upon entering **EXPLORING AERONAUTICS**, students will view a brief introductory montage. To bypass this introduction, simply click the mouse.

After the introductory montage, a brief overview of each section is presented. The main screen then appears and audio directions are given. These directions indicate where each section of aeronautical information is located as well as how to access the information found therein. The sections include the following: [The Resource Center](#), [The Hangar](#), [How an Airplane Flies](#), [The Tools of Aeronautics](#) and [The Activity Center](#). See Navigation Map to note their locations. To return to the main screen at anytime, click on the NASA logo found in the lower left-hand corner of each menu bar or screen.

By clicking on the building nearest the three flagpoles students will be able to access [The Resource Center](#) that contains the "Glossary", the "History", and the "Web Sites and Books" subsections. The "Glossary" contains aeronautical terms, definitions and illustrations. "History" includes a timeline of aviation and aeronautical events. "Web Sites" is a listing of URL's for aeronautical sites, as well as a brief description of the type of information contained in that particular URL, suggested grade level usage, and correlation to the CD-ROM and its accompanying print material. The "Book List" contains a listing of aeronautical or aviation trade books appropriate for the fourth through sixth grade reading level.

A click on the [The Hangar](#) leads students to a listing of six unique aircraft. Click on each aircraft in the menu bar to view photos and QuickTime (c) movies of each airplane, as well as to examine each airplane's specifications.

To learn about the principles of flight, click on the airplane located on the runway. This takes students to the section [How an Airplane Flies](#). Here they can learn more about the concept of "Lift"; how the "Four Forces" interact on an airplane; the importance of "Wing Shape" to different types of flight; the different "Parts" of an airplane; and an airplane's "Movement". The "Movement" subsection includes the motions of an airplane, the airplane's control surfaces and the movements these control surfaces affect.

Clicking on the wind tunnel will direct students to [The Tools of Aeronautics](#). Here they will be introduced to four researchers who answer questions about their work. Each tool of aeronautics is demonstrated through video footage.



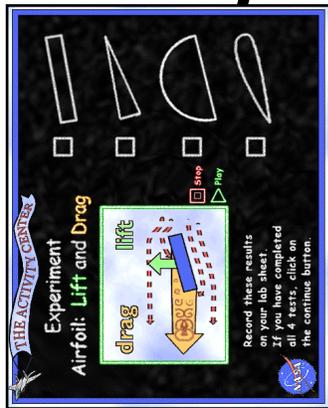
Perhaps the final subsection to visit should be the The Activity Center. Using the scientific method, students work as researchers to determine which airfoil shape will give the greatest amount of lift and the least amount of drag.

The **Student Logbook** contains student activity sheets for each section of the CD-ROM which can be used to demonstrate the student's acquisition and application of the skills, concepts and processes embedded in **EXPLORING AERONAUTICS**.

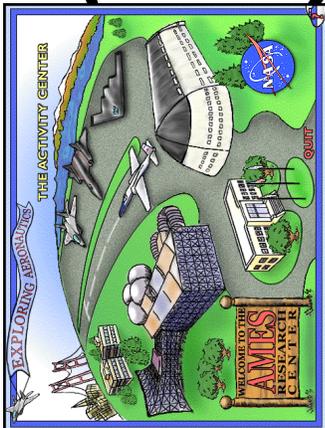


Navigation Map

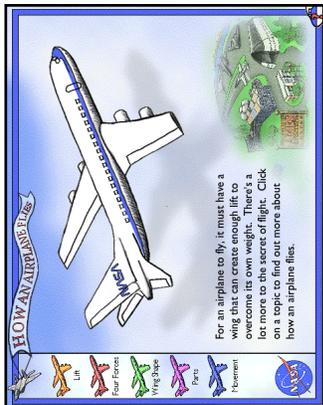
Click on the NASA logo to return to the homepage.
Click on the nose of the airplane in lower right-hand corner to activate the Help Bar.



The Activity Center



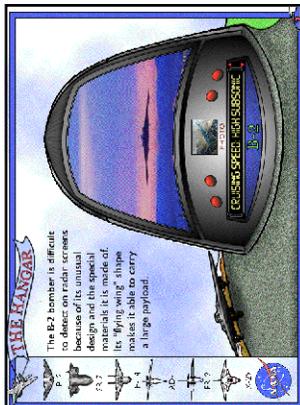
Main Menu Homepage



How an Airplane Flies



The Tools of Aeronautics



The Hangar



The Resource Center



Technical Directions

System Requirements

- Mac
 - Macintosh with minimum of 8 MB memory and 5 MB of available RAM
 - Operating System: OS 7.1 or greater
 - Colors: Minimum 256 color monitor
 - CD-ROM Drive: minimum double speed
- PC
 - PC compatible with minimum 8 MB memory and 5 MB of available RAM
 - Operating System: Windows 3.1, Windows '95 or Windows NT
 - Colors: Minimum 256 color monitor
 - CD-ROM Drive: minimum double speed

Getting Started

Insert the **EXPLORING AERONAUTICS** CD-ROM into your CD-ROM player. The automatic start-up function will activate, and the CD-ROM will begin by displaying the introductory montage.

If the automatic start-up function is not activated, double-click on the **EXPLORING AERONAUTICS** icon to open the file folder. Choose the file that describes the computer system you are using by double-clicking on it. This will launch the program.

Key Features

The Homepage contains five sections which students can explore by clicking on the various locations specified in the Overview. Each subsequent screen contains a menu bar located along the left-hand side. Clicking on any of the icons will activate a subsection. To return to the Homepage, click on the NASA logo.

To quit the program from one of the subsections, click on the NASA logo to get to the Homepage, then click "QUIT."

Help

To activate the help bar, click on the nose of the airplane located in the lower right-hand corner of each screen. The airplane will extend and give you the following three choices: sound adjustment (speaker), navigation review (?) and the index (i). To adjust the sound, click on the speaker and then click on a number. The greater the number, the louder the sound. To review the navigation process, click on the question mark (?). To go to the index, click on the "i". The index is a textual breakdown of the information contained on the CD-ROM. Click on a topic and you will go directly to the subsection of the CD-ROM where that information is found.



Usage Suggestions

Although there are a variety of ways to integrate multimedia into an educational setting, below you will find a few suggestions for implementing **EXPLORING AERONAUTICS** in the classroom.

1. Use the CD-ROM in conjunction with a projection system (LCD panel, LCD projector or a large screen television monitor) to introduce the new aeronautical concepts before the students perform the student reading and note taking.
2. Use the CD-ROM in conjunction with a projection system (LCD panel, LCD projector or a large screen television monitor) to illustrate or reinforce the aeronautical concepts during the course of student reading and note taking.
3. If you have access to computers in a networked lab setting, load the CD-ROM onto the network server's hard drive and run the CD-ROM program throughout the lab. Have the students in a group setting engage in each section of the CD-ROM (using the **Student Logbook**) after each aeronautical topic is introduced. Save the Activity Center for one of the final sections because the students should be well versed in the concepts from the section How an Airplane Flies, as well as the scientific method before performing this activity.
4. If you have classroom access to computers, the computers can be used as learning center stations. Other stations can include a science lab, an activity from "Additional Student Activities and Projects," an informational reading and note taking station, an art activity, etc. All of these types of activities can be found in Part I **The Science of Flight** Unit, Part II **Integrating with Aeronautics** and Part III **Student Logbook**.
5. The CD-ROM can also be used as an independent learning station for enrichment. The student, using the **Student Logbook**, can navigate through the CD-ROM and record his/her responses and experiences in the **Student Logbook**.



Troubleshooting

Sound not playing

Make sure the volume on your computer is turned up (See your Windows or Macintosh operating system user's guide for information). Go to the Help Bar in the lower right-hand corner of the screen and click on the airplane's nose. "0" is no sound and "6" is the greatest volume. Remember to return the airplane to its original position by clicking on the nose before attempting to proceed.

Movies not playing smoothly

The speed of your computer, as well as the speed of your CD-ROM player, determines the quality of the movies and the accompanying sound. High-end computers will play the movies more smoothly. The slower the computer, the choppy the performance. Unfortunately, there is not much that can be done to improve this performance aspect of the CD-ROM.

Cannot find files

If the program won't start and an error message indicates that the CD-ROM cannot be found, make sure the CD-ROM is in your player, label side up, and that your CD-ROM player is properly installed.

Not enough memory to play movies

If you see this message on the screen, that means that you do not have enough free memory to run QuickTime (c) movies. You could have other software running that is using memory that this CD-ROM application needs. Try quitting all other applications and running only the CD-ROM. If this does not get a positive result, then check your system versus the system requirements of this CD-ROM.

Not enough memory to run the program

If you get this message when starting the program, you do not have enough free memory to run this CD-ROM. Shut down any other applications you are running and try again.

Inability to access certain sections of the CD-ROM

This could be a bug on the CD-ROM or a failed disk. If this should happen see Assistance and give us a call.



Assistance

If you are still having technical problems after reviewing Troubleshooting, give us a call at NASA Ames Research Center's Educator Resource Center 1-650-604-3574 or fax us at 1-650-604-3445 between 9:00 a.m. and 4:00 p.m. PST from Tuesday through Saturday.