



RU↑4 the JOB?

Careers in Aviation Teacher Resource Guide



Ohio | eTech Ohio

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This resource was made possible by a grant from eTech Ohio and the State of Ohio.

RU↑4 the JOB?

Module Synopsis

- Does the idea of taking flight appeal to you?
- Do you enjoy traveling to new places?
- A career in aeronautics may be a good fit for you. Some of the jobs include: airline pilot, copilot, flight engineer, or flight instructor. mathematics, science, communication skills, and a love of technology are a few of the required skills for this profession.

Terms

Aerodynamics - the study of how air flows around the airplane.

<http://www.ueet.nasa.gov/StudentSite/aeronautics.html>

Aeronautics - the study of the science of flight. Aeronautics is the method of designing an airplane or other flying machine.

<http://www.ueet.nasa.gov/StudentSite/aeronautics.html>

Aviation - refers to flying using aircraft, machines designed by humans for atmospheric flight.

http://www.answerbag.com/q_view/158401

Aviator - (Airline Pilot) - An aviator is a person who flies on aircraft as a profession.

Copilot - the second or relief pilot of an aircraft.

<http://www.thefreedictionary.com/copilot>

Flight Engineer - a member of a flight crew responsible for the aircraft's engines and other systems during flight.

<http://www.merriam-webster.com/dictionary/flight%20engineer>

Propulsion - the study of how to design an engine that will provide the thrust that is needed for a plane to take off and fly through the air.

<http://www.ueet.nasa.gov/StudentSite/aeronautics.html>

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Pre & Post Assessment

Correct answer is shown with a
RED Capital letter

- To be an airplane pilot, the area you study is called
 - Pilots Licensure
 - B. Aviation**
 - Avionics
 - Weather and meteorology
- To legally fly in the United States, you must earn a(n)
 - Pilot License
 - B. Pilot Certificate**
 - Avionics certification
 - Medical Certificate
- In their first year, a pilot may transport (fly)
 - Passengers (only)
 - Cargo (only)
 - C. Passengers and Cargo**
 - Only yourself - no passengers or cargo
- In the United States, what federal agency governs flying?
 - ODE
 - FFA
 - EPA
 - D. FAA**
- Careers in flying are available for well qualified pilots from
 - Military
 - Commercial airlines both small and large
 - Many small business
 - D. Both a and b**
- In their first year of flying for an airline, a pilot is likely to earn
 - Under \$20,000
 - B. \$25,000**
 - \$30-\$50,000
 - Over \$50,000
- Which course is NOT usually a part of the required curriculum?
 - Meteorology
 - Instrument training
 - Physics
 - D. Calculus**
- To find out more about flying as a career, look online or tour a(n)
 - Aviation program at a university
 - Local Airport
 - FFA certification office
 - D. Both a and b**

Activity 1

This activity is taken from the NASA UEET (Ultra-Efficient Engine Technology)

Website: <http://www.ueet.nasa.gov/StudentSite/lessonplans.html#jaa>

Click on the **HTML** or **PDF** links at the Web site above to view this activity online.

Goal: To familiarize students with the NASA UEET Student Web Site and improve their knowledge of aeronautics.

Objective: The students will investigate a web site and answer questions about aeronautics by reading and following the directions listed on the scavenger hunt worksheet.

National Science Standards Met:

Position and motion of objects

Objects in the sky

Abilities of technological design

Understanding about science and technology

History of science

Activity: Hand out copies of the UEET Scavenger Hunt Worksheet.

Have students visit the NASA UEET Student Site at

<http://www.ueet.nasa.gov/StudentSite/> and answer the questions on the worksheet.

Activity 2

PBS: Chasing the Sun

Website: http://www.pbs.org/kcet/chasingthesun/resources/resources_lesson_2.html

Fly Away: (Students design and test paper airplane designs)

Learning Objectives:

Students will have the opportunity to:

Demonstrate flight principles and cause and effect relationships.

Collect, organize and analyze data.

Tools and Materials:

Paper, scissors, tape, paper clips, meter sticks, fans, and stopwatches.

Time Needed

One class session is needed in order to complete this lesson.

Teaching Strategy

Begin the lesson by screening the segment entitled *The French Hero* (timecode: 10:50 - 16:00) from episode 1 of *Chasing the Sun*. In the segment, French aviator Louis Bleriot makes many unsuccessful plane flights before finally discovering a design that helps him become the first person to cross the English Channel.

After screening the segment, begin a discussion with students about what they feel makes for a good plane design. Why is it that certain designs work, while others fail? How important is the process of trial and error in experimentation? Write some of their responses on the chalkboard. During the discussion, introduce the four basic principles of flight: Gravity, Drag, Thrust, and Lift. How does a plane's design influence its ability to produce lift? How do its engines produce thrust?

Explain to the class that, like Louis Bleriot, they are going to test several different airplane designs. After testing and modification of their designs, they will decide which is the best, and then compete against other students with their planes.

First, divide the class into groups of four to five students. Provide instructions on how to construct several different types of paper airplanes. (See links on following pages if you need help coming up with airplane constructions.) Have each group work on one design. They will construct several prototypes and conduct testing within their group. Instruct the students to create a data chart and record their distances and times of flight for each of their prototypes during all of their test flights.

The students in each group will select their best plane to submit for the class competition. One representative from each group will line up and after a count down of 3-2-1 they will release their planes. A simple tip: the soundtrack from "Top Gun" during the airplane competition always seems to motivate students and creates a fun learning atmosphere. After the test flights, the class will create a new data sheet and record the flight times and distances for each group's different type of planes.

The students will return to their small groups and make modifications using the scissors, tape and paper clips. After another round of prototype testing, the group will select a different student to take their best entry to the class' final airplane competition. Using the same format the previous competition, have the students throw their planes and record data from this final demonstration.

Have the students discuss their results and modifications in both the small group and class setting.

Several different types of evaluation should be used to check for understanding and student mastery. The data sheet and a written analysis of the data should be collected and evaluated for completeness, accuracy and level of understanding. Students can be observed during the activity to evaluate teamwork and cooperation, and effort. Student understanding and mastery can also be evaluated in the class discussion at the end of the lesson.

Activity 3

Career in Aeronautics:

Compare and contrast the information about careers as an airline pilot found on the following two websites:

1. Becoming an airline pilot – http://education-portal.com/be_an_airline_pilot.html

2. Jet careers – <http://jetcareers.com/becoming-an-airline-pilot.html>

- List the job responsibilities, education needed and income found on these sites.
- Summarize the benefits of this career.
- State your opinion of this type of career.
- Cite your references including source, author and date of publication.

Common Core Standards

- Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects
- Write arguments focused on discipline-specific content. WHST.6-8.1
- Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically. WHST.6-8.1a
- Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. WHST.6-8.2
- Use precise language and domain-specific vocabulary to inform about or explain the topic. WHST.6-8.2.d
- Reading Standards for Literacy in Science and Technical Subjects 6–12
- Craft and Structure - RST.6-8.4
- Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6–8 texts and topics.
- Integration of knowledge and ideas - RST.6-8.9
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- Key Ideas and Details - RST.6-8.3
- Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

Resources:

Be an Airline Pilot: Education Requirements and Career Info

http://education-portal.com/be_an_airline_pilot.html

This website contains detailed career information.

Specific steps to follow are included with tips on how to be successful at each step.

Airline Pilot Career Information

<http://www.superscholar.org/careers/aviation/airplane-pilot/>

This website gives a brief, overview of what an airline pilot does and the necessary qualifications.

There are also links to degrees and colleges.

Chasing The Sun: The History of commercial aviation through the eyes of its innovators

<http://www.pbs.org/kcet/chasingthesun/index.html>

This PBS website includes material about the history of flight, lesson plans, activities and resources.

The video series is no longer available on the website. However, the text material provided is valuable.

Cleared to Dream Become an Airline Pilot

<http://www.clearedtodream.org/BecomeAnAirlinePilot/GeneralQualifications/tabid/1271/Default.aspx>

Airline Pilots Association, International

Detailed information on becoming an airline pilot. Includes general qualifications needed as well as resources.

Federal Aviation Administration Summer Camp (aimed at middle school students)

http://www.faa.gov/education/student_resources/ace_camps/

“How Stuff Works” How becoming an Airline Pilot Works by Joel Freeman

<http://science.howstuffworks.com/transport/flight/modern/pilot3.htm>

This is an interesting article about being a pilot and the paths you may pursue to be successful in this career.

Inventing Flight For Schools

<http://www.inventingflightschools.org/>

This is a middle school curriculum based on Flight, with an emphasis on the Wright Brothers experiments

The website has many interactive activities and covers several curricular areas.

“Learning about the science of how airplanes fly, learning about the history of flight, celebrating the invention of the airplane: This is what Inventing Flight for Schools is all about!”

Jet Careers

<http://jetcareers.com/becoming-an-airline-pilot.html>

This website has a wealth of information for those interested in pursuing a career in aviation

The site is created by aviation professionals. It includes preparation information as well as forums and professional information.

NASA Ultra Efficient Engine Technology

<http://www.ueet.nasa.gov/StudentSite/aeronautics.html>

This NASA sponsored “kid’s” website includes information about aeronautics, airplanes, as well as activities and games. There is a link for vocabulary, and lesson plans for educators

There is a great educational link to other NASA resources, with an emphasis on STEM topics.