Grades: 2nd

Subject: Social Studies, Language Arts, Science

Time Required: 3-4 days, 45 minutes each day

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OVERVIEW
The invention of the airplane has made a big change in our society and how we travel. Students will walk through the very beginnings of flight history up to the present and observe the developments that continue to improve flight.

Understanding Goal:
Students will understand how flight has changed over time.

Objectives:
Upon completion of this lesson, students will be introduced to the beginnings of flight and be able to understand key changes in flight. They will be able to recognize the changes of flying machines and identify machines from past to present by using primary source images and identifying the changes. They will be able to identify basic parts of an aircraft. They will also use their new knowledge to imagine and design what flying machines will be like in the future. Students will also learn to analyze different types of primary sources.

Investigative Question:
How has flight changed over time?

Photographers of the U.S. Office of War Information (OWI) filming a scene at the American Airlines "Flagship" passenger plane, for the motion picture "Black Marketing." The film was released by the OWI on August 19, 1943.

TN CURRICULUM STANDARDS:

Social Studies
2.31 Analyze and interpret events placed chronologically on a timeline.
2.32 Contrast primary and secondary sources.

Science
2.ETS1: Engineering Design
1) Define a simple problem that can be solved through the development of a new or improved object or tool by asking questions, making observations, and gather accurate information about a situation people want to change.
2) Develop a simple sketch, drawing, or physical model that communicates solutions to others.
STANDARDS (CON’T)

Library of Congress Primary Sources:
- American Airlines "Flagship" passenger plane
- First Flight
- Expérience du globe aerostatique du MM. Charles et Robert
- Airplane
- The U.S. Space & Rocket Center, Huntsville, Alabama

Other Resources:
- Timeline of Flight from The Dream of Flight exhibition
- Analyzing Sources from Multiple Perspectives

Web sites:
- Sites4Teachers Timeline Template

Books:

English Language Arts:
- 2.SL.CC.1 Participate with varied peers and adults in collaborative conversations in small or large groups about appropriate 2nd grade topics and texts.
- 2.SL.PKI.6 Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.
- 2.RI.KID.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- 2.RI.KID.2 Identify the main topic of a multi-paragraph text as well as the focus of specific paragraphs within a text.
- 2.RI.KID.3 Describe the connections between a series of historical events, scientific ideas, or steps in a process in a text.
- 2.RI.KID.7 Identify and explain how illustrations and words contribute to and clarify a text.
- 2.RI.KID.9 Compare and contrast the most important points presented by two texts on the same topic.

[First flight, 120 feet in 12 seconds, 10:35 a.m.; Kitty Hawk, North Carolina] [1903 Dec 17]
### Procedure

#### Day One

| Step 1: | The teacher will show students a picture of a [mid-20th-century airplane](https://www.loc.gov) from the Library of Congress Web site and explain/ask the following:  
| | • When you look at this picture, what words come to mind?  
| | • What clues did you see in the picture that made you think of that word?  
| | Share thoughts with a partner after each question. (Allow each group to share one clue.)  
| | **Note to Teacher:** If the word flight or something similar doesn’t come up, guide students in a discussion leading to flight. Have students share one thing they know about flying. Make it clear that they are not to share stories about personal travel experiences, but rather what they know about how flight works or the invention of flight. |

| Step 2: | The teacher will then read *How People Learned to Fly* by Fran Hodgkins. While reading, ask questions such as:  
| | • Did all the flying inventions mentioned in this book work?  
| | • What were some things each inventor needed to know in order to make their aircraft fly?  
| | • What information in the book shows us the importance of an engine and why the aircraft needs an engine in order to fly? Point to key words or phrases in the text that led you to your conclusion. |

| Step 3: | Students will analyze two photos of airplanes [First Flight](https://www.loc.gov) (1903) and [American Airlines "Flagship" passenger plane](https://www.loc.gov) (1943) using the worksheet [Analyzing Sources from Multiple Perspectives](https://www.loc.gov). Remind students to think about the physical features they just learned about in the book as they analyze these two photos. |

#### Day Two

| Step 4: | Based on the material introduced the previous day, ask the following questions:  
| | • What have we learned about how flight has changed so far?  
| | • What do you still wonder about how flight has changed over the years?  
| | Chart students’ responses to the above questions (KWL Chart). |

| Step 5: | Read the book *Into the Air: An Illustrated Timeline of Flight* by Ryan A. Hunter. While reading, allow students to analyze (notice) the features of the timeline. Discuss the changes they noticed in research and development of flight over time according to the timeline in the book. |

| Step 6: | Pull up the [The Dream of Flight: Timeline of Flight](https://www.loc.gov) from the Library of Congress Web site. This web page is a timeline of flight from 1000 B.C.E.-2000 A.D. The timeline includes several primary sources pictures and events. The teacher should briefly read the timeline with the students. |
**PROCEDURE (cont.)**

| Step 6 (cont.) | While reviewing the timeline, ask the following questions:  
|               | • When does this timeline begin and end?  
|               | • What does B.C.E and A.D. mean?  
|               | • As you look at this timeline, what things do you notice?  
|               | • Were there more improvements in flying machines during a certain time period? If so, which time period and how can you tell? |

| Step 7: | Put students in groups and give them 5 photos (see links to photos below) of flying machines and have them arrange them on a timeline with specified dates (use this [timeline template](#), create your own, or have students draw their own timeline).  
| Photos Used for Timeline activity:  
| Expérience du globe aerostatique du MM. Charles et Robert (1783); First Flight (1903); Airplane (1923); American Airlines “Flagship” passenger plane (1943); The U.S. Space & Rocket Center, Huntsville, Alabama (1967-1973; 1999-year the full-scale model in this picture was built) |

| Step 8: | Have groups discuss why they put the pictures in that order. What clues did they use from the pictures to determine the order from past to present?  
| Review the correct order of the timeline and have groups share one clue they found that helped them place the pictures in order. Allow students to discuss what features have made flying machines better over the years.  
| Note to Teacher: See book list in the Extension section that have timelines of flight for students to look at and gain further knowledge before moving on to step 9. |

**Day Three**

| Step 9: | Take another look at the last page of the book *In the Air: An Illustrated Timeline of Flight* and have students share what they noticed about future aircrafts. Have them brainstorm ideas about what features aircrafts will have in the future.  
| Have students create a future flying machine using the knowledge they have gained through this lesson. The end project can be a drawing or a 3D model. They must also include a written paragraph describing the parts of their flying machine and how their design is an improvement over current flying machines.  
| Note to Teacher: You can choose to allow them to get ideas from books such as *Super Paper Airplanes: Biplanes to Space Planes* by Norman Schmidt |

**Day Four**

| Step 10: | Have students present their flying machine design to the class and explain the changes made that will make it an improved flying machine of the future. Display final projects in the classroom or hallway. |
Evaluation

Evaluate projects. If students present 4 solid reasons their invention would improve flight, they have mastered the material. If they present 2-3 solid reasons, they are progressing toward mastery. If they present 0-1 solid reasons, they need to review the material again and make revisions to their project. If they present 2-3 solid reasons, they are progressing toward mastery. If they present 0-1 solid reasons, they need to review the material again and make revisions to their project.

Sample Reason Statements:
Excellent Reason: The flap I added to the back of the plane will help it fly faster and keep it steadier when traveling through rough weather.
Acceptable Reason: The changes I made will make it fly faster. (Didn’t specify what change)
Poor Reason: I took a lot of time working on my flying machine to make it better.

Extension

Make books available for students to take home and read about the history of flying machines as well as books on how planes are used today. Students will chose a time period they liked and write a paragraph about the advancements in flight in that time period or about an inventor and their achievements.

Here are some suggested titles and sites:

Books:
The History of the Airplane by Barbara A. Somervill
Flight: Balloons, Kites, Airships and Gliders by June Loves
Flight: Fliers and Flying Machines by David Jefferis
Planes, Rockets, and other Flying Machines by Ian Graham
Plane Song by Diane Siebert
Flight: A Pop-Up Book of Aircraft by Robert Crowther
The Wright Brothers: How They Invented the Airplane by Russell Freedman
Things That Fly by Karen Little
Freaky Big Airplanes by Meish Goldfish

Web Sites:
Smithsonian National Air and Space Museum
Scholastic Interactive Timeline of 100 Years of Flight