

Creating a Comparative Timeline: The Race to the Sky

Activity Type: HTML

Grade Level: 6–8

A RIF Guide for Educators

Objective: Students will explore both primary and secondary sources in order to gather information to complete an interactive comparative timeline.

Content Connections: Literacy, History

Standards:

- **CCSS.ELA-LITERACY.RH.6–8.1:** Cite specific textual evidence to support analysis of primary and secondary sources.
- **CCSS.ELA-LITERACY.RH.6–8.2:** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.
- **CCSS.ELA-LITERACY.RH.6–8.3:** Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes a law, how interest rates are raised or lowered).
- **CCSS.ELA-LITERACY.RH.6–8.5:** Describe how a text presents information (e.g., sequentially, comparatively, causally).
- **CCSS.ELA-LITERACY.RH.6–8.9:** Analyze the relationship between a primary and secondary source on the same topic.

Summary: In this HTML Activity, students will search through several digital archive collections of documents from the Wright brothers. They will then research another important aviation pioneer from a provided list. Using the information they gather from these primary and secondary sources, they will create an interactive timeline that graphically represents the relationship between the work of the Wright brothers and that of the other selected aviation pioneer.

Before the Activity

Explore the Wilbur and Orville Wright Papers Teacher Page:

The [Teachers Page to The Wilbur and Orville Wright Papers at the Library of Congress](#) provides standards alignment information, links to the [Collection Highlights](#) page, the collection [Finding Aid](#), and a list of additional [Related Resources](#).

Explore the following online resources:

This activity requires students learn to read and understand primary documents. There are a number of great online tutorials available for students and educators to refine their primary source reading skills. Here is a short selection:

- [How to Read a Primary Source \(The University of Iowa\)](#): This short webpage is largely directed to students and provides a number of useful tips for examining primary sources.
- [Four Read: Learning to Read Primary Documents \(Teaching History National History Education Clearinghouse\)](#): This teacher-directed web tutorial explains a number of reading strategies that students might use when evaluating primary sources.
- [Using Primary Sources \(Library of Congress\)](#): This teacher-directed website covers a number of useful tips encouraging student analysis of primary sources.
- [Guide to Reading Primary Sources \(Office of Learning Resources\)](#): This short guide provides students with a workable definition of primary sources and some useful tips on exploring primary sources.

This activity was funded by a Library of Congress Teaching with Primary Sources Grant.

Explore the Readings: Students will be using the following readings and documents to complete this project.

Books:

- Russell Freedman, *The Wright Brothers: How They Invented the Airplane* (New York: Holiday House, 1991).
 - In this work of history, Freedman explores the lives and interests of the Wright brothers from an early age through the beginnings of the age of flight.

Archival Sources:

- [Family Papers: Correspondence—Wright, Wilbur, 1900–1901](#)
- [Family Papers: Correspondence—Wright, Orville, 1903](#)
 - At these two links are three years of correspondence created and circulated among the Wright Brothers and their family and friends.
- [Diaries and Notebooks: 1902, Orville Wright](#)
 - In this diary, Orville records their work adjusting and calibrating their flying machine on the dunes of Kitty Hawk between August and December of 1902.
- [Diaries and Notebooks: 1903, Orville Wright](#)
 - In this diary, Orville records the flight experiments he and his brother conducted between September and December of 1903.

Online Resources for Initial Research:

Samuel P. Langley:

- These online resources are intended to introduce the life and work of Samuel P. Langley. Students should use these as a starting point to conduct additional research as is necessary.
- [Samuel P. Langley: Aviation Pioneer \(Smithsonian Libraries\)](#)
- [Samuel Pierpont Langley, 1834–1906 \(Smithsonian Institution Archives\)](#)
- [Samuel Pierpont Langley, 1834–1906 \(flyingmachines.org\)](#)

Gustave Whitehead

- These online resources are intended to help provide students with an introduction to the life and work of Gustave Whitehead. Students should use these as a starting point to conduct additional research as is necessary.
- [The Case for Gustave Whitehead \(wright-brothers.org\)](#)
- [Daniel C. Schlenoff, “Scientific American Debunks Claim Gustave Whitehead was ‘First in Flight’” \(scientificamerican.com\)](#)
- [The Flight Claims of Gustave Whitehead \(Smithsonian National Air and Space Museum\)](#)

Glenn Hammond Curtiss

- These online resources are intended to introduce the life and work of Glenn Hammond Curtiss. Students should use these as a starting point to conduct additional research as is necessary.
- [About the Man – Glenn H. Curtiss \(Glen H. Curtiss Museum\)](#)
- [David Langley, “The Life and Times of Glenn Hammond Curtiss \(aviation-history.com\)](#)
- [Curtiss, Glenn Hammond \(The National Aviation Hall of Fame\)](#)

During the Activity

Warming Up:

Direct students to complete the Warming Up activity. Once the students pairs have had time to discuss the three questions, have them work together to draft a short report on their discussion and conclusions. Consider having the students make a joint presentation to the class if there is time.

Getting Started:

The Getting Started section of the Student Edition is intended to encourage students to think about the efforts of the Wright brothers as a handful of contributions to a much larger and longer effort to master flight. This effort existed before the Wright brothers, and it continued long after them. Indeed, the process continues today.

After students read these paragraphs, ask them to think about this phenomenon. Consider holding a classroom discussion where they consider how this shapes the way we think about technological change. The students should have discussed other technological innovations that required a similar type of long-term effort in the Warming Up activity. Consider having them return to these examples to further explore this concept.

Student responses:

Answers may vary, but the following will provide a rough estimation of acceptable answers:

1. These dates indicate that the birth of flight was a long-term process that involved the work of many people over many generations.
2. These dates and events indicate that the Wright brothers were able to use and incorporate the findings of those who came before them to succeed in 1903.
3. Some examples of technological innovations that required long-term effort include the Internet, the automobile, rocketry.

Readings:

Students may read the suggested readings on their own or in pairs of small groups. For students who may need support understanding the readings' key ideas, use the suggested comprehension questions below.

Books:

- Russell Freedman, *The Wright Brothers: How They Invented the Airplane* (New York: Holiday House, 1991).
 - Who was the “red-bearded, barrel-chested” man testing gliders on a hill in Germany in the 1890s? *Otto Lilienthal*
 - Which two engineers designed an Aerial Steam Carriage in the 1840s? *William Henson and John Stringfield*
 - What impressed the U.S. Army so much that it gave Samuel P. Langley \$50,000 to continue his flight experiments? *He flew a steam-powered airplane for 90 seconds at a speed of 20 to 25 miles per hour.*
 - Why did Wilbur and Orville select the Outer Banks of North Carolina for their experiments? *This area was remote and had the wind conditions they needed.*
 - What year did the Wright Brothers return to Kitty Hawk with a powered airplane? *1903*

Archival Sources:

- [Family Papers: Correspondence—Wright, Wilbur, 1900–1901](#)
 - Find the following dates and draft short summaries of Orville’s entries: July 26, 1901: *This is a letter written from Kitty Hawk to the father of the Wright brothers. It describes how they reached Kitty Hawk right after a huge storm with great wind.*
- [Family Papers: Correspondence—Wright, Orville, 1903](#)
 - Find the following dates and draft short summaries of Orville’s entries: November 19, 1903: *This is a letter to “Pop and Steichen” that describes the cold weather they experienced while living in the small shelter in North Carolina.*
- [Diaries and Notebooks: 1902, Orville Wright](#)
 - Find the following dates and draft short summaries of Orville’s entries: September 9, 1902: *Orville describes working for 8 hours on the machine and a wind of 40 miles per hour.*
- [Diaries and Notebooks: 1903, Orville Wright](#)
 - Find the following dates and draft short summaries of Orville’s entries: November 17, 1903: *Orville describes making repairs on the plane with wire and discusses weight of the machine and speed of the wind.*

Activity: Create an Interactive Timeline:

The timeline activity can be completed independently or in groups. Consider the abilities of the students when determining which approach to take.

Although creating the interactive timeline is the ultimate goal of this activity, there are a number of important preparation steps that students must complete as they work their way toward this goal. These steps include the following:

Step One: Identify several important milestone events, achievements, or failures the Wright brothers experienced in their work. The Student Edition indicates that students should find between 10 and 12 of these events. However, you might consider paring this down if you think this number is too ambitious for your students or if time is a factor. The timeline would also work well with as few as five events evenly distributed across the year range.

Students will likely need the most support in this stage. Consider conducting some classroom demonstrations to show students how to read and take notes with these sources. If you have access to a projector, consider projecting the digital resources for the students and demonstrating for them how to read, interpret, and transcribe these sources. If time or student ability is a consideration, you might consider conducting all of the primary research into the family correspondence and diaries as a class. To do this:

- Project the sources in front of the class
- Encourage the students to read them; help them as necessary
- Discuss each event (its significance, importance, etc.)
- Have students independently complete the graphic organizers
- Select several of these events that students can choose from to complete their timelines

Step Two: Have students research the Wright brothers’ biography to find additional information about the events culled from the primary sources. This could be done in groups or independently.

Step Three: Have students work independently or in groups to select one of the three identified Wright brothers' contemporaries to research. Time permitting, demonstrate how students might use the curated online resources to find additional resources for researching their selected aviation pioneer.

Once students have made a selection, they will need to find several events from the lives of these research subjects. Encourage the students to find events that either parallel the Wright brothers' accomplishments or occur at approximately the same time. All of these events should be recorded in the graphic organizer linked in the Student Edition.

Step Four: Have students explore the tutorial and timeline examples provided in the Student Edition. They may need some time to master the TimeGraphics timeline creator. Time permitting, conduct your own classroom tutorial on the timeline creator for the students.

Creating an Account at TimeGraphics: To use the free interactive timeline builder at TimeGraphics, each student will need to create a free account. Here are the three simple steps you can follow to help them create this account:

First: Click on the orange "Create" button at [this link](#).

Second: When the "sign up" screen emerges, enter the student's name, email address, and a suitable password.

Third: Click "sign in."

This last step will open up the timeline builder where students can begin creating their own interactive timelines.

After the Activity

Elaborate: Consider having students share their timelines with the class, either through classroom demonstrations or by sharing their links. Students who observe these demonstrations or receive the links should be prepared to provide constructive feedback either orally in class or in written reports.

Reflect: Consider assigning some or all of the following reflection prompts as the basis of a short essay or to start a class discussion:

How was conducting primary research into the diaries and correspondence of the Wright brothers different from conducting secondary research into the pioneer aviators? What does this suggest about the use of primary and secondary research in producing historical knowledge?