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Moving Along: Learning American History at Huffman Prairie Flying Field Interpretative Center/ Wright Memorial: Grade 5 Field Trip Model

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**LEARNING AMERICAN HISTORY AT HUFFMAN PRAIRIE FLYING FIELD INTERPRE-
TIVE CENTER / WRIGHT MEMORIAL:
GRADE 5 FIELD TRIP MODEL
BY- TIMOTHY BINKLEY**

Lesson Title: “Moving Along”

Time Allotment:

Classroom Preparatory Exercises: 30 minutes (or more)

90 minutes on site: 10 minutes for the welcome and introduction, 40 minutes for main activity+
40 minutes to view other exhibits

Post-Trip Cross-Discipline Activities: 60 minutes (or more)

Overview: With the development of their first practical powered aircraft, the Wright Brothers introduced a new mode of transportation. In this lesson, students are asked to brainstorm different forms of transportation, the merits and limitations of each, and how different forms of transportation aided in the expansion and development of the United States.

[Note: this lesson plan is very similar to “Americans on the Move”, a lesson plan for use at Carillon Historical Park / Wright Hall. Because of duplication, only one trip (1.5 hours = HPFF/W; 1 full day = Carillon Park) should be chosen.]

Standard(s): History Benchmark C: “Explain how new developments led to the growth of the United States.” (p.28)

Indicator(s) Addressed: Grade-Level indicator for Grade Five, *Growth*: “6. Explain the impact of settlement, industrialization and transportation on the expansion of the United States.” (p.44)

Preparation for Teachers:

When the Wright brothers returned to Dayton, Ohio, after their historic first flights at Kitty Hawk, North Carolina, on December 17, 1903, they looked for a suitable flying field closer to home. Dayton banker Torrence Huffman allowed the brothers to use his pasture, which was located eight miles northeast of Dayton, rent-free. Here in 1904 and 1905, through a series of unique experiments, the Wright brothers mastered the principles of controlled powered flight and developed the world’s first practical airplane. . . . The Wright brothers returned to Huffman Prairie Flying Field in 1910. The field was used by their new company, The Wright Company, as a testing ground, flying school, and home to their exhibition team. (Source: http://www.nps.gov/daav/cul_huffmanprairieff.htm)

Additional background information on Huffman Prairie Flying Field and the work that the Wright Brothers did there is easily accessed at:

http://www.nps.gov/daav/cul_huffmanprairieff.htm http://www.nps.gov/daav/exp_quest_for_flight.htm

http://centennialofflight.gov/essay/Wright_Bros/1904/WR7.htm

<http://www.wpafb.af.mil/museum/tours/vt1.htm>

<http://www.ascho.wpafb.af.mil/HUFFMAN.HTM>

<http://www.ascho.wpafb.af.mil/BUILDINGS/prairie.htm>

<http://www.ascho.wpafb.af.mil/BUILDINGS/memorial.htm> .

See also pages 81-86 in Mary Ann Johnson's book: *A Field Guide to Flight on the Aviation Trail in Dayton, Ohio* (Dayton: Landfall Press, 1986). Multiple copies of this book are available at the Dayton Metro Library system (Catalogue no. T77173 J68F). ISBN 0-913428-58-2

For your own information, you may wish to review details of the lives and careers of the Wright Brothers. Here are two good online resources for this: <http://www.hfmgv.org/exhibits/wright/> and <http://www.time.com/time/time100/scientist/profile/wright.html>.

It is worth noting that the Dayton Aviation Heritage National Historical Park has produced the following teaching guides / lesson plans: "From Wheel to Wing: A Guide to Teaching the invention of Flight" and "The Wright Story: A Teaching with Historic Places Lesson Plan on the Wright Cycle Company Building." These two excellent resources are available for your use. Call 937-225-7705 to ask for copies.

REMEMBER TO MAKE YOUR RESERVATIONS WELL IN ADVANCE. Please call the Dayton Aviation Heritage National Historical Park (937-225-7705) to schedule your visit.

PREPARATORY ACTIVITIES

Before taking this field trip, in the classroom: Tell students that they will be expected to take notes during the field trip. Therefore, they will need to take paper or writing pads and a pen or pencil with them. It is up to the teacher to decide if these items will be collected and transported to the site in a group box, or if it is better to have each student carry their own from school to the site and back.

Following are three classroom activities designed to help prepare the students for their field trip. Choose as many as feasible.

A) READ A BOOK

You may wish to read one of the following books to (or with) your class:

- Berliner, Don. *Before the Wright Brothers*. Minneapolis, MN: Lerner Publications, 1990
- Marquardt, Max. *Wilbur, Orville & The Flying Machine*. Milwaukee, WI: Raintree Publishers, 1989.
- Parker, Steve. *The Wright Brothers and Aviation*. New York: Chelsea House Publications, 1996.
- Sobol, Donald J. *The Wright Brothers at Kitty Hawk*. New York: Scholastic, 1987.
- Sproule, Anna. *The Wright Brothers*. Great Britain: Exley Publishers, Ltd., 1996.
- Woods, Andrew. *Young Orville and Wilbur Wright: First to Fly*. Mahwah, NJ: Troll Associates, 1992.

(Note: these children's books are recommended by The Henry Ford [Museum & Greenfield Village] at <http://www.hfmgv.org/exhibits/wright/moreinfo.asp>.)

B) TRIP INTRODUCTION USING THE INTERNET

[Today / Tomorrow], we are going to visit the Dayton Aviation Heritage National Historical Park. Ask: Did you know that we have a National Park right here in the Dayton area? Has anyone been there? Actually, some of the places in the National Park might look familiar to you. Perhaps you've visited without realizing that you were in one of America's National Historical Parks.

Note to teachers: If you do not have internet projection or direct student access to the internet in your classroom, you may be able to turn the following web pages into overhead transparencies with permission of the National Park Service.

****[Curriculum editor / publisher: can we get this permission for teachers or produce transparencies and image discs?]****

PROJECTOR HAVE STUDENTS LOG INTO: <http://www.nps.gov/daav/home.htm> . Note "Dayton Aviation Heritage" and "Cultural Significance" paragraphs.

Scroll down to the bottom of the page. Have students note the date that this park was established (October 16, 1992). Ask: How long ago was that? Ask: Does it surprise you to know that new National Parks are being created today?

View http://www.nps.gov/daav/park_partners.htm . Note how our local National Park is a partnership. Several organizations work with the National Park Service to preserve and present the history of aviation in the Miami River Valley. Have students note the names of the four partner groups.

Ask: Where are our local National Park sites? Let's take a look at the map: http://www.nps.gov/daav/pla_mapsdirections.htm# . Click on the map to enlarge it. If possible, have students locate their school or neighborhood on this map.

Ask: How many visitors did the park report in 2002?
Let's visit http://www.nps.gov/daav/park_facts.htm and see. *[Answer: 40,536]*

State: Many more visitors came to the Dayton Aviation Heritage National Historical Park in 2003. One reason for this increase is that the Huffman Prairie Interpretive Center opened in December of 2002 and the Wright-Dunbar Interpretive Center opened in June on 2003.

Ask: Can anyone think of other reasons why many more people visited the Dayton Aviation Heritage National Historical Park in 2003 than in 2002? *[Answer: to celebrate 100 years of powered flight]*

Ask: How did you participate in the celebration of flight? What do you want to remember so that you can tell your children about it some day?

State: The Wright Brothers... <http://www.worldalmanacforkids.com/explore/inventions/wright.html>

flew their first airplane near Kitty Hawk, North Carolina, on December 17, 1903.

PHOTO OF THE FIRST FLIGHT:

www.centennialofflight.gov/essay/Wright_Bros/First_Powered_Flight/WR6G15.htm

TELEGRAM FROM THE WRIGHT BROTHERS TO THEIR FATHER:

www.centennialofflight.gov/essay/Wright_Bros/First_Powered_Flight/WR6G18.htm

Ask: Why do you think so many people came to Dayton to celebrate the 100th anniversary of powered flight? Though their first flights were in North Carolina, the Wright Brothers were from Dayton. Soon after December 17, 1903, they returned home to Dayton to master flight and to work on improving their airplanes. Our field trip [today / tomorrow] will take us to the place near Dayton where they did this important work. The place is called “Huffman Prairie Flying Field.”

View webpage http://www.nps.gov/daav/cul_huffmanprairieff.htm together, and have students read the introductory paragraphs.

C) PRE-FIELD TRIP HANDOUT (Reading and Group Processing Activity)

It would be helpful to show, project or pass around the following images from *How We Invented the Airplane: An Illustrated History*, by Orville Wright, Edited by Fred C. Kelly. (New York: Dover Publications, 1988) [ISBN 0-486-25662-6] as the students undertake this reading and responding assignment:

- 1) The Wright family and home (pages 6 & 7),
- 2) The Wright Cycle Company, exterior and interior (pages 8-9,)
- 3) The Kitty Hawk, NC encampment and flyer (pages 38-43), and
- 4) Huffman Prairie with airplanes (pages 47-49).

Note: Most of these images are from the Wright State University Dunbar Library Special Collections and Archives. Copies may be available through them. For details, contact 937-775-4125 or <http://www.libraries.wright.edu/special/>.

Pre-Field Trip Learning Activity: Reading Handout with Group Processing Questions

Milton and Susan Wright raised five children. Reuchlin and Lorin were the oldest boys. Wilbur and Orville came next. Their youngest child was a girl named Catherine.

Milton Wright was a minister and Bishop in the Church of the United Brethren in Christ. His church work required the family to move several times. It also kept him away from home a lot. Often, when he returned from his travels, Milton would bring his children educational toys and take delight in telling them about what he had seen.

From their mother, the Wright children learned how to make and fix things using whatever was at hand. From their father, the children gained a love for learning. As a family, they were very close. The two youngest Wright brothers even went into business together. First they were printers, then they ran a bicycle shop together. Later, they decided to solve the problem of flight as a team.

Just imagine how excited the entire family was to hear of their success! After many years of hard work, Wilbur and Orville Wright finally succeeded in flying an engine-powered airplane. The date was December 17, 1903. The place was Kill Devil Hills, near Kitty Hawk, North Carolina.

They returned home to Dayton, Ohio, to celebrate their achievement and to make their airplane even better. In the years that followed, they flew and improved their airplanes closer to home. Just a few miles from Dayton, they used a pasture called Huffman Prairie as their very own flying field. That's how Huffman Prairie became the first airport in the world. Later, when they began to teach other people how to fly airplanes, Huffman Prairie Flying Field also became the world's first school of aviation.

PROCESSING QUESTIONS *(to be printed on the back of the handout)*

Working in groups of 3 or 4 students, find the answers to the following questions.

1. How many Wright brothers were there? How many Wright sisters?
2. Which two Wright brothers were pioneers of aviation?
3. Name three kinds of work that the Wright brothers did as a team.
4. Where did the Wright brothers live when they invented their first airplane?
5. When and where did they first fly that airplane?
6. Where was the first airport in the world located?
7. Where did the Wright brothers teach other people to fly airplanes?
8. Why do you think the inventors of the airplane might have wanted to teach other people to fly?
(Come up with several possibilities.)
9. If you could learn to fly an airplane, would you like to do that? Give some reasons why you would or would not like to learn to fly.

Teachers: After 15 minutes of small group processing time, assemble the entire class and compare their answers for questions 1-7. Summarize and discuss various answers to questions 8 and 9.

VOCABULARY

Minister	<i>n.</i> an agent or instrument; a clergyman
Bishop	<i>n.</i> an overseer of ministers and of church business matters
Educational	<i>adj.</i> Having qualities that promote learning
Delight	<i>v.</i> to find pleasure in
Business	<i>n.</i> employment; occupation
Printers	<i>n.</i> people who earn a living by printing newspapers, posters, etc.
Problem	<i>n.</i> a question that is not easy to solve
Achievement	<i>n.</i> something successfully done; an accomplishment
Pasture	<i>n.</i> land on which animals graze
Prairie	<i>n.</i> a large open space with a lot of grass and few trees
Aviation	<i>n.</i> the art of flying an airplane

ON-SITE TOUR

Welcome and Introduction (10 minutes)

Upon arrival, introduce the National Park Service staff member who will be assisting. Share a brief word of welcome and state these guidelines for visiting.

We ask you to:

- Stay with your group at all times;
- Listen carefully to the guide and teacher;
- Ask questions as you go;
- Respect the property by staying on approved paths, by not littering, and by not touching artifacts unless invited to do so;
- Respect other visitors who are here to enjoy the park.

Begin the tour of the Huffman Prairie Interpretation Center by taking the students out to the Wright Memorial. Note the inscription on the central stone. Emphasize the concept that Wilbur and Orville were a team recognized for their work as scientists, aviators and flight educators.

Next, walk the students out to the stone wall / overlook. What major features can they see from here? [*The Mad River with Huffman Dam, Wright-Patterson Air Force Base and highways*] All three of these major features are transportation-related. Spend a few minutes observing the air traffic, if any. Point out below and to the right approximately where Huffman Prairie is. Explain that this was the place where the Wright Brothers experimented with ways to make their first airplanes work better. Huffman Prairie was the world's first airport and pilot training school. Tell the students that inside the Interpretation Center they will learn more about the important work that Orville and Wilbur Wright did at Huffman Prairie.

Media Resources: "Perfecting the Airplane" Exhibit at Huffman Prairie Flying Field Interpretive Center. [*Location: enter the large exhibit hall just past the gift shop. "Perfecting the Airplane" will be the first exhibit area on your right.*]

Activity Description: (40 minutes) In groups of 6 - 10 students and at least one adult, view the exhibit, "Perfecting the Airplane." Point out the quotation about the December 17, 1903 flight being "enough to prove that mechanical flight was possible, but not enough to prove that it was practical." Ask: "What is the difference between possible and practical?"

Ask: What forms of transportation came before the airplane? Have students list as many as possible. It might be good to write these answers down on newsprint or poster board for later reference. [*Some possible answers: walking, riding on horseback, driving an animal-drawn vehicle (cart, buggy or coach), boat, train, streetcar, bicycle, roller skates, ice skates, etc.*] As you are listing, discuss some advantages and disadvantages of each form of transportation.

Ask: What forms of transportation do you think might be useful (practical) for moving a family and everything they own? What forms would be impractical?

Ask: How would our world be different if airplanes had not been invented? How would your life be different if the airplane hadn't been invented?

Point out the model Wright Flyer hanging overhead. This is an accurate small-scale model. From it, ask students to consider the following questions:

- What materials did the Wright Brothers use to build their airplane? [*wood, metal, cloth*]
- Before flying airplanes, the Wright Brothers flew kites and gliders. How does this airplane resemble a box kite? [*the basic shape, two wings, materials used*] How is it different? [*a person flies in it; an engine and two propellers*]
- Before making airplanes, the Wright Brothers made and sold bicycles. How does this airplane resemble a bicycle? How is it different? [*e.g., similar = spoke-like supports, propellers driven by a bicycle chain; different = has an engine and no wheels!*]

Mention that Wilbur and Orville Wright realized that a practical airplane needed the following:

- The ability to take off
- The ability to sustain flight
- The ability to control direction, and
- The ability to land safely.

View the interactive video on problem solving, and see if your group can help the Wright Brothers decide how to meet these goals.

Continue viewing the exhibits of the interpretive center in a counter-clockwise direction, approximately 40 minutes.

Assessments with Rubrics:

Have the following assessment test pre-printed and ready to hand out at the end of the tour:

-
- 1) Name the two Wright Brothers who invented the airplane.
_____ and _____
 - 2) What was their home town? _____
 - 3) Name one kind of work the Wright Brothers did together before building airplanes.

 - 4) The Wright Brothers wanted to go beyond showing that powered flight was possible. They wanted to make it p_____

 - 5) Name any two qualities or abilities of a “useful” aircraft.
_____ and _____
 - 6) Where did the Wright Brothers first succeed in flying a heavier-than-air, machine-powered aircraft on December 17, 1903?

-
- 7) Where did the Wright Brothers perfect their airplanes, master the art of aviation and teach others to fly? _____
 - 8) Name three forms of transportation that came before the airplane.

-
- 9) Name something the Wright Brothers flew before they flew an airplane.

-
- 10) Short answer: Think of your favorite artifact, picture or exhibit, story or activity of the day. On the back of this paper, write one paragraph (at least five sentences) about it.
-
-

GRADE 5 TEST RUBRIC (Questions 1-10)

Fourteen responses are requested. Award 2 points for each correct answer.

TEST KEY:

1. *(2 responses requested) Wilbur, Orville*
2. *Dayton, Ohio*
3. *(1 response requested) printing / publishing; bicycle repair, sales and manufacturing*
4. *practical*
5. *(2 responses requested) An airplane must be able to take off, keep flying once in the air, control the direction of flight, land safely; carry passengers, carry cargo, be reliable*
6. *Kitty Hawk, NC*
7. *Huffman Prairie Flying Field*
8. *(3 responses requested) Some possible answers: walking, riding on horseback, driving an animal-drawn vehicle (cart, buggy or coach), boat, train, streetcar, bicycle, roller skates, ice skates*
9. *(1 response requested) kites, gliders*

GRADE 5 WRITING RUBRIC

	CONTENT	GRAMMAR	LEGIBILITY	MECHANIC	EFFORT
4	On topic	All sentences complete and coherent	Very legible	Correct capitalization, punctuation, and spelling	Very engaged; significant energy expended
3	Somewhat topical	Most sentences complete and coherent	Mostly legible	Mostly correct capitalization, punctuation and spelling	Somewhat engaged; adequate energy expended
2	Very little connection to content	Some sentences complete and coherent	Somewhat legible	Some correct capitalization, punctuation and spelling	Not very engaged; little energy expended
1	Not on topic	Filled with incomplete and incoherent sentences	Not legible	Little correct capitalization, punctuation and spelling	Disengaged; no energy expended

Extensions:

1) TOUR THE FLYING FIELD

If another hour is available, go from the interpretation center to Huffman Prairie Flying Field. Note the white flags marking the perimeter of the Flying Field. There are 17 wayside panels around the field. Hiking from sign to sign (or touring with the aid of a NPS Ranger) would be great follow-up to reading about what was accomplished at the Field.

2) TRANSPORTATION AND COMMUNITIES

In the classroom or media center, compare and contrast the following:

- Map(s) indicating the major water routes of transportation (oceans, rivers, lakes, canals) [*An Ohio canal map can be found at <http://my.ohio.voyager.net/~lstevens/canal/canalmap.html>]*
- Railroad map(s) [*many options are available at <http://memory.loc.gov/ammem/gmdhtml/trnshome.html> , an Ohio railroad map is available at http://railmap.railspot.com/USA/OH/Ohio_railmap_1950.GIF]*
- Highway map(s) [*Why not AAA?*]
- Map(s) indicating the location of North American airports and flight patterns. [*Check out the FAA: www.fly.faa.gov/flyfaa/usmap.jsp and detail maps such as www.fly.faa.gov/flyfaa/ncmap.jsp .*]

Discuss the link between transportation and the birth and death of towns.

3) WRIGHT ACTIVITY BOOKLET

Download, copy and distribute the “Wilbur and Orville Wright Activity Booklet” produced by the Federal Aviation Administration. It is available for free at <http://www1.faa.gov/education/resource/educorn.htm> . Have your students complete appropriate pages.

Cross-discipline Activities:

ART / HISTORY: Using colored pencils, draw an image of the Wright Brothers testing their airplanes or teaching others to fly at Huffman Prairie Flying Field. On the back, write a paragraph telling others what your artwork depicts.

MATH: Make a chart showing how fast you can travel by foot (3 mph), horse (6 mph), bicycle (10 mph), boat (20 mph), train (60 mph), car (65 mph maximum in Ohio!), and airplane (200 mph). Calculate how long it would take to travel 1000 miles by each of these methods. Make a bar graph showing how many hours each of these modes of traveling 1000 miles would take.

ENGLISH COMPOSITION / ART: Imagine that you have just seen an airplane fly overhead for the very first time. Compose a newspaper headline article reporting what you’ve just seen and how you feel about it. Then (by hand or using a computer), turn your article into a newspaper front page!

SCIENCE / ART / COMPOSITION: Think about something that would make the Wright Flyer more safe or practical. Write a letter to the Wright Brothers describing your helpful idea. Be sure to include an illustration of your idea.

HISTORY / COMPOSITION: Research and write a 2-3 page report on an Ohio “ghost town.” Try to discover when and why this town was settled, and when and why it disappeared. Locate the place where this town was on a state map and also on a county map. Be sure to include these maps in your report.

SCIENCE / TEAMWORK: Perfect your own flying machine! Have each participating student make a paper airplane. In groups of 3 or 4, test these planes against each other. Have each team measure and chart the distance flown by each of their planes. Try modifying the designs to make them work better. Measure and chart again. Note changes that made paper airplanes fly better.

At the end of the building and testing time (approx. 20 minutes), have all teams compete against each other to determine the top designs. Take some time to discuss the process of making better paper airplanes through experimentation. Collect team charts to post in your classroom.

If students need to look at published design plans, they can be found in various paper airplane and origami books including:

Jack Botermans. *Paper Flight: 48 Models Ready for Take-Off* (New York: Workman Pub., 1994). [Available via Dayton Metro library]

And website such as <http://www.paperairplanes.co.uk/> and <http://www.zurqui.co.cr/crinfocus/paper/air-enlace.html> .

Materials / Resources Needed: For the field trip: reservations, transportation, extra adult supervision. For the activities (depending on which extension and cross-discipline activities are used) newsprint or poster board and markers, blank paper, lined paper, graph paper, pencils with erasers, clip boards or other writing surfaces, straight edges, colored pencils, paper clips, resource books.