

Lesson Plan

The Tuskegee Weathermen: African-American Meteorologists during World War II



The staff of the Tuskegee Weather Station circa 1944. (front row, left to right) Lt. Grant Franklin, Lt. Archie Williams, Capt. Wallace Reed, Lt. John Branche, Lt. Paul Wise, and Lt. Robert Preer. Photo by Air Force Weather History Office, Air Force Weather Agency, Offutt Air Force Base, Nebraska, http://wxedge.com/articles/20130226the_tuskegee_weathermen.

Grade Level(s): 9-12

Subject(s): History, Earth Science

In-Class Time: 45-60 Minutes

Prep Time: 20-30 Minutes

Materials

- Photocopies of reading “The Tuskegee (Weather) Airmen” and “Tuskegee Weathermen Integral to Success” (available in Supplemental Materials)
- Internet access to show a video clip in the classroom (link below)
- Photocopies of “Weather Map Symbols” guide (available in Supplemental Materials)
- Printed weather map of the current day’s weather – this can be printed from a website such as weather.com
(http://www.weather.com/maps/maptype/currentweathersnational/uscurrentweather_large.html).

Objective

In this lesson plan, students will learn about the history of meteorology and about African American weather forecasters of the Tuskegee Weather Detachment that served in the Air Corps during World War II. They will learn about the work of these meteorologists and how they supported the Tuskegee Airmen. Students will also learn how to read a weather map.

Introduction

After the rapid rise of aviation during World War I, interest in aviation and aeronautics increased in the 1920s and 1930s and created a demand for military meteorology. African Americans, however, were greatly underrepresented in the field of aviation because of discrimination and Jim Crow laws which restricted African Americans from entering military and commercial aviation. While African Americans could and did serve in military during wartime, the Army War College maintained in 1924 that “in the process of evolution, the American Negro has not progressed as far as other subspecies of the human family ... His mental inferiority and inherent weakness of character are factors that must be considered ... [in] any plans for his employment in war.”¹ Over a decade later, a crucial change in the segregation and attitude toward African Americans in the military took place in 1938. Mary McLeod Bethune was an African American activist and the only female member of F.D.R.’s “black cabinet” – an informal group of African American public policy advisors to the president. Bethune advocated and fought for the integration of the pilot program. She used her influence and her position to establish pilot training programs at several HBCUs (Historically Black Colleges and Universities) including the Tuskegee Institute, Hampton Institute, Virginia State, North Carolina A&T, Delaware State, West Virginia State and Howard University. The Tuskegee Airmen, or “red tails” as they were called because of the red tails of the airplanes they flew, were the first African American military aviators in the United States army who fought in World War II. The Tuskegee Airmen earned many purple hearts, Silver Stars, and Distinguished Flying Crosses; President Truman gave the Tuskegee Airmen a Distinguished Unit Citation for their “outstanding performance and extraordinary heroism.” Because of the service of African Americans such as the Tuskegee Airmen, the protests and advocacy by those such as Bethune, and the changing political structure of the United States in the fight against fascism, the struggle against racism in the military scored a significant victory in 1948 when President Truman issued Executive Order 9981 desegregating the armed forces.

While many have heard of the Tuskegee Airmen, the weather forecasters and meteorologists who supported the decorated pilots are lesser known. Just as the “Red Tails” were pioneers in the field of aviation, the “Tuskegee Weathermen” were pioneers in the field of meteorology. The Tuskegee Weather Detachment was formed on March 21, 1942 as part of the Tuskegee Army Flying School in Tuskegee, Alabama. They were the first group of black meteorologists who were enlisted to support the Tuskegee Airmen and other segregated units. Around fifteen men, recruited from cadet programs, were pioneers in opening the field of meteorology to African Americans. They had to pass rigorous tests and complete academically challenging coursework in order to qualify for the detachment.

Until World War I, the field of meteorology was more of an art than a science. Meteorologists were primarily concerned with collecting data rather than applying mathematical and physical principles to that data. The war provided the impetus for the professionalization and expansion of meteorology as a field and its transition from an art to a science. The American Meteorological Society, which formed in 1919, spearheaded the reformation of meteorological instruction across the country. In addition, numerical weather prediction, which applied the laws of physics and mathematics to the weather, was beginning to gain the interest of meteorologists. The Tuskegee Weathermen entered the field of meteorology as these groundbreaking transformations were taking place within the discipline.

¹ Steve Estes, *I Am a Man!: Race, Manhood, and the Civil Rights Movement* (Raleigh: UNC Press, 2005), 17.

Instructions/Activities

Engage: 5 Minutes

Ask the students what they know about World War II and the people that fought it. In particular, ask whether they have ever heard of the “Tuskegee Airmen.” These were the first African American pilots in the US military. Explain that during World War II, the military was segregated, so in addition to pilots, the Tuskegee Airmen’s support also needed to be African American. Ask students what support an air squadron would need; or what information they had to have to carry out their missions. One of the most important pieces of information was the expected weather, so the military selected members of the Tuskegee Airmen to train as meteorologists.

What is the teacher doing?

Ask the students what they know about the US military during World War II. In particular, ask if they know about the Tuskegee Airmen and give them background information. Then ask what they know about meteorology and what meteorologists do.

What are the students doing?

Students should be drawing on any historical knowledge that they have about the time period and should try to answer questions to the best of their knowledge about the Tuskegee Airmen and meteorology.

Explore: 20-25 minutes

Students will now have the opportunity to learn about the “Tuskegee Weathermen” and their accomplishments. Begin with the short video, “[Black History Month 2014: Remembering the Tuskegee Weathermen](#)” (3 minutes), which gives the basic story. Students will then learn more with the two recommended/required readings (to conserve time, for the Tuskegee (Weather) Airmen article, you can choose to have them only read pages 22-25 and “Conclusion,” page 29). Both of these readings are in the Supplemental Materials.

What is the teacher doing?

The teacher should move from discussions of the Tuskegee Airmen and meteorology to the Tuskegee Weathermen. Play the Black History Month clip to the class to introduce the topic.

What are the students doing?

Students should be watching the video clip and taking notes.

The teacher should pass out paper or electronic copies of the two other readings for students to examine. If you choose to use the assigned discussion questions (available in Supplemental Materials), pass the questions out now so students have a chance to answer them.

Students should read the assigned readings and take notes. They should also fill out any assigned discussion questions.

Explain: 5-15 minutes

Now the students will share out what they have gathered from their reading and watching. Most of this information will focus on the Tuskegee Weathermen, but the teacher should encourage the students to share information they know about World War II, race relations, and meteorology more generally.

What is the teacher doing?

The discussion can be as structured or free-ranging as the teacher would like. To help, here

What are the students doing?

Students should be paying careful attention and participating in the class discussion. Students

<p>are some possible questions (they are also available as a worksheet in Supplemental Materials).</p> <ol style="list-style-type: none"> 1. What were the duties of the Tuskegee Weather Detachment? How did they work together with the Tuskegee Airmen? 2. How were men selected to be part of the Tuskegee Weather Detachment? 3. Why is the Tuskegee Weather Detachment significant? 4. What does a meteorologist do? How did the field of meteorology change after World War II? 	<p>should be taking notes on interesting ideas or topics that come up during the discussion. There should be opportunities for each student to participate if desired.</p>
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Elaborate: 15 minutes

<p>Now students will have the opportunity to learn how to read a weather map. You should make it clear that reading and creating these maps by hand was a crucial part of what the Tuskegee Weathermen did during the war.</p>	
<p>What is the teacher doing? Hand out a copy of the “Weather Map Symbols” guide (available in Supplemental Materials) and a printout of your area’s current weather map. Go over the symbols, and answer questions students have about topics such as warm and cold fronts.</p>	<p>What are the students doing? Students should be examining the weather map guide and asking questions about it. They should also be thinking about how pilots would use this information and how it can be applied today.</p>
<p>Next, you can have the students read today’s weather map. These can easily be found online, such as at https://weather.com/maps/currentusweather, or in your city’s newspaper. The teacher should assist students in reading the current map. You can also ask follow up questions about what value this knowledge has and why it was so important in history.</p>	<p>They should be analyzing the current weather map and interpreting its symbols. They should ask questions on troubling spots and answer any follow-up questions from the teacher.</p>

Evaluate:

<p>Students can be evaluated on their attention and engagement during discussion, by requiring them to turn in any notes they take, or by any assigned questions or worksheets. The discussion question handout and associated answer key are one example method.</p>

Required/Recommended Reading and Resources

- Gerald A. White Jr., "Tuskegee (Weather) Airmen: Black Meteorologists in World War II," *Air Power History* 53, no. 2 (Summer 2006): 20-31.
- "Tuskegee Weathermen Integral to Success," *Air Force Weather Historian* vol. 2, issue 4 (Autumn 2004): 1-2
http://www.airweaassn.org/afw_historian/AFW%20Historian%20Newsletter%202-4.pdf.
- Video clip "[Black History Month 2014: Remembering the Tuskegee Weathermen](#)," The Weather Channel.

Discussion Questions

Discussion Questions can be found as a Handout with a corresponding Answer Key in the Supplemental Materials to this lesson plan.

1. What were the duties of the Tuskegee Weather Detachment? How did they work together with the Tuskegee Airmen?
2. How were men selected to be part of the Tuskegee Weather Detachment?
3. Why is the Tuskegee Weather Detachment significant?
4. What does a meteorologist do? How did the field of meteorology change after World War II?

Further Reading and Additional Resources

Resources on the Tuskegee Airmen:

- A documentary video on the Tuskegee Airmen narrated by Morgan Freeman:
<https://www.youtube.com/watch?v=7SuOJlYTZY>.
- "The Tuskegee Airmen," in Gates, Henry Louis. *Life upon These Shores*. New York: Alfred A. Knopf, 2011. 304-305.
- Charles Anderson, first black meteorology PhD and Tuskegee Weatherman,
http://www.aaregistry.org/historic_events/view/charles-anderson-scientist-born
- Films for the Humanities & Sciences (Firm), Films Media Group, and Public Broadcasting Service (U.S.). *The Tuskegee Airmen They Fought Two Wars*. New York, N.Y.: Films Media Group, 2002. <<http://www.films.com/id/20011>>.
- Hemingway, Anthony, et al. *Red Tails*. Beverly Hills, CA: 20th Century Fox Home Entertainment, 2012.

Resources on the History of Meteorology:

- Harper, Kristine. *Weather by the Numbers: The Genesis of Modern Meteorology*. Cambridge, Mass: MIT Press, 2008.

Other Resources:

- The [American Meteorological Society](#) promotes the teaching of atmospheric, oceanographic, and hydrologic sciences through pre-college teacher training and instructional resource material development. Their website includes a number of their instructional initiatives.

Extensions

Build Your Own Weather Station: To learn more about what meteorologists like the Tuskegee Weatherman do, you can have students construct their own measuring instruments and collect data. The Stevens Institute of Technology, Center for Innovation in Engineering and Science Education has an excellent guide with diagrams and activities here: [Weather Scope: An Investigative Study of Weather and Climate](#).

Related AIP Teacher’s Guides on Women and Minorities in the Physical Sciences:

- The Physical Sciences at Historically Black Colleges and Universities
- “The Physicist’s War:” Dr. Herman Branson and Scientific Training of African Americans during World War II

Common Core Standards

For more information on Common Core Standards, visit <http://www.corestandards.org/>.

Speaking & Listening	
CCSS.ELA-LITERACY.SL.9-10.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.9-10.4	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
CCSS.ELA-LITERACY.SL.11-12.1	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.
CCSS.ELA-LITERACY.SL.11-12.4	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
History/Social Studies	
CCSS.ELA-LITERACY.RH.9-10.1	Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
CCSS.ELA-LITERACY.RH.9-10.2	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.

<u>CCSS.ELA-LITERACY.RH.11-12.1</u>	Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.
<u>CCSS.ELA-LITERACY.RH.11-12.2</u>	Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.
Science & Technical Subjects	
<u>CCSS.ELA-LITERACY.RST.9-10.1</u>	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
<u>CCSS.ELA-LITERACY.RST.9-10.4</u>	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 <i>grades 9-10 texts and topics</i> .
<u>CCSS.ELA-LITERACY.RST.11-12.1</u>	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
<u>CCSS.ELA-LITERACY.RST.11-12.4</u>	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 <i>grades 11-12 texts and topics</i> .

Next Generation Science Standards

For more information on the Next Generation Science Standards, visit <http://www.nextgenscience.org/>.

<u>Dimension One: Practices</u>	<ol style="list-style-type: none"> 1. Asking questions (for science) and defining problems (for engineering) 4. Analyzing and interpreting data 8. Obtaining, evaluating, and communicating information
<u>Dimension Two: Crosscutting Concepts</u>	<ol style="list-style-type: none"> 1. Patterns. 4. Systems and system models. 7. Stability and change.
<u>Dimension Three: Disciplinary Core Ideas</u>	Core Idea ESS2: Earth's Systems