Forecast Cloudy with a Slight Chance of Showers: The Delay of the D-Day Invasion (1944)

Students learn about how physical systems affect human actions.

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Grade Level: High School
Duration: 2 to 3 class periods

National Geography Standards

ELEMENT THREE: PHYSICAL SYSTEMS
7. The physical processes that shape the patterns of Earth’s surface.

ELEMENT FIVE: ENVIRONMENT AND SOCIETY
15. How physical systems affect human systems.

ELEMENT SIX: THE USES OF GEOGRAPHY
17. How to apply geography to interpret the past.

Arizona Geography Strand

CONCEPT 3: PHYSICAL SYSTEMS
PO 1 Analyze how weather and climate influence the natural character of a place.

CONCEPT 5: ENVIRONMENT AND SOCIETY
PO 1 Analyze how Earth’s natural systems affect humans.

CONCEPT 6: GEOGRAPHIC APPLICATIONS
PO 3 Analyze how geography influences historical events and movements.

Other Arizona Standards

Strand One: American History
CONCEPT 8: GREAT DEPRESSION AND WORLD WAR II
HIGH SCHOOL
PO 2 Describe the impact of American involvement in World War II:
- a. movement away from isolationism
- b. economic recovery from the Great Depression
- c. homefront transformations in the roles of women and minorities
- d. Japanese, German, and Italian internments and POW camps
- e. war mobilization (e.g., Native American Code-Talkers, minority participation in military units, media portrayal)
- f. turning points such as Pearl Harbor, D-Day

Strand Two: World History Strand
CONCEPT 8: WORLD AT WAR
HIGH SCHOOL
PO 5 Analyze aspects of World War II
- a. political ideologies (e.g., Totalitarianism, Democracy)
- b. military strategies (e.g., air warfare, atomic bomb, Russian front, concentration camps)
- c. treatment of civilian populations
- d. Holocaust

ELA Common Core Standards
Reading Standards for Literacy in History/Social Studies
Key Ideas and Details
11-12.RH.1 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.
Overview

In deciding what to wear to school or where to travel during summer vacation, weather matters. Students should be able to analyze the importance of how weather affects everyday activities as well as momentous events in history such as D-Day during WWII.
Purpose

In this lesson students will gain a better understanding of how particular weather systems are created, while also analyzing how people make decisions based on the weather. Students will increase their knowledge of the Allied invasion in Normandy, France, by investigating the role that weather played in the decision to invade the European continent.

Teacher Background Information

*Parts of this information can be duplicated as a student reading if the course textbook does not contain enough information on D-Day. Be sure to not give away the ideal weather conditions (Importance of the Weather and Weather Conditions Present on June 6, 1944) so the lesson proceeds with students learning more and more about what was desired in terms of weather on D-Day.*

Planning Stages

During the Teheran Conference in November of 1943 the planning stages for a cross-Channel invasion of the European continent began. The initial time decided upon was May of 1944. Such a massive operation would require the collaboration of multiple ground, sea, and air troops from the major Allied countries. Prior to December 1943, General Dwight D. Eisenhower was commander of Allied Forces in North Africa and the Mediterranean Sea, but in lieu of the upcoming operation to invade Germany, he was promoted as the Supreme Allied Commander of the European Theatre on January 14, 1944. In the beginning stages of planning “Operation Overlord,” D-Day symbolized the day of attack and was given no official date in order to keep the plans top secret.

Reasons for Invasion

Important to the Allied cause in the war was relieving pressure on the eastern front where Joseph Stalin’s Soviet troops were fighting to rebuff attacks from Adolf Hitler's Nazi soldiers. A two-front war would force the Germans to spread thin their military units to protect the multiple fronts. Furthermore, attacking Germany from the west would quite possibly alleviate concerns that Stalin would sign a separate peace with Hitler leaving the Americans, British, and other Allied nations to fight a harsh battle over the European continent.

Invasion Facts

Five separate invasions sites were utilized: American troops were to land at two Normandy beaches code named “Utah” and “Omaha,” British troops were instructed to land on “Gold” and “Sword” beaches, while the Canadians were responsible for taking “Juno” beach. The invasion force consisted of nine battleships, twenty-three cruisers, one hundred and four destroyers, and seventy-one other large landing crafts, in addition to the use of transports, mine sweepers, and merchantmen amounting to nearly five thousand ships. When attempting to come ashore, the Allied troops faced obstacles and barriers such as concrete structures, land mines, and steel rails entrenched in the sand. Past that, soldiers would have to scale limestone cliffs up to one hundred fifty feet in height while dodging machine gun bullets from German pillboxes.

Importance of the Weather

Before any maneuvering of troops could occur, meteorologists and top military officials at SHAEF (Supreme Headquarters, Allied Expeditionary Force) needed to assess the weather conditions. An invasion by sea could only take place a few days each month, as there would need to be a full moon in order to provide enough light. The level of the tide was just as important; it must be three hours past its ebb in order to provide the right line-of-sight and ability to come ashore for ground troops. The winds must not be too strong in order to prevent heavy casualties during the dropping of paratroopers.

The problem was that weather forecasting was unreliable more than 24 hours in advance, and the weather in the English Channel had been characteristically terrible. On the anticipated days of invasion there was a five-foot swell, heavy winds, and a cloud cover. These factors led the Axis powers to assume that no invasion would be possible.

The original recommendation from SHAEF was to invade on June 5, 6, or 7, with the fifth being the most favorable choice. Eisenhower rejected the fifth given that weather reports early on the morning of the fourth indicated that the sky was overcast and the tides were too high for a successful landing. He ordered the ships that had left from the northern English coast to return immediately as a safety measure. This left the sixth or the seventh as the only feasible dates, and if that failed, the Allies would have to wait until the backup dates of June 18, 19, and 20. As fortune would have it, it was decided that the invasion of Europe would commence on the sixth as forecasters foresaw a break in the tumultuous weather. General Eisenhower executed the order...
with the following words: “I am quite positive we must give the order...I don't like it, but there it is...I don't see how we can do anything else.”

Weather Conditions Present June 6, 1944
Captain J.M. Stagg, the SHAEF advisor who met directly with General Eisenhower at least twice daily, was able to suggest that the morning of June 6, would be an appropriate time to launch the D-Day invasion. Stagg concluded from his many reports that a full moon would be present providing good visibility, the skies would be clear or partly cloudy, there would be light winds, and a low tide. The original low-pressure system that had moved eastward on June 4, was forecasted to have a “gap” of good weather caused by a high pressure trough that was following the rapidly moving cold front associated with the low pressure system. All of these conditions allowed for the best possibility of success in all aspects of the invasion.

Outcome
After two days of holding their position on the beach and suffering severe counterattacks from the Germans, the Allied forces were successful in securing the beach with reinforcements. This sustained effort opened the French coast for an invasion of Nazi Germany from the western front. It is nearly impossible to discount the bravery that the soldiers who stormed the beaches on D-Day exhibited. Likewise, it is absurd to disregard the importance of strategy in planning the invasion in order to save thousands of lives. Knowing and attending to the weather gave the Allied forces the advantage when seeking to invade a continent dominated almost exclusively by the Axis powers on what history has recorded as “the longest day.”

Materials

- Europe Map
- Forecast Cloudy with a Slight Chance of Showers: The Delay of the D-Day Invasion (1944) Student Handout
- Optional—Background Information (minus the ideal weather conditions) and Geographic Considerations for D-Day
- Writing Prompt
- We’ll Weather the Weather Whatever the Weather Whether We Like It Or Not: Or Will We? The D-Day Invasion: June 6, 1944 Teacher PowerPoint Lecture
- 8 envelopes
- Weather Cards; Xerox each sheet in a different color, cut apart, and divide into 8 envelopes so each group has a 1 cloud condition, 1 visibility, 1 tide, 1 moon phase, etc. You can sort the cards so one group has perfect conditions for the invasion while the others would have some good and some poor conditions or you can do a random sort.

Objectives
The student will be able to:

1. identify how weather conditions affects human actions.
2. determine how geography influences historical events, specifically war.

Procedures

Prerequisite Skills: Students should have studied the events leading to World War II and have a basic knowledge of the events of the war up to Operation Overlord (1944).

SESSION 1

1. Anticipatory Set: Have students observe a map of Europe in their textbooks, or on a screen using a document camera or overhead projector. Ask this question: “If you were General Eisenhower, where would you invade the European mainland in order to begin the liberation of the continent?” (Possible answers include: Italy from North Africa, France from Great Britain, France from Spain, Great Britain to Norway to Denmark. Students are generally looking at distance instead of what countries were occupied by the Nazis.)

Orally ask the following questions:
1. Why did you select this location?
2. What advantages does this location provide?
3. What disadvantages might you face?

2. Distribute Forecast Cloudy with a Slight Chance of Showers: The Delay of the D-Day Invasion (1944) Student Handout. Have students read “Overview” and “Background” sections. Discuss what the class considers the best weather conditions for an invasion.

3. Present the power point: We’ll Weather the Weather Whatever the Weather Whether We Like It Or Not: Or Will We? The D-Day Invasion: June 6, 1944. Refer back to the location for the invasion that was discussed in the Anticipatory Set with
slides 2 and 3. Use slides 4-5 to introduce the idea that the class will become meteorologists helping the Allied forces. Use slides 6-12 to discuss the weather conditions that would come into play for an invasion. Students should take notes on the worksheet pages for phases of the moon, tides, etc.

SESSION 2
4. Divide students into groups of four. Within each group one student should fill each of the roles: (1) Facilitator--keeps the team on assigned task, (2) Time Keeper--aware of the time spent on each section of the assignment and keeps the group moving, (3) Recorder--writes down the consensus of the group regarding each weather condition (4) Consensus Builder--summarizes the ideas said and helps develop a thorough answer for all. Distribute an envelope containing the Weather Cards to each group.

5. Each group will analyze their 6 cards to determine if today is the right day for an attack. Students will complete the “Analyzing Weather” section of the student handout.

Conclude this session by looking at slides 13-17 of primary source documents.

SESSION 3
6. Begin this session by reading the Secondary and Primary Source Materials from the Met Office (British Meteorological Service). Students should gather in their same groups as Session 2. Have students refer to their worksheets for the weather conditions that their group received. Now complete the Final Decision worksheet.

7. Students share their work in discussion with the class. Use the Geographic Considerations for D-Day handout to bring out additional details on how geography played a role in planning and conducting the invasion.

8. Closure: On a half sheet of paper students respond to the following prompt: What is the most significant factor that contributed to your decision on whether or not to invade? Explain your rationale in a well-written paragraph.

Alternate Lesson Plan
Session One remains the same. Session Two has the students reading the Secondary and Primary Source Materials from the Met Office (British Meteorological Service) and perhaps the Geographic Considerations for D-Day. Then they are grouped and receive the envelope with weather cards. The group will then complete the Final Decision worksheet based on their cards and the reading information.

Assessment
Students will demonstrate mastery in the following ways:
• Completing the note-taking page after the PowerPoint lecture with 80% accuracy.
• Providing reasonable justification for their choices using information given in the PowerPoint lecture in 5 of the 6 tasks on the worksheet.
• Using 5 to 6 facts in creating the Final Decision.
• Providing a solid justification of which factor was most important in the well-written paragraph. Paragraph can be graded for Ideas and Organization with the 6 Trait Rubric for Writing.

Alternate Assessment: Students could think of another event in history where geography placed an important role in the planning of a battle or an invasion. What geographic considerations would be factors in this battle or invasion?

Extensions
1. As an extension to this lesson students could write a formal letter to General Eisenhower detailing their recommendation for attack and what may happen if he waits too long to make the decision.

2. Students could plan an invasion of Japan as they explore the Allied strategy in the Pacific theatre in consideration of the weather.

3. Students could watch the video produced by the Weather Channel about the invasion (see “Sources”) and compare their analysis to that of Captain J. M. Stagg.

Sources
Arizona Geographic Alliance. Europe.Map
http://alliance.la.asu.edu/maps/EUROPE.PDF

http://www.awesomestories.com/history/normandy-invasion/

European Center Medium-Range Weather Forecasts
http://www.ecmwf.int/research/era/dday/

http://www.ecmwf.int/research/era/dday/
http://www.history.army.mil/brochures/normandy/nor-pam.htm

https://docs.google.com:443/a/asu.edu/gview?a=v &pid=gmail&attid=0.2&thid=12255a25d5b046bf&m t=application/pdf&AuthEventSource=SSO

Library of Congress Photographs of:  
D-Day Landing  
http://lcweb2.loc.gov/cgi-bin/query/i?pp/ils:@field(NUMBER+@band(cph+3c11201)):displayType=1:m856sd=cph:m856sf=3c11201,

Eisenhower  
http://memory.loc.gov/cgi-bin/query/i?ammem/presp:@field(NUMBER+@band(cph+3a26521)):displayType=1:m856sd=cph:m856sf=3a26521

NY Times Newspaper  
http://www.loc.gov/exhibits/treasures/images/vc68a.1.jpg


Met Office  
http://www.metoffice.gov.uk/corporate/pressoffice/anniversary/dday.html

Photographs of James Stagg, D-Day Chart Drawing, and D-Day Chart  
http://www.metoffice.gov.uk/corporate/pressoffice/anniversary/dday.html

http://www.history.rochester.edu/mtv/overview.htm