

Durham Boats

Grades: 4-6

Time Allotment: 30-45 minutes

Common Core Standards

CCSS.WHST.6-8.8	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
CCSS.WHST.6-8.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.
CCSS.RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
CCSS.RST.6-8.9	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
CCSS.RI.4.3	Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
CCSS.W.5.8	Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.

Objectives

Students will:

- Understand and explain the significance of Durham Boats during Washington's crossing of the Delaware before the Battle of Trenton
- Describe a brief history of Durham Boats construction and purpose
- Predict, estimate, and measure the length and width of a Durham Boat
- Locate the Delaware River and Washington's embarkation point on a map

Materials

- Smart Board for projection of Durham boat diagrams
- Map of Delaware River
- 240 feet of string
- Measuring tapes
- Pictures of replica Durham boats from Washington Crossing Historic Park
- Park video on Durham boats: <https://www.washingtoncrossingpark.org/education/76-seconds/>
- Copy of Leutze painting, "Washington Crossing the Delaware"

Anticipatory Set

- The teacher will tell the students that they are going to learn about Durham Boats. An introductory statement will be given that includes the following:
 - George Washington used Durham Boats to cross the Delaware River on Christmas Day 1776. He needed to get his army across the river for the Battle of Trenton. Without these boats, Washington and his men would not have been able to win the battle.
 - Durham Boats had been used on the Delaware to transport cargo.
- The teacher will direct the children's attention to the '76 Seconds of History video on Durham boats. The children will be instructed to watch the video and look for the answers to the following questions:
 - What made Durham boats different from other boats on the Delaware River?
 - How long are Durham boats?
 - How much do Durham boats weigh?
 - Why did Washington have to use boats to cross the river before the Battle of Trenton?
- After viewing the video, quickly discuss the answers to the questions. Tell students to keep these facts in mind as listen to a brief history of the Durham boats and how they were used by Washington and his men.

Teacher Presentation and Modeling

- The teacher will display the Leutze painting, "Washington Crossing the Delaware." Ask and say the following:
 - Does the boat in this picture look like the one in the video we just watched?
 - The boat in this picture is not a true representation of what a Durham boat really looked like.
- The teacher will provide a description and brief history of Durham boats on the Delaware using the following facts:
 - Durham boats were invented by an engineer named Robert Durham.
 - The boats were invented at the Durham Iron Works in Reiglesville, Pennsylvania.
 - They were designed as early 1757 and became a common method for transporting cargo from the northern Delaware River to the port of Philadelphia.
 - The boats were commonly 40 to 60 feet long.
 - The width of the boats was 6 feet.
 - The boats were flat-bottomed, which made them a perfect vessel for travel on the Delaware River, especially in the shallower parts.
 - Each boat weighed a little over 2 tons.
 - The boats had a shallow draft of up to 28 inches when fully loaded with bulk goods.
 - Durham Boats hauled cargos of ore, pig iron, timber and fresh produce.
 - The current carried the boat downstream.
 - Oars and steel tipped poles were used to move the boat upstream.
 - A long, curved oar called the "sweep" was used to steer the boat.

- The teacher will now explain the significance of the boats for Washington before the Battle of Trenton using these facts:
 - As Washington and his troops approached the Delaware River, the General gave the order that all boats and craft from Trenton to 70 miles north be commandeered. He hoped to keep the British from crossing the river from New Jersey. Washington was particularly interested in the Durham boats for the anticipated crossing. The boats were good for transporting troops.
- Captain Daniel Bray and Jacob Gearhart delivered 16 to 18 Durham Boats to Washington on December 25, 1776.
- Col. John Glover and the Marblehead regiment began transporting the army across the river at about 6:00 PM. There were 35 to 45 men in each boatload. The Marbleheaders made six to eight trips in order to get approximately 2,400 men across the river.
- The boats had to travel across the current and break through ice that formed on the river due to cold temperatures and a raging Nor'easter.
- The large Durham boats enabled Washington to move his troops faster across the river than if only small craft had been used.
- The teacher will ask the students to imagine what a 60 foot, 6-foot-wide boat looks like.
- The teacher will take the children outside for the measuring activity.

Guided and Independent Practice

- The teacher will break the students up into groups of four. Each group will need approximately 60 feet of string and a tape measure.
- The teacher will guide the students through the activity using the following steps:
 - Ask one student to remain in place. Give this student the string and tell them to hold on tight to the end.
 - Have another student take the ball of string and walk in a straight line away from the first student. Tell him/her to estimate how long a Durham boat is from where the first student is standing. The student will be instructed to stop walking when they have reached their estimate.
 - A third student will be instructed to take the provided measuring tape and measure out 60 feet, which is the actual length of a Durham boat.
 - The fourth member of the group will take the ball of string from the second student and continue walking with the string to the actual 60-foot mark.
- The students will be instructed to remain in their places and think about the following questions:
 - What do you notice about the estimate the second student made?
 - How close was the estimate to the actual length of Durham boat?
 - Repeat this activity to determine the actual width of a Durham boat.

Closure

- The teacher and students will come back together to compare results from the outside activity.

- The teacher will ask the following questions to help the students determine why the Durham Boats were a necessary part of George Washington's plan to cross the Delaware.
 - Why were the Durham boats important to Washington before the Battle of Trenton?
 - What conclusions can you draw about why the size of the Durham boats was helpful for Washington and his troops?
- The teacher will help the students to conclude that the Durham boats were of vital importance in transporting the troops across the Delaware River quickly. Without the boats, Washington would not have been able to carry out the attack on Trenton.
- The teacher will have the students review facts about the history of the Durham boats in small groups. Instruct students to list as many facts as they can remember about the boats on a piece of paper. Return to the large group to briefly share results.

Assessment

- The teacher will assess students' measuring and estimation abilities through observation.
- The teacher will assess students understanding of Durham boats importance prior to the Battle of Trenton by instructing them to write a paragraph explaining facts learned about the boats during the lesson.
- The teacher will assess facts learned about Durham boats through observation of small group closure activity number 4.

Extension of Lesson

- Students can construct model Durham Boats using shoe box lids, paints, and other materials of their choice.
- Students can research other waterways on which Durham Boats were used in the 18th century.
- Students can learn about the cargo that Durham Boats transported.
- Students can do research to learn more about the Marblehead Regiment.
- Students can learn more about the Delaware River and its importance during the Revolutionary War.