

Teaching Guide

SEGMENT 3, WEBISODE 4

Please note: Each segment in this Webisode has its own Teaching Guide



Segment Overview



Let's Discuss

The new technology and scientific advances of the late nineteenth century radically changed America. Nowhere was this more significant than in transportation and agriculture. Transportation became both faster and cheaper with the opening of the Erie canal in 1825, the invention of the first commercially successful steamboat (Robert Fulton's *Clermont* in 1807), and the opening of the Baltimore and Ohio Railroad in 1830. By 1840, three thousand miles of track connected American cities; within twenty years, ten times that number of miles of track had been laid. Agriculture experienced a similar technological revolution with the invention of John Deere's steel plow and Cyrus McCormick's reaper. Other significant inventions of the period included the sewing machine and the telegraph.

Teacher Directions

1. Using a large map of the United States, point out the location of the Erie Canal.

Note to the Teacher: If using Joy Hakim's *A History of US*, use the map on pages 122 – 123 in *The New Nation, Book Four*.

2. Show the Erie Canal's connection to the Hudson River and to the Great Lakes. Point out major ports along the lakes, commenting on the wealth of raw materials in those areas (iron ore and lumber specifically).
3. Trace the National Road from Cumberland, Maryland, to Vandalia, Illinois. The National Road is now known as old Route 40, and it generally runs parallel to Interstate 70.
4. Students locate the Mississippi River. Flatboats (pushed along by poles) and steamboats moved cargo up and down this great river.
5. Students trace the Chesapeake and Ohio Canal that ran from Washington, D.C., to Cumberland, Maryland.
6. Students, in small teams, discuss the following questions.
 - Why were canals superior to roads for transporting goods and people?
 - What difficulties did engineers face in building the Erie Canal?
 - How long did it take to build the Erie Canal?

Canals were quieter, smoother, and more reliable than roads. Goods could be transported faster and more cheaply than on roads. In building the Erie Canal, engineers had to dig a ditch over three hundred and fifty miles across New York state. No one had ever built a canal that long. Lake Erie



History Sleuth

is over five hundred and fifty feet higher than the Hudson, so a series of locks were needed to raise and lower boats. It took eight years to build the Erie Canal.

Teacher Directions

1. Students work in six small teams. Each team uses one of three separate student sheets that highlight an innovative mode of transportation introduced in the early nineteenth century.
2. Distribute one of the following Student Sheets to each team so that two teams work on the same student sheet.

Student Sheet: *I've got a mule and her name is Sal ~~ Fifteen miles on the Erie Canal*

Student Sheet: *Tom Thumb ~~ the Smallest Iron Horse*

Student Sheet: *Cruising Down the River on a Sunday Afternoon*

3. Students read the paragraphs at the top of their team's student sheet and then discuss the questions. **Note to the teacher:** Teams need access to maps of the United States.
4. Teams share their responses in a class discussion.

Teacher Directions

1. Students respond to the following writing prompt.

Imagine that you have a time machine. Punch a button and go back to 1825. You are a young man or woman who loves to travel but have been discouraged because transportation by horseback, cart, and carriage is dismally slow, and roads are rutted and muddy. But you have other options! You learn that the Erie Canal has just opened, and consider riding a canal boat along the canal route. You could also ride a flatboat down the Mississippi River and then take a steamboat such as the *Clermont* back up the river.

2. Students research the routes of the Erie Canal and/or a trip on the Mississippi River. Students write a brief essay describing their mode of transportation and route.

Note to the Teacher: To stimulate student interest and creativity, you may direct students to view paintings such as *The Jolly Flatboatmen* by George Caleb Bingham (found on page 5 of *The New Nation*, Book 4 of *A History of US*).



What do you Think?



Teacher Directions

1. With the students, discuss how new and better forms of transportation offer opportunities for individuals to move toward freedom—especially personal freedom.
2. Use the information from on the Student Sheets: *I've Got a Mule and Her Name is Sal~~Fifteen Miles on the Erie Canal*; *Tom Thumb~~the Smallest Iron Horse*; and *Cruising Down the River on a Sunday Afternoon* to discuss the new forms of transportation in the eighteenth century—canals, trains, and steam boats.
3. Working in their teams or in a class discussion, students ponder how each of the new forms of transportation offered opportunities for eighteenth century people to move toward freedom. For example, how did the railroads help Irish immigrants move toward freedom? Help the students understand that building the railways offered jobs to newly-arrived, poor immigrants.
4. Pose questions that encourage the students to connect technical innovations with new opportunities for personal freedom. During the discussion always include the other side of the coin: how does the same innovation decrease or limit opportunities?

Teacher Directions

Use the following activities with your students.

Science — Students investigate how a steam engine works. They draw diagrams and label parts. Discuss with the students that during the early nineteenth century, the boilers of steamships often blew up, killing numbers of people. Students investigate the relationship of pressure to steam, and identify how such accidents might have happened.

Science — Students investigate why it takes a shorter time to fly to England – and why the return trip is longer (prevailing winds). Why is it more difficult to go upstream against the current in a river?

Music — Students listen to the song “Old Man River” and discuss how that song captures the power of the Mississippi River.

Language Arts — Someone once referred to the locomotive as “the machine in the garden.” The writer discussed how the steam engine changed our lives and our landscape with miles of tracks and huge trains spewing soot across the countryside, not to mention the noise. Students write a list poem entitled “I am a Train” using the following format:

I am a train.
I am a new part of the American scenery.
Here is what I do...
I.....

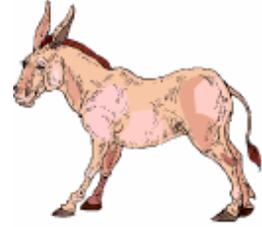


Connections, Cont.

Students complete the poem with complete sentences listed randomly. Use Walt Whitman's *Leaves of Grass* as an example.

Art—Using any media, students design a mode of transportation for the future and name their designs.

I've got a mule and her name is Sal~~Fifteen Miles on the Erie Canal



Directions: Read the following notes, and then answer the questions! This is a scavenger hunt!

The Erie Canal was 363 miles long, 40 feet wide, and 4 feet deep. It ran between the Hudson River and the Great Lakes. It took eight years to build.

In 1825, Governor DeWitt Clinton of New York boarded a canal boat in Buffalo. It took him nine days to get to New York City. On the boat with him were two barrels of water from the Great Lakes symbolizing the blending of the Atlantic Ocean and interior lakes.

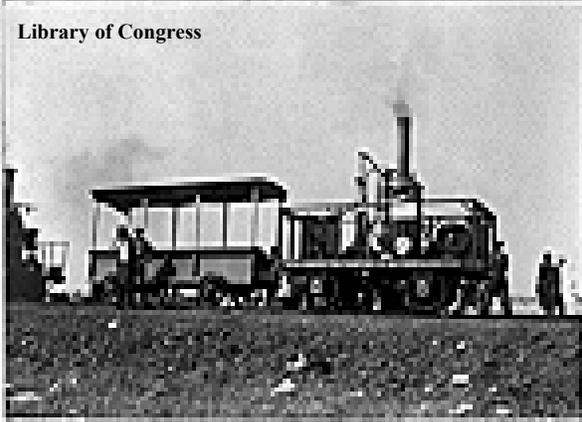
Irish immigrants mostly built the canals, for the wage of 50 cents a day for their hard labor. Along the Erie Canal were 83 locks. A "liftlock" raised or lowered a canal boat through the hilly terrain. (See handout on how locks worked and were constructed.) Towpaths were built on either side of the canal because horses and mules pulled the canal boats from town to town.

Before the Erie Canal was built, it cost \$100 per ton to carry items by road from Buffalo to New York City. After its opening, the cost of transporting supplies this same distance dropped to \$8 per ton.

Time to Go To Work!

1. If Governor Clinton got on the canal boat in Buffalo, New York, from what Great Lake did he get the two barrels of water?
2. If you had to transport 3000 pounds of iron ore from Buffalo to New York City, how much would it cost if you carted it by wagon? How much would it cost you if you used the Erie Canal?
3. Could two twenty-foot wide canal boats pass one another in the canal? Why or why not?
4. How much would an Irishman earn for seven days of work on the Erie Canal? How many years did it take the Irish workers to dig the canal? There are 52 weeks in each year.
5. How much would an Irishman make in an entire year?
6. How long did it take Governor DeWitt Clinton to get from Buffalo to New York City?
7. Did canal boats operate by using steam engines? Explain how they were powered.

Library of Congress



Tom Thumb~~the Smallest Iron Horse

Directions: Read the following notes, and then answer the questions!

Although James Watt (1736-1819) actually invented the steam engine in his native Scotland, his invention was put to work in the United States to power both trains and steamboats.

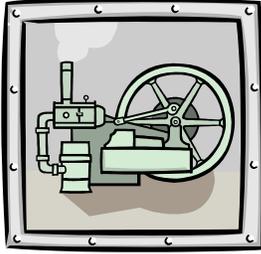
The Baltimore and Ohio Railroad opened in 1830 with thirteen miles of track. At first, horses pulled the carriages, until Peter Cooper, a Baltimore inventor, decided to try steam power. Using odds and ends, Cooper built a small locomotive. Forty-two people climbed aboard, and the tiny train chugged from Baltimore to a small town nearby. The experiment was a success!

Firsts for the Baltimore and Ohio Railroad

- First to operate a locomotive in the United States — the Tom Thumb (1829)
- First to have paying passengers
- First to gain a government contract to carry mail
- First railroad to reach the Ohio River (1852)
- First to install air-conditioning in a train car (1931)
- First to build a train station — Mount Clare Station in Baltimore (1829)

Time to Go To Work!

1. Why do you suppose people called locomotives “iron horses”?
2. Read and discuss the following excerpt written by British author and visitor Charles Dickens after he took a ride on a train:
“There {moves}the mad dragon of an engine with its train of cars...scattering in all directions a shower of burning sparks from its wood fire; screeching, hissing, yelling, panting.”
3. After reading the above quotation, what actually powered the steam engine?
4. Do you think that Charles Dickens enjoyed his train ride? Why?
5. What do you think a Native American living on the plains would have thought after seeing a train first cross their land?
6. Do trains still carry mail today? Why or why not?



Cruising down the River on a Sunday Afternoon

Directions: Read the following notes, and then answer the questions! This is a scavenger hunt!

Robert Fulton did not invent the steam engine, but he did use it to power large boats that navigated major rivers in the United States. In 1807, Fulton's steamboat, the *Clermont*, traveled from New York City to Albany, a distance of 150 miles, in 32 hours.

In 1811, Fulton built a shipyard in Pittsburgh, Pennsylvania, and launched the *New Orleans*, the first steamboat on the Ohio River.

Charles Dickens, a British writer visiting America, called the Mississippi River "a slimy monster...an enormous ditch...mud and slime on everything." Mark Twain, a Mississippi river-pilot and American writer, called the Mississippi "the majestic, magnificent Mississippi...shining in the sun."

In the 1850s, thousands of steamboats navigated the great river, and they raced one another, seeing who could get from New Orleans to either St. Louis or Louisville the fastest.

Time to Go To Work!

1. What rivers run through Pittsburgh, Pennsylvania?
2. Look at a map of the United States. List some major cities on the Mississippi River.
3. Into what major river does the Ohio River flow?
4. Why do you think that Charles Dickens and Mark Twain held such different opinions about the Mississippi River?
5. How many miles per hour did the steamship *Clermont* travel?
6. If you had a choice among riding on a canal boat, a train, or a steamship—which would you choose and why?