

Grade 2 Social Studies Unit: 07

Lesson: 03

Suggested Duration: 5 days

Grade 02 Social Studies Unit 07 Exemplar Lesson 03: Technology Through Time

This lesson is one approach to teaching the State Standards associated with this unit. Districts are encouraged to customize this lesson by supplementing with district-approved resources, materials, and activities to best meet the needs of learners. The duration for this lesson is only a recommendation, and districts may modify the time frame to meet students' needs. To better understand how your district may be implementing CSCOPE lessons, please contact your child's teacher. (For your convenience, please find linked the TEA Commissioner's List of State Board of Education Approved Instructional Resources and Midcycle State Adopted Instructional Materials.)

Lesson Synopsis

The lesson looks more closely at how scientific and technological innovations have changed the way people meet their needs in communities. Robert Fulton is used as an example of an innovator in this lesson that focuses on changes in transportation.

TEKS

The Texas Essential Knowledge and Skills (TEKS) listed below are the standards adopted by the State Board of Education, which are required by Texas law. Any standard that has a strike-through (e.g. sample phrase) indicates that portion of the standard is taught in a previous or subsequent unit. The TEKS are available on the Texas Education Agency website at http://www.tea.state.tx.us/index2.aspx? id=6148.

- 2.2 History. The student understands the concepts of time and chronology. The student is expected to:
- 2.2A Describe the order of events by using designations of time periods such as historical and present times.
- 2.2B Apply vocabulary related to chronology, including past, present, and future.
- 2.2C Create and interpret timelines for events in the past and present.
- 2.3 History. The student understands how various sources provide information about the past and present.

 The student is expected to:
- 2.3A Identify several sources of information about a given period or event such as reference materials, biographies, newspapers, and electronic sources.
- 2.3B Describe various evidence of the same time period using primary sources such as photographs, journals, and interviews.
- 2.4 History. The student understands how historical figures, patriots, and good citizens helped shape the community, state, and nation. The student is expected to:
- 2.4B Identify historical figures such as Amelia Earhart, W. E. B. DuBois, Robert Fulton, and George Washington Carver who have exhibited individualism and inventiveness.
- 2.4C Explain how people and events have influenced local community history.
- 2.17 Science, technology, and society. The student understands how science and technology have affected life, past and present. The student is expected to:
- 2.17A Describe how science and technology change communication, transportation, and recreation.
- 2.17B Explain how science and technology change the ways in which people meet basic needs.

Social Studies Skills TEKS

- 2.18 Social studies skills. The student applies critical-thinking skills to organize and use information acquired from a variety of valid sources, including electronic technology. The student is expected to:
- 2.18B Obtain information about a topic using a variety of valid visual sources such as pictures, maps, electronic sources, literature, reference sources, and artifacts.
- 2.18C Use various parts of a source, including the table of contents, glossary, and index, as well as keyword Internet searches to locate information.
- 2.18D Sequence and categorize information.
- 2.18E Interpret oral, visual, and print material by identifying the main idea, predicting, and comparing and

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contrasting.

- 2.19 Social studies skills. The student communicates in written, oral, and visual forms. The student is expected to:
- 2.19A Express ideas orally based on knowledge and experiences.
- 2.19B Create written and visual material such as stories, poems, maps, and graphic organizers to express ideas.

GETTING READY FOR INSTRUCTION

Performance Indicators

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Create an illustrated timeline showing a variety of means of transportation over time; include examples of technological innovation in transportation. Also include an illustration predicting transportation in the future. Use vocabulary related to chronology (past, present future) to explain (orally or in writing) how transportation has changed over time and describe how technology helps people solve problems and meet their needs.

Standard(s): 2.2B, 2.2C, 2.17A, 2.17B, 2.18D, 2.19A, 2.19B

ELPS ELPS.c.1C

Key Understandings

- Scientific and technological innovations in communication, transportation, and recreation change the way people work and play.
 - How do scientific and technological innovations change the way people work and play?
 - What innovations in communication, transportation, and recreation have changed the way people work and play?

Vocabulary of Instruction

technology

chronology

innovation

· basic needs

invention

Materials

- · chart paper
- information about Robert Fulton
- · map pencils or markers
- blank U.S. map with states labeled (1 per student)
- · large paper for drawing
- photographs of inventions that are commonplace today, such as appliances (or other photographs gathered by the teacher)
- · photographs of life without modern appliances
- scissors

Attachments

All attachments associated with this lesson are referenced in the body of the lesson. Due to considerations for grading or student assessment, attachments that are connected with Performance Indicators or serve as answer keys are available in the district site and are not accessible on the public website.

- Teacher Resource: PowerPoint: Inventions
- 🦊 Handout: Before and After T-Chart (optional, 1 page per group)
- Teacher Resource: PowerPoint: Before and After
- By Handout: Robert Fulton Note-taking Sheet (1 per student)
- Handout: Robert Fulton (1 per student)
- Handout: GWC and RF Map Instructions (1 per student)
- B Handout: Other Innovations in Transportation (1 per student)
- Handout: Transportation Timeline Cards (1 per student)

Teacher Resource: Sample Transportation Timeline PI

Resources

None identified

Advance Preparation

- 1. Become familiar with content and procedures for the lesson, including biographical information on Robert Fulton and George Washington Carver.
- 2. Refer to the Instructional Focus Document for specific content to include in the lesson.
- 3. Select appropriate sections of the textbook and other classroom materials that support the learning for this lesson.
- 4. Preview available resources and websites according to district guidelines.
- 5. Gather pictures of innovations such as refrigerator, washing machine, microwave, computer, car, and dishwasher.
- 6. Prepare materials and handouts as needed.

Background Information

Robert Fulton (1765-1815) – Inventor of the first commercially successful steamboat in the United States. He also designed a one man submarine. He was an artist as well. Although he did not invent the first steamboat, his innovations improved steamboats and it was his design that brought them into common use. A statue of him is in the National Statuary Hall of the U.S. Capitol.

He became known as the "father of steam navigation." He was a remarkable mechanical genius who successfully built and operated a submarine in 1801, and then investigated the uses of steam power on boats. Fulton's efforts resulted in transforming steamboats into a commercial success. In 1807, his steamboat *Clermont* made history when it made a 150-mile trip along the Hudson River taking 32 hours at an average speed of around 5 miles an hour.

His innovations with steamboats resulted in bringing steam power to railroads. The Age of Steam was born. By the 1870s, railroads had begun to take over from steamboats as the major mover of both goods and people.

- · Chronology order of events
- Invention a new technology
- · Innovation doing things in a new way
- · Technology machinery or processes invented with scientific knowledge

GETTING READY FOR INSTRUCTION

Teachers are encouraged to supplement and substitute resources, materials, and activities to meet the needs of learners. These lessons are one approach to teaching the TEKS/Specificity as well as addressing the Performance Indicators associated with each unit. District personnel may create original lessons using the Content Creator in the Tools Tab. All originally authored lessons can be saved in the "My CSCOPE" Tab within the "My Content" area.

INSTRUCTIONAL PROCEDURES

Instructional Procedures ENGAGE – What was life like before	Notes for Teacher NOTE: 1 Day = 50 minutes Suggested Day 1 – 10 minutes		
 Display inventions that are commonplace today, such as appliances. If desired, use the Teacher Resource: PowerPoint: Inventions. Introduce this lesson using words such as: Can you imagine life without these appliances? What do you think life was like then? Continue discussion, providing students an opportunity to name other inventions that have changed the way we live. 	Materials: • photographs of inventions that are commonplace today, such as appliances • chart paper Attachments: • Teacher Resource: PowerPoint: Inventions Purpose: Students are engaged in the idea that technology has changed the way we live. TEKS: 2.2A, 2.2B, 2.17A, 2.18B, 2.18E Instructional Note:		

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families could be used as resources for photographs of life before these technologies. EXPLORE - Inventions change how people meet needs Suggested Day 1 (continued) - 40 minutes 1. Divide the students into six groups, with no more than four members to a Materials: group. These will be expert groups. photographs of inventions that are 2. Provide each group with one page of the Handout: Before and After Tcommonplace today, such as appliances (or Chart (or students create their own). other photographs gathered by the teacher) • photographs of life without modern appliances 3. Distribute pictures of one of the appliances (or other photographs gathered by teacher). Attachments: 4. Students study the pictures and discuss how they think the appliances • Teacher Resource: PowerPoint: Inventions changed how people live. • Handout: Before and After T-Chart 5. Distribute to each group the appropriate picture showing life before the (optional, 1 page per group) appliance (slides 3-8 of the Teacher Resource: PowerPoint: Before and • Teacher Resource: PowerPoint: Before and After). After (slides 10-15) 6. Expert groups discuss the differences and add to their handouts as needed. Purpose: Students infer how inventions have changed how people live 7. Rearrange students into jigsaw groups made up of one student from each of and meet their needs. the expert groups. TEKS: 2.2B, 2.17A, 2.17B, 2.19B 8. Students discuss differences and how life appears to be different as they fill Instructional Note out the T-chart, writing about life before the invention they are assigned was created and life after. • If desired, to adjust for class size, add T-Charts for other inventions. 9. Students in the jigsaw groups take turns talking about their invention and life · Catalogues and ads might be a good resource before and after its invention. To keep the discussion on track, guide the for photographs of these inventions. discussions in the group by showing slides 10-15 of the Teacher Resource: • Use a visual analysis strategy to build social PowerPoint: Before and After. studies skills when discussing the photographs from the Library of Congress in 10. Offer students an opportunity to look at photographs of kitchens during the Teacher Resource. various historical eras (See the Teacher Resource: PowerPoint: Before and After, slides 16-19) and discuss. (Consider using a structured visual analysis strategy.) **EXPLAIN - 3-2-1** Suggested Day 2 (continued) - 10 minutes 1. Students write: · 3 innovations we looked at that you think made the biggest difference in the lives of people · 2 ways people's lives have changed as a result of innovation • 1 innovation you would like to see in the future **EXPLORE - Robert Fulton** Suggested Day 2 (continued) - 40 minutes 1. Introduce the next topic using words such as: Materials: • information about Robert Fulton We have looked at how life changed with innovation in the kitchen. Let's look next at innovation in transportation. Attachments: 2. Show Slides 19-21 of the Teacher Resource: PowerPoint: Before and • Teacher Resource: PowerPoint: Before and After. After • Handout: Robert Fulton Note-taking Sheet . The car has made huge differences in how people live, but there (1 per student) have been other significant changes in transportation through • Handout: Robert Fulton (1 per student) history. Let's learn about some of them. 3. Distribute the Handout: Robert Fulton Note-taking Sheet and the Students learn about how inventions change the way people Handout: Robert Fulton to each student. live. Robert Fulton is a historical figure that illustrates this

· Online museums, local historical societies, and

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 4. Provide additional background and biographical information about Robert Fulton. 5. Students, individually or in pairs, note important details on their note-taking sheet. 	concept. TEKS: 2.3A, 2.3B, 2.4B, 2.4C, 2.17A, 2.18B, 2.18C, 2.19B Instructional Note: Note that Robert Fulton did not invent the first steamboat. However, he did invent the first one that was economically feasible to use.		
EXPLAIN	Suggested Day 3 – 15 minutes		
Students share their notes from Handout: Robert Fulton Note-taking Sheet with three partners, adding and adjusting information as needed.			
Bring students back to whole group and allow students to share out what they have learned.			
3. Scribe student input to compile a class anchor chart about Robert Fulton and his innovations.			
ELABORATE	Suggested Day 3 (continued) – 35 minutes		
 Distribute to each student a blank U.S. map, with states labeled, and a copy of the Handout: GWC and RF Map Instructions. Display or project the map and lead students through the handout to show students the different locations on the map of places related to George Washington Carver (studied in lesson 1 of this unit) and Robert Fulton (studied in this lesson). 	Materials: • blank U.S. map with states labeled (1 per student) • map pencils or markers Attachments:		
3. Students mark on the locations on their maps as well.4. Students share their map with a partner to ensure the map was completed correctly.	Handout: GWC and RF Map Instructions (1 per student) Purpose: Students continue to learn about Robert Fulton and George Washington Carver while building skills related to the geography of the United States. TEKS: 2.4B, 2.18B, 2.19B		
EXPLORE	Suggested Day 4 – 35 minutes		
 With students in groups of 3, distribute the Handout: Other Innovations in Transportation. Each student reads and studies one of the handouts. Students share the knowledge they have gained with the other members of the group. Distribute the Handout: Transportation Timeline Cards. Students cut apart the cards and place them in order to see the progression of innovations in transportation. Facilitate a class discussion where students address the guiding questions in support of the Key Understanding. Scientific and technological innovations in communication, transportation, and recreation change the way people work and play? How do scientific and technological innovations change the way people work and play? What innovations in communication, transportation, and recreation have changed the way people work and play? 	Materials: • scissors Attachments: • Handout: Other Innovations in Transportation (1 per student) • Handout: Transportation Timeline Cards (1 per student) TEKS: 2.2B, 2.2C, 2.17A, 2.17B, 2.19A, 2.19B		
EXPLAIN	Suggested Day 4 (continued) – 15 minutes		
Students answer the following questions: How did transportation change? (e.g., transportation became faster, safer, and more comfortable. People could travel farther.)			

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 Why do you think these changes were made? (people recognized problems they could solve with new technology)

EVALUATE - Illustrated Timeline

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Create an illustrated timeline showing a variety of means of transportation over time; include examples of technological innovation in transportation. Also include an illustration predicting transportation in the future. Use vocabulary related to chronology (past, present future) to explain (orally or in writing) how transportation has changed over time and describe how technology helps people solve problems and meet their needs.

<u>Standard(s)</u>: 2.2B , 2.2C , 2.17A , 2.17B , 2.18D , 2.19A , 2.19B

ELPS ELPS.c.1C

Suggested Day 5 - 50 minutes

Materials:

- large paper for drawing
- map pencils or markers

Attachments:

• Teacher Resource: Sample Transportation Timeline PI

Purpose:

Students create a timeline and display their understanding of how innovation has changed the way we live.

TEKS: 2.2B, 2.2C; 2.17A, 2.17B; 2.18D; 2.19A, 2.19B

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Dishwasher

Before	After		

Washing Machine

Before	After			

Microwave

Before	After		

Car

Before	After			

Computer

Before	After			

Refrigerator

Before	After			

Robert Fulton Note-taking Sheet

Biographical Data

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How did Robert Fulton's innovations change communities?

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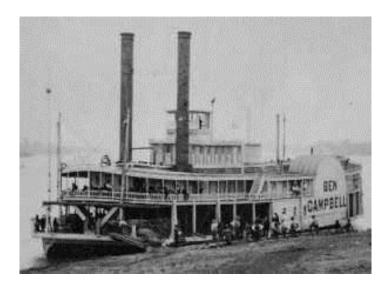
Summarize Robert Fulton's contributions.

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Robert Fulton



Robert Fulton (1765-1815) is called "father of steam travel." In 1807 he started a steamboat passenger service. His steamboat the Clermont made a 150-mile trip in 32 hours at 5 miles per hour. It traveled on a schedule instead of on the tides and did not need wind.





Robert Fulton and George Washington Carver Map Instructions

- 1. Trace the state of Missouri with green. This is the home state of George Washington Carver.
- 2. Place a red school house on Kansas. This is where George moved to attend school.
- 3. Draw a cob of corn on Iowa. This is where George Washington Carver attended college.
- 4. Draw a plant on Alabama. This is the home of the Tuskegee Institute. George Washington Carver worked there and this is where he did his research.
- 5. Trace the state of Texas in red. Texas farmers are helped by the work of George Washington Carver.
- 6. Trace Pennsylvania with blue. This is the home state of Robert Fulton.
- 7. Trace New York with black. This is the state where Robert Fulton's steamboat was first put to use.
- 8. Place a star on Washington, D.C. This is our nation's capital. A statue of Robert Fulton is on display in the U.S. Capitol building.

Other Innovations in Transportation

Air Travel: the Wright Brothers



Wilbur and Orville Wright grew up in Ohio. They ran a bicycle shop. They loved to work with machines. They invented a way to steer an airplane. In 1903, they flew their airplane and landed it safely.

In 1911, a plane they built was the first to fly across the United States. It took 84 days. They stopped 70 times on the way.

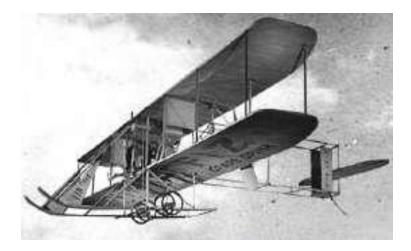


Photo Credit from Top to Bottom

Image 1: Daniels, J. (Photographer). (1903). First successful flight of the wright flyer, by the wright brothers. [Print Photo]. Retrieved from http://commons.wikimedia.org/wiki/File:First_flight2.jpg

Image 2: (1911). Wright brothers plane - vin fiz. (1911). [Web Photo]. Retrieved from http://inventors.about.com/od/weirdmuseums/ig/Wright-Brothers/Wright-Brothers-Vin-Fiz.htm

Automobile Travel: Karl Benz



In 1885, Karl Benz built the first automobile with an engine that ran on gas. He got a patent in 1886. Then he began selling his motor carriage.

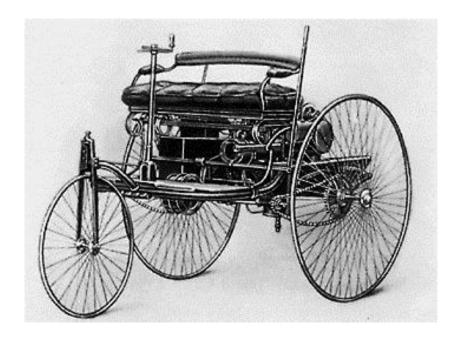


Photo Credit: From top to bottom

Image 1: (2013). Karl benz (carl benz). (2013). [Web Photo]. Retrieved from http://inventors.about.com/library/inventors/blbenz.htm

Image 2: (2005). 1885 benz. (2005). [Web Photo]. Retrieved from http://commons.wikimedia.org/wiki/File:1885Benz.jpg

Bicycle travel





1790

1866







Today

Photo Credit from Left to Right and Top to Bottom:

Image 1: (2013). The earliest bicycle - 1790. (2013). [Web Photo]. Retrieved from http://bicycling.about.com/od/thebikelife/ss/History.htm

Image 2: (2013). Bicycle riders circa 1869. (2013). [Web Photo]. Retrieved from http://inventors.about.com/od/bstartinventions/a/History-Of-The-Bicycle.htm

Image 3:(2009). 1886 swift safety bicycle. (2009). [Web Photo]. Retrieved from

http://commons.wikimedia.org/wiki/File:1886_Swift_Safety_Bicycle_Coventry_Transport_Museum.jpg

Image 4: Microsoft. (Designer). (2010). Clip art [Web Graphic]. Retrieved from http://office.microsoft.com/en-us/images/

Transportation Timeline Cards

1807 Steamboat with passenger service: Robert Fulton (the Clermont)	1885 Automobile: Karl Benz	
1903 Airplane: Wright Brothers	1814 Steam-Powered Train Locomotive	
1981 Space Shuttle	1935 Amelia Earhart flies nonstop from Hawaii to California	
1885 James Starley invents modern safety bicycle	1790 Bicycle invented	

Sample Transportation Timeline

1790	1801	1807	1867	1885	1885	1903
Bicycle invented	Steam powered locomotive invented	Steamboat with passenger service begins	Motorcycle invented	safety bicycles invented	First practical automobile invented	First engine airplane flown
	1000 11 11 11 11 11 11 11 11 11 11 11 11 11					X

Photo Credit: From Left to Right

Image 1: (2013). The earliest bicycle - 1790. (2013). [Web Photo]. Retrieved from http://bicycling.about.com/od/thebikelife/ss/History.htm

("The earliest bicycle," 2013)

Image 2,3,4,5,6: Microsoft. (Designer). (2010). Clip art [Web Graphic]. Retrieved from http://office.microsoft.com/en-us/images/Image 7: (2012). First engine airplane flown. (2012). [Web Photo]. Retrieved from http://www.myschoolhouse.com/courses/O/1/108.asp

("First engine airplane," 2012)