

The Transcontinental Railroad: How Did It Change American Society and Environment?

Author	Victoria White
Grade Level	7
Duration	3 class periods

National Standards

GEOGRAPHY

Element 1: The World in Spatial Terms

1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

Element 2: Places and Regions

4. The physical and human characteristics of places

Element 4: Human Systems

9. The characteristics, distribution and migration of human populations on Earth's surface

Element 5: Environment and Society

14. How human actions modify the physical environment

Element 6: The Uses of Geography

17. How to apply geography to interpret the past

AZ Standards

ELA

Reading

Key Ideas and Details

7.RI.2 Determine two or more central ideas in a text and analyze their development over the course of the text; provide an objective summary of the text.

Writing

Production and Distribution of Writing

7.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

MATHEMATICS

The Number System

7.NS.A.3. Solve real-world and mathematical problems involving the four operations with rational numbers. (Computations with rational numbers extend the rules for manipulating fractions to complex fractions.)

TECHNOLOGY

Strand 2: Communication and Collaboration Concept 2: Digital Solutions

PO 1. Communicate and collaborate for the purpose of producing original works or solving problems.

Strand 5: Digital Citizenship Concept 1: Safety and Ethics

PO 6. Exhibit legal and ethical behavior when using technology.

Arizona Social Science Standards

GEOGRAPHY

The use of geographic representations and tools helps individuals understand their world.

7.G1.1 Use and construct maps and other geographic representations to explain the spatial patterns of cultural and environmental characteristics

Human-environment interactions are essential aspects of human life in all societies.

7.G2.1 Explain how cultural demographic patterns, economic decisions, and human adaptations shape the identity of nearby and distant places.

7.G2.2 Analyze cultural and environmental characteristics that make places both similar and different.

Examining human population and movement helps individuals understand past, present, and future conditions on Earth's surface.

7.G3.1 Explain how changes in transportation, communication, and technology influence the spatial connections among human settlements and affect the diffusion of ideas and cultural practices.

7.G3.2 Analyze how relationships between humans and environments extend or contract patterns of settlement and movement.

7.G3.3 Evaluate the influences of long-term, human-induced environmental change on spatial patterns and how it may cause conflict and promote cooperation.

7.G3.4 Evaluate human population and movement may cause conflict or promote cooperation.

HISTORY

The development of civilizations, societies, cultures, and innovations

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have influenced history and continue to impact the modern world.

7.H1.2 Trace the development and impact of scientific, technological, and educational innovations within historical time periods

Economic, political, and religious ideas and institutions have influenced history and continue to shape the modern world.

7.H3.1 Compare the origins and spread of influential ideologies and both religious and non-religious worldviews.

7.H3.4 Explain the influence of individuals, groups, and institutions on people and events in historical and contemporary settings.

SIOP Elements

<p>Preparation Adapting content Linking to background Linking to past learning Strategies used</p>	<p>Scaffolding Modeling Guided practice Independent practice Comprehensible input</p>	<p>Grouping Option Whole class Small groups Partners Independent</p>
<p>Integrating Processes Reading Writing Speaking Listening</p>	<p>Application Hands on Meaningful Linked to objectives Promotes engagement</p>	<p>Assessment Individual Group Written Oral</p>

Arizona English Language Proficiency Standards

Stage IV

Basic

Comprehension of Oral Communications

Standard 1: The student will listen actively to the ideas of others in order to acquire new knowledge. The student will demonstrate understanding of oral communications by:

B-6: following multi-step instructions/ directions, procedures and processes which contain specific academic content vocabulary.

Standard 2: The student will express orally his or her own thinking and ideas.

The student will communicate orally by:

B-8: providing an appropriate response to given formal and informal situations.

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate knowledge of reading comprehension by:

B-23: locating information in print and electronic reference sources (*e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodicals, website, and textbooks*) periodicals for a specific purpose.

B-28: interpreting information in functional documents (*e.g., maps, schedules, letters, graphic organizers*) for a specific purpose.

Basic Writing

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Standard 5: The student will demonstrate research skills by using a variety of reference materials to complete a variety of writing tasks. The student will demonstrate research skills by using a variety of reference materials to complete a variety of writing tasks as evidenced by the following:

B-1: summarizing events using topic sentences, main ideas, relevant facts, details, and concluding statements.

Language

Standard 2: The student will acquire English language vocabulary and use it in relevant contexts. The student will demonstrate knowledge of vocabulary by:

B-3: identifying the meaning/usage of high frequency words and applying them in context.

B-5: comprehending the meaning of academic compound words (landslide, benchmark, sharecropper).

Overview

The building of a Transcontinental Railroad dramatically changed the United States and was an example of how technology and innovation affects society and the environment. The railroad united the very diverse regions of our country (East and West), facilitated Westward Expansion, and changed the way of life for many Americans.

Purpose

In this lesson, students will use readings and maps to discuss the technology that was used to build the Transcontinental Railroad and then calculate the amount of money each railway company received. The Essential Question that will be answered is: How do human actions change American society and the environment? This lesson includes strategies for teaching diverse learners.

Key Vocabulary

transcontinental: across a continent

route: a pathway to follow

terrain: the way a landscape looks

settler: a person who travels to a new area of the country to build a home and live

track: iron rails, spikes and wooden ties that a train travels on

tunnel: a passage dug under or through a mountain

Materials

- Highlighters (pink, yellow, blue)
- Sticky notes
- "Building the Transcontinental Railroad" Video clip (3:15 minutes):
<https://www.youtube.com/watch?v=K4YgEMyqAQ>
- The First Transcontinental Railroad reading

- Index cards
- Exit Ticket Prompt & Scoring Guide
- National Parks Service map of Transcontinental Railroad found at:
<https://www.nps.gov/hfc/carto/PDF/GOSPmap2.pdf> or can be printed from file with this lesson
- The Pacific Railroad Route (1863-1869) map labeled (key) and unlabeled (student)
- The Pacific Railroad Route Map Directions and Grading Scale
- Technology for Building a Railroad reading
- Pacific Railroad Cost Per Mile Worksheet and Answer Key
- Writing Prompt and Composition Scoring Guide
- Vocabulary Quiz
- Calculator or SmartPhone with Calculator
- Computer for typing a summary (optional)
- Answer Keys

Objectives

The student will be able to:

1. Read maps to locate and track the route of the Transcontinental Railroad.
2. Synthesize details about the Transcontinental Railroad from maps and readings to answer the essential question.
3. Use math to solve real world problems.
4. Exhibit appropriate, legal and ethical use of technology in the classroom.

Procedures

Student Prerequisites: Students have been introduced to Manifest Destiny and Westward Expansion through their textbook or other materials. Students have participated in close reading and highlighting activities in previous classes. Students know how to read, use and label a map. Students are able to add and multiply whole numbers.

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Teacher Preparation: Before the lesson, the teacher should print out and tape together the four page Railroad Map. You should have one map for each group (8–10 groups).

SESSION ONE

Engage:

1. Write the Essential Question (EQ) on the board: How do human actions change our society and environment?
2. Allow students to discuss their thoughts on the EQ with a partner, then randomly call on individuals to share their answers out loud. Record ideas on the board. **(Preparation: Linking to Background, Integrating Process: Speaking & Listening, Grouping Option: Partners)** Then explain that in the next several days, the class will be looking at the Transcontinental Railroad as a good example to answer this EQ.

Explore:

3. Project or distribute the Vocabulary Card: “transcontinental.” Discuss its meaning and model going across a continent using a world map. **(Scaffolding: Modeling)** Then introduce the video “Building the Transcontinental Railroad” by explaining that many different people helped to build the Transcontinental Railroad. Immigrants made up a large percentage of the workforce. **(Scaffolding: Comprehensible Input)**
4. Show the video (3:15 mins.) from YouTube: <https://www.youtube.com/watch?v=K4YgEMykqAQ> **(Application: Promotes Engagement)**
5. Rewrite the EQ after the video to make it more specific: How did building a Transcontinental Railroad change the society and the environment? (This will be the prompt for their writing at the end of the lesson.) **(Scaffolding: Comprehensible Input)**
6. Allow students to talk to a partner about their answer, then choose individual students randomly to share their thoughts using cards or popsicle sticks. Record their ideas along with the first ones on the board. **(Preparation: Linking to Past Learning, Integrating Process: Speaking & Listening)**

Explain:

7. Distribute the The First Transcontinental Railroad reading to each student. Instruct students to use three colors of highlighter (pink, yellow and blue). Write the color and corresponding content on the board for students to reference during the activity, and explain how they will be used.

- Pink = Highlight vocabulary card words
- Yellow = Highlight environment and society clue words

- Blue = Highlight 8–10 sentences that are the main ideas

(Grouping Option: Whole Class, Scaffolding: Guided Practice) (Application: Hands on)

8. Project the Vocabulary Cards with definitions. Give students 5 minutes to read the article to themselves and use the pink highlighter to highlight the vocabulary words. **(Scaffolding: Comprehensible Input, Integrating Processes: Reading, Application: Linked to Objectives)**
9. Have students join with one or two partners to re-read the article together and continue to highlight environment or society clue words (yellow) and 8-10 important sentences (blue). Make sure students know that the highlighting will overlap in some cases. **(Scaffolding: Independent Practice, Grouping Option: Small Group, Integrating Processes: Speaking and Listening, Application: Linked to Objectives)**

10. Revisit the revised EQ and give students a few minutes to talk with a partner about how they think the building of a new railroad would change the society and environment. Randomly choose several students to share what their answer is to the EQ. Record their ideas on the board. **(Integrating Process: Speaking and Listening)**
11. Distribute index cards (Exit Tickets). Project the Exit Ticket Prompt & Rubric. Go over the instructions. Model one possible response for each side of the index card using the sentence frames. **(Scaffolding: Modeling) (Assessment: Written, Individual)**

SESSION TWO

(Note: On this day you may want students to have access to a computer/tablet to type their summaries if you plan to have them work on the assessment at school.)

Elaborate:

12. Refer to the Essential Question from yesterday: How did building a Transcontinental Railroad change the society and the environment? Underline the words: change and the environment. **(Preparation: Linking to Past Learning)**
13. Group students into small groups of 3-4 students. Distribute the unlabeled The Pacific Railroad Route (1863-1869) and The Pacific Railroad Route Map Directions and Grading Scale to each student. Give each group a copy of National Parks Service map of The Transcontinental Railroad map found at: <https://www.nps.gov/hfc/carto/PDF/GOSPmap2.pdf> if they have devices at their tables, they can access the map online. Give them time to orient the National Parks Service map to the student version of

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the map. **(Grouping Option: Small Groups, Application: Promotes Engagement)**

14. Explain to students that they will be completing their own map while working with the group.

(Scaffolding: Comprehensible Input, Application: Hands On Activity and Linked to Objectives)

15. When students have completed the map work, write the question on the board: "What is technology?" Groups should then discuss the concept of technology and write a definition. Construct and write a good definition on the board.

(Application: Promotes Engagement)

16. Direct students to study their maps and list all of the physical features that the Pacific Railroad crossed. Have groups brainstorm the types of technology that would have been required to build the railroad across the physical landscape that was chosen for the Pacific Route. **(Grouping Option:**

Small Group, Integrating Processes: Speaking and Listening, Application: Linked to Objectives)

17. Distribute the Technology for Building a Railroad reading and give students time to read about the methods used to build the railroad. Instruct groups to go back and highlight which methods used matched their definition of "technology." **(Integrating Processes: Reading)**

18. Give time for groups to compare their findings in the reading with the rest of the class and support their choices with evidence from the reading and their definitions. **(Integrating Processes: Speaking and Listening, Application: Linked to Objectives and Promotes Engagement)**

SESSION THREE

19. Introduce today with the concept that not only did the Transcontinental Railroad change the environment and society in terms of the ability to travel across the nation but it also affected our economy. Now goods and services would be available in many different places. But what did it cost to have such a convenience as a transcontinental railroad?

20. Project or write on the board the amount paid for each mile of track laid in Easy Grade, High Grade, and Mountain Grade. Ask the students to work in pairs to decide whether the payments per mile were fair based on evidence from the reading and maps. Each pair should write their reasoning on a sticky note and post the note on the board under the heading Fair or Unfair.

21. Then distribute the Pacific Railroad Cost Per Mile Worksheet and allow students to use their calculators to answer the questions on the worksheet. Pairs may shift their sticky notes to a different column after their calculations are completed. **(Scaffolding: Independent Practice,**

Application: Linked to Objectives, Integrating Processes: Speaking and Listening, Assessment: Individual)

Evaluate:

22. Distribute the Writing Prompt and Composition Scoring Guide. Instruct students use the data they have collected (i.e., reading article, maps, technology lists, etc.) to write a composition that answers the EQ: How did building the Transcontinental Railroad change the society and the environment? **(Integrating Processes: Writing, Assessment: Individual)**

23. Administer the Vocabulary Test.

Assessment

Social Sciences and ELA

The Exit Ticket can be graded with the scoring guide provided. Mastery will be considered a score of 8 points or higher.

The Composition can be graded using the scoring guide provided. Mastery will be considered a score of 48 points or higher.

Geography

The The Pacific Railroad Route map work can be graded according to the points given. Mastery will be considered a score of 22 points or higher.

Mathematics

The Pacific Railroad Cost Per Mile Worksheet work can be graded according to the points given. Mastery will be considered a score of 8 points or higher.

ELA

The Vocabulary Test can be given. Mastery will be considered a score of 100%.

Extensions

- Students can create a presentation or essay about Thomas Durant and the Credit Mobilier scandal.
- Students can read the book *Dragon's Gate* by Laurence Yep and do a report to the class.
- Students can make a poster or drawing about an incident where Native Americans and White settlers interacted (positively or negatively).
- Students can list the types of projects that use civil engineering and then find a picture

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of an example (or take one in their neighborhood) to share with the class.

Sources

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