Learning Guide

Trains

We hope you enjoyed learning all about trains. Extend your learning with this print-ready Learning Guide!

What's in this Learning Guide?

Get Set to Listen
Answer TRUE or FALSE statements before and after listening to the episode.

Vocabulary

Discussion Questions
CCSS.ELA-Literacy.SL.3-8.1, SL.3-8.3

Writing Prompts
CCSS.ELA-Literacy.W.3-8.1, W.3-8.2, W.3-8.3, W.3-8.4, W.3-8.7, W.3-8.8

Trains Then & Now
CCSS.ELA-Literacy.RI.3.7, RI.4.7, RI.5.9, RH.6-8.7

Design a Train Track
NGSS: 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3, MS-ETS1-1, MS-ETS1-2, MS-ETS1-4

Make a Train Whistle
CCSS.Mathematics.3.MD; MU:Cr1.1.6–8; NGSS: 3-PS2-2

Create a Museum Exhibit
C3 Framework: Historical Thinking: Chronological Thinking & Historical Comprehension, Historical Analysis & Interpretation; D2.His.4.3-5, D2.His.4.6-8, CCSS.ELA-Literacy.RH.6-8.1, W.3-5.7, WHST.6-8.7, SL.3-8.4

Railroad Community Meeting
C3 Framework: D2.Civ.9.3-5, D2.Civ.10.3-5, D2.Civ.9.6-8, D2.Geo.4.6-8; NGSS: MS-ESS3-3; CCSS.WHST.6-8.1

Additional Resources & Book List

The Children's Hour
kids public radio

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https://www.childrenshour.org/trains/

Get Set to Listen

1. Before listening!

Read each statement and write TRUE or FALSE based on what you already know.

2. After listening!

Based on what the experts said in the episode, write TRUE or FALSE.

Before Listening	TRUE or FALSE?	After Listening
	1. Model trains all use the same kinds of tracks.	
	2. Trains helped people transport food, like fresh fruits and vegetables, and merchandise to Albuquerque.	
	3. Early railways in Germany used wooden tracks in the 1500s.	
	4. Wooden railway tracks were replaced with iron tracks in the 1700s.	
	5. Steam-powered trains used electricity to operate.	
	6. Today, most trains operate using diesel or electricity.	
	7. The Shanghai Maglev train in China can travel up to 286 miles per hour.	

What did you learn?

_____

_____

_____

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Get Set to Listen

Answer key

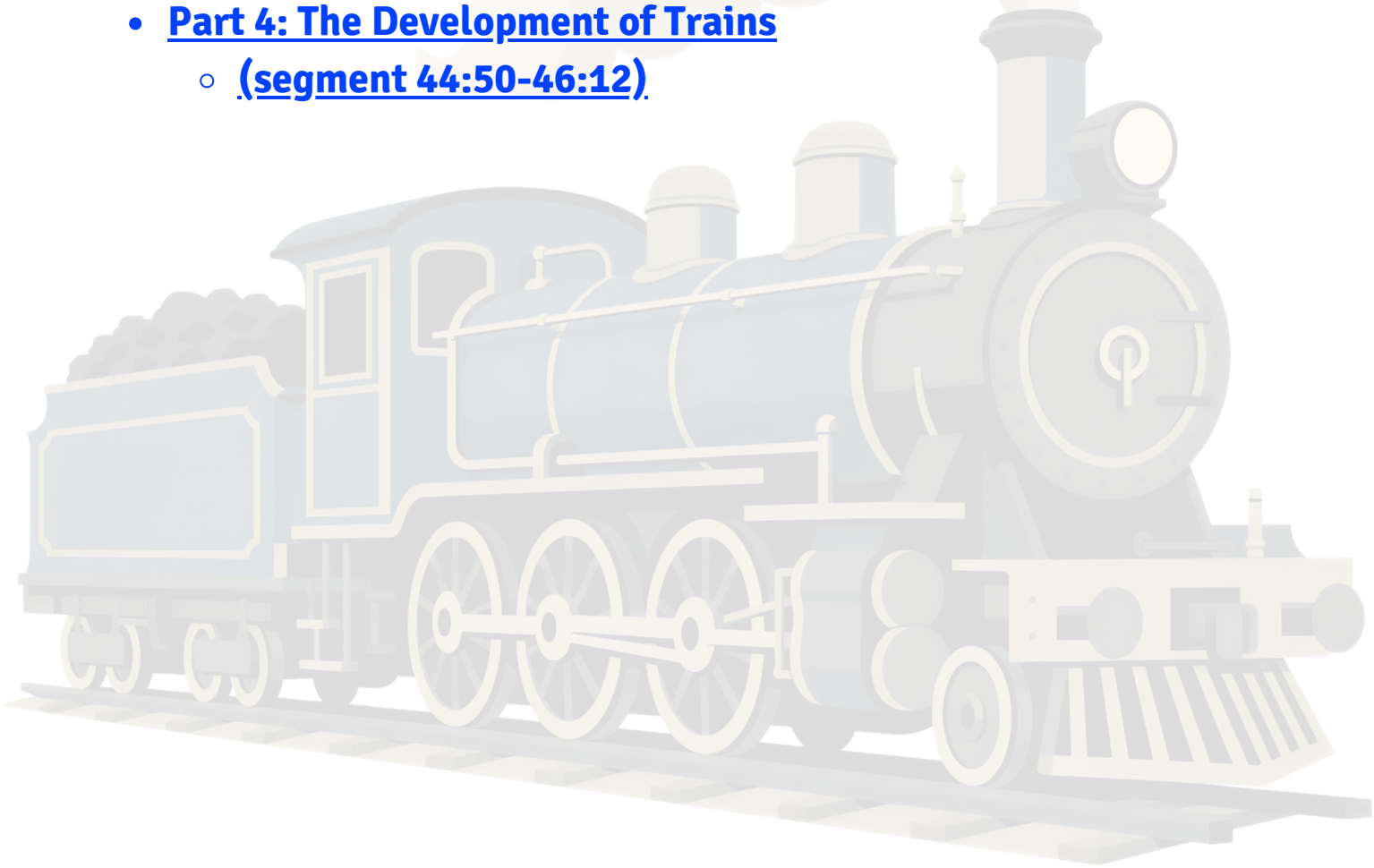
1. FALSE. Model trains generally use one of two types of tracks: standard or narrow gauge.
2. TRUE
3. TRUE
4. TRUE
5. FALSE. Steam-powered trains used steam produced by heating water, not electricity.
6. TRUE
7. TRUE

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Listen

Use these Shorts clips in the classroom or anytime you want to learn more about a specific topic we talked about in the full-length Children's Hour Trains episode!

- Part 1: The Wheels Museum: Trains, Wagons, Bicycles & More!
  - (segment 8:52-10:46) + (segment 16:38-17:52)
- Part 2: Model Trains
  - (segment 24:44-26:11)
- Part 3: The History of Trains
  - (segment 34:20-35:30)
- Part 4: The Development of Trains
  - (segment 44:50-46:12)



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Vocabulary

Listening for Words

1. Make a four-column chart and label the columns “I don’t know,” “I’ve seen or heard, but don’t know the meaning,” “I think I know the meaning,” and “I know the meaning.”
2. Write the vocabulary word in the column that describes how well you know the meaning of the word.
3. Listen to **the episode**. Note how the speaker uses the words.

Matching Words with Definitions

1. Print and cut apart the word and definition cards.
2. Spread out the word cards so you can see them all. One by one, attach a definition card to each word card.

Writing with New Words

After working with the words and definitions, write a one-page essay or story that uses at least three of the words.

steam locomotive	A train engine powered by steam produced by heating water.
freight train	A train that transports goods, materials, and products.

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Vocabulary

wagon	A wheeled vehicle used to transport people or supplies.
merchandise	Goods or products that are bought and sold.
gauge	The distance between the two rails of a railroad track.
artifact	Any object that was made, changed, or used by a human being rather than created by nature.

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Discussion Questions

1. What is a train used for?
2. How are modern trains different from steam trains?
3. What stories do you think the old trains, automobiles, and other objects can tell us?
2. The WHEELS Museum president says that visitors sometimes cry when they see objects that remind them of their childhood or work. Why do you think this happens?
3. How do you think the railroads were built? Who built them? Imagine what this was like for the people building the tracks.
4. How did the arrival of the railroad change Albuquerque from a small town into a growing city?
5. How did transportation change over time? What effects did this have on the community?
6. Are there any community members who were not mentioned in the story about transportation development in this episode?
7. Do you think all the changes brought about by the railroad were positive for everyone? Who might not have benefited?

Group Discussion Strategies

Think Pair Share:
1. Individually, student writes down their answer to a question.
2. Students pair up and tell each other their answers.
3. Teacher calls for volunteers to share with the whole class their answer (and/or their partner's answer). Teacher notes key words/phrases on board.

Round Robin:
1. Teacher poses one question (written on top of a large page) to students, who are assembled into small groups of 3 or 4.
2. Students take turns brainstorming the answers. The recorder of the group writes down all answers.
3. The leader reads the group's ideas to the entire class. Teacher moderates.

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Writing Prompts

Narrative Prompts

1. Imagine you are a steam locomotive traveling through New Mexico in the 1880s. Describe the people, places, landscapes, and communities you encounter.

2. Write a story from the perspectives of two children: one whose family celebrates the railroad's arrival because it creates new opportunities, and another whose Indigenous community sees the railroad as a threat to its land and way of life.

Informational/Expository Prompts

1. Explain how railroads transformed transportation, trade, business, food distribution, and the growth of cities such as Albuquerque.

2. Research how railroad construction affected Indigenous lands, communities, economies, cultures, and sovereignty in the American West.

3. Who built the railroads in the United States? What roles did Chinese, Mexican, Irish, Black, and Indigenous workers play?

4. Explain the differences between steam, diesel, electric, and magnetic levitation (maglev) trains.

5. Compare the environmental effects of trains, cars, airplanes, and trucks. Which forms of transportation are more sustainable, and why?

6. How did railroad expansion affect forests, water resources, wildlife, and surrounding communities?

Opinion/Persuasive Prompts

1. The museum president explains that trains helped Albuquerque become a successful city. Do you agree that railroads represented progress for everyone? Why or why not? Consider different communities' experiences.

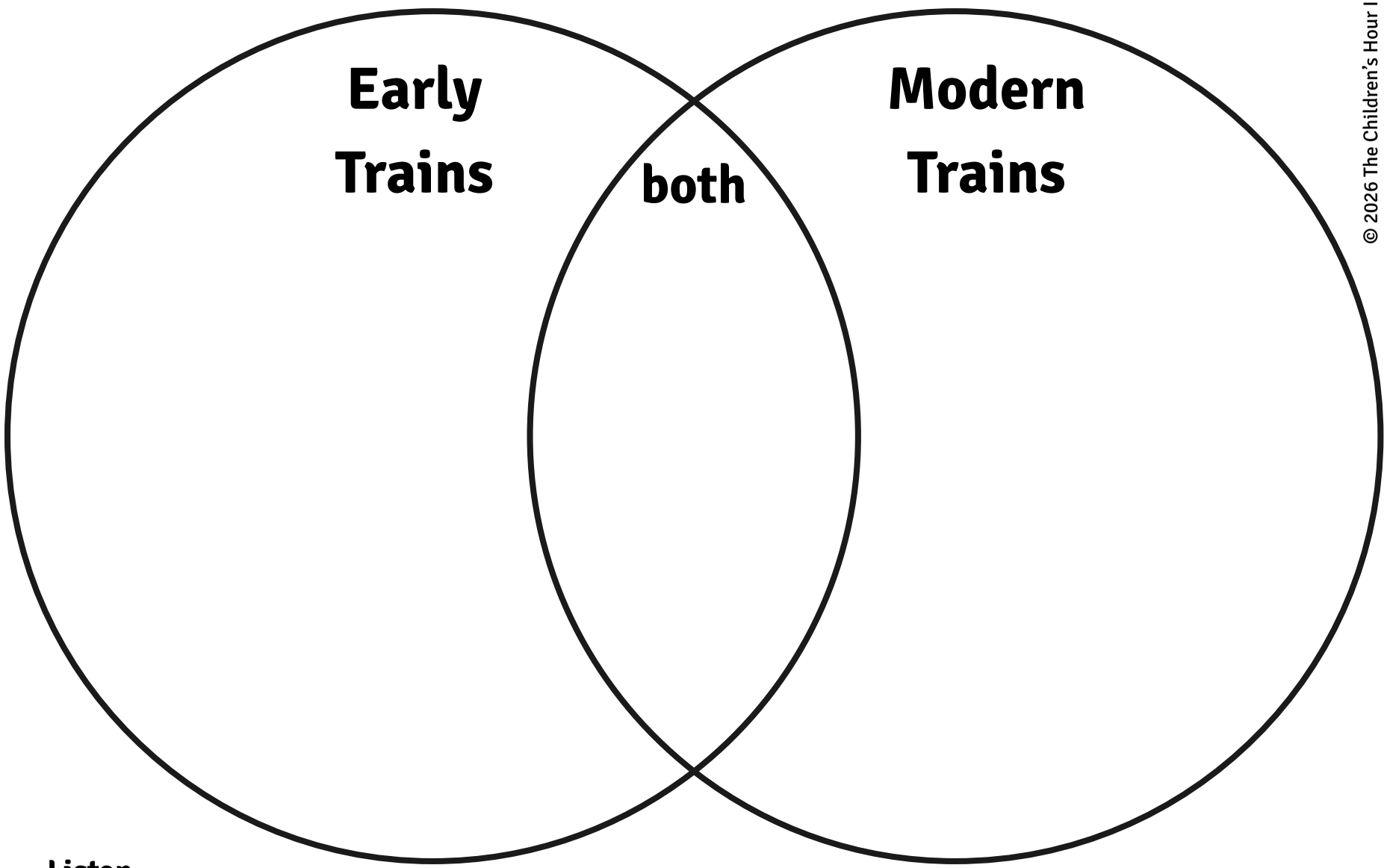
2. What stories might be missing if a museum focuses primarily on machines instead of people? If you could add three exhibits to the WHEELS Museum to tell a more complete history of transportation in this area, what would they be?

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Trains Then & Now

Name_____

Look at the pictures of early trains and modern trains on the following page. Then compare the two. What has changed? What has stayed the same?.



Listen

- Part 1: The Wheels Museum: Trains, Wagons, Bicycles & More! (segment 8:52-10:46) + (segment 16:38-17:52)
- Part 4: The Development of Trains (segment 44:50-46:12)

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Trains Then & Now

Early Steam-powered Train



Modern Maglev Train



Extend

Compare other forms of transportation, such as horse-drawn wagons vs. cars or old bicycles vs. modern bicycles.

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Design a Train Track

Listen

- Part 2: Model Trains (segment 24:44-26:11)

Research

Use the **“Additional Resources”** in this Learning Guide to learn more about the impacts of railroads.

Your Mission

You are a transportation engineer! Your job is to design a train system that connects people and communities, keeps the Earth healthy, respects Indigenous lands and people, and makes sure everyone can ride.

Materials

- Blocks
- Cardboard tubes
- Toy trains
- Tape
- Cardboard and other building materials

The Challenge

Build a train track that:

- Goes over a bridge
- Travels through a tunnel
- Goes around a mountain
- Allows everyone to access and use the transportation system, even if they use a wheelchair or need extra help
- Respects the environment by making less pollution and keeping plants and animals safe
- Respects Indigenous community lands and the choices of the people who live there

Design

- Draw your train track ideas before you start building.
- Build on your own or work together with a team.
- Make sure your train is good for the Earth, easy for everyone to use, and fair for all.
- Test your train to see if it can make it all the way around the track.
- If something doesn't work, try again and find ways to make it better!

Reflect & Discuss

- *How can our train help the environment?*
- *Can everyone use your train?*

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Make a Train Whistle

Make a classic multi-tone PVC pipe train whistle. This project requires basic adult cutting and gluing, while kids can help measure lines and test the notes.
*Instructions are based on **this video with Toymaker Paul Schuller**.*

Materials & Tools

- A 1/2-inch PVC pipe (about 6 or 12 inches long)
- One 1/2-inch connector
- Two 1/2-inch PVC end caps
- One 1/2-inch long piece of a 1/2-inch wooden dowel
- PVC cement or strong glue
- A handsaw or PVC pipe cutter
- A sharp utility knife and a small flat file
- Sandpaper
- Drill (1/2 in. bit)

Directions

- **Cut the pipes to length.** Cut two separate pieces of PVC pipe to different lengths to create a multi-tone chord.
- **Cut the whistle notches.** Draw a line **1 inch** down from the top open end of each pipe. Use a saw to cut straight down into the pipe halfway through. Then, use a knife or file to cut a 45-degree angle down toward that first cut, creating a sharp lip where the air will split.
- **Make and insert the plugs.** Cut four **3/4-inch long pieces** from your wooden dowel. File a flat edge along one side of each piece so air can slide past it. Slide one plug into the top of each pipe just down to the notch. The flat edge must face the angled notch lip.
- **Assemble the whistle body.** Push a PVC end cap onto the bottom open end of each of the four pipes.
- **Connect to the cross fitting.** Insert the top plug ends of all four pipes into the four openings of the PVC cross fitting. Secure all the joints tightly with PVC cement.
- **Blow into the center.** Blow directly into the small gap in the center of the cross fitting. The air will split across all four pipes at once and create a rich train chord.

Play!

- Experiment with high and low sounds.
- Create a train rhythm together: "Choo, choo, clickety-clack!"

For a simpler, kazoo-style train whistle craft project kids can do themselves, check out **this design**!

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Create a Museum Exhibit

Listen

- Part 1: The Wheels Museum: Trains, Wagons, Bicycles & More!
  - (segment 8:52-10:46) + (segment 16:38-17:52)
- Part 3: The History and Impact of Trains
  - (segment 34:20-35:30)

Research

Use the **"Additional Resources"** in this Learning Guide to learn more about the other impacts of railroads.

Your Mission

You have been invited to redesign an exhibit at the WHEELS Museum. What story would you add that visitors might not currently hear? Describe three objects you would include and explain whose experiences they represent. Write the exhibit description as if visitors are reading it in the museum.

Your museum exhibit must include:

- At least three community members' perspectives (eg., Indigenous people, railroad laborers, settlers, business leaders, or even the more abstract "environment" or "wildlife")
- Historical evidence (i.e., the artifact(s), such as photos, objects, or written accounts)
- Captions that include an explanation of whose stories are represented

Questions to Consider

- *Whose objects are currently represented?*
- *Who is telling the stories?*
- *Are workers represented as much as business owners and inventors?*
- *Where are Indigenous perspectives?*
- *What stories about women, immigrants, and communities of color might be missing?*
- *What artifacts would help tell those stories?*

Share

Do a gallery walk or present your new exhibit to your class or community.

Museums are not neutral spaces. The objects selected, the stories told, and the voices included shape how we understand history.

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Railroad Community Meeting

The Challenge: A New Railroad Proposal

Your community is considering a new railroad that could create jobs and improve transportation but also affect neighborhoods, Indigenous sacred lands, wildlife, and businesses. Your job is to recommend a route and decide who should have a voice in the decision.

Explore the Proposal

Look at the fictional **"Proposed Routes Map"** showing possible railroad routes. Think about how each route might affect people, animals, land, and businesses.

Choose a Role

Work in groups and represent one of the following:

- Indigenous community members
- Railroad workers
- Local business owners
- Environmental advocates
- Recently arrived community members

Hold a Community Meeting

Share your group's ideas, concerns, and questions.

- *How might the railroad affect Indigenous lands and communities?*
- *Could it harm plants, animals, or the environment?*
- *How could it help or hurt local businesses and neighborhoods?*
- *Will everyone have access to the railroad?*
- *Who should have a say in deciding where the tracks go?*

Create a Community Proposal

Work together to design a railroad route that considers everyone's needs, protects the environment, respects Indigenous sovereignty, and provides fair access to transportation.

Reflect

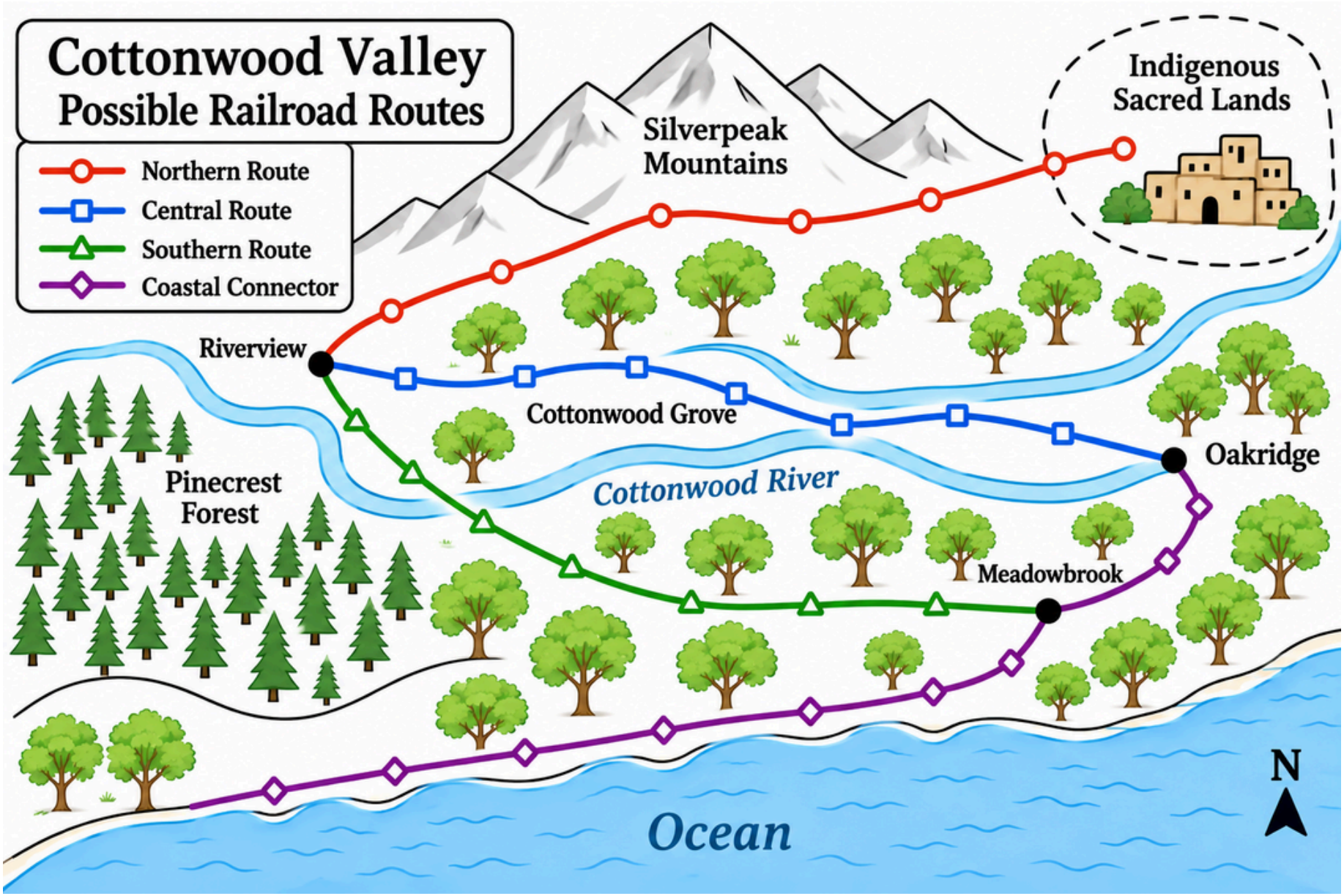
- *Who benefits from the new railroad?*
- *Who might be affected by its construction?*
- *Should a railroad be built if some communities do not agree?*
- *How can we make transportation decisions fair for everyone?*

Transportation is about more than moving people and goods. It's also about whose land is used, whose voices are heard, who benefits, and how we make decisions that respect everyone.

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Proposed Routes Map

*Examine this fictional map and consider how each route might affect people, animals, land, and business. Look at the **"Impacts to Consider"** on the following page to help you decide which route is best for all community members.*



Railroad Community Meeting

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Railroad Community Meeting

Key Impacts to Consider

- **People:** More travel and jobs, but potential displacement.
- **Animals:** Habitat loss, noise, and increased disturbance.
- **Land:** Fragmentation, erosion, and changes to traditional land use.
- **Businesses:** Increased trade, but higher costs for some community members.
- **Sacred lands:** Railroad construction could disturb sacred mountains, burial grounds, and ceremonial locations.
- **Cultural traditions:** Construction could affect traditional hunting, fishing, gathering, and travel areas.
- **Tribal sovereignty:** Indigenous communities should have a meaningful role in decisions affecting their lands.
- **Environmental impacts:** Noise, pollution, and habitat destruction could affect plants, animals, and culturally important natural resources.
- **Consultation:** Tribal nations should be consulted early, and sacred sites should be protected.
- **Balance** economic growth with cultural and environmental stewardship.

Impacts of Proposed Routes	
Northern Route • Disturbs alpine wildlife habitat • Risks damage and unwanted traffic near Indigenous sacred lands • Higher construction costs	**Central Route** • Brings jobs and trade • Less impact on Indigenous sacred lands • May increase development
Southern Route • Protects mountain areas • Could impact river habitats • May affect fishing grounds	**Coastal Connector** • Boosts trade and tourism • May impact coastal habitats • Could affect Indigenous shellfish gathering areas

Reflect

Should a railroad route be changed if it would damage Indigenous sacred lands, even if the railroad could create jobs and help businesses? Why?

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Additional Resources

How the Early Railroads Changed New Mexico
Lesson plans from the National Park Service for grades 3-8, including handouts and reading materials. Contact PETR_Interpretation@nps.gov to schedule an educational program in your classroom.

NM PBS: The Transcontinental Railroad
An introductory article and collection of primary and secondary resources.

NM PBS: The Impact of the Transcontinental Railroad

NM PBS: Workers of the Central and Union Pacific Railroad
The railroads employed primarily Irish and Chinese immigrants for this gruelling job.

NM PBS: Scouting the Route
The makers of the Transcontinental Railroad traveled back and forth across the original route of the railroad, looking for locations, stories, and images. Explore the path of the original railroad through six Western states.

NM PBS: Life Before the Transcontinental Railroad: American Experience Interview
In this interview, Donald Fixico, Director of the Center for Indigenous Nations Studies at the University of Kansas, talks about the West before white settlement, the impact of the railroad on Native American life, and the near-extinction of the American buffalo.

NM PBS: Building the Transcontinental Railroad Image Gallery
The transcontinental railroad affected many lives, from settlers and workers to Native Americans. Explore photos of those who supported, built, or opposed it.

NM PBS: Transcontinental Railroad Timeline
Travel back in time and learn about key events surrounding the Transcontinental Railroad, from 1769 to 1889.

A Brief History of the American Southwest for Kids: Episode 6: Nationalization
Listen to The Children's Hours Episode 6: Nationalization to learn more about the historical context of the era of railroad development. Learning Guide available!

Traversing El Camino Real de Tierra Adentro
This resource uses interactive map overlays to highlight historical Indigenous travel routes and modern roads and railways to tell the history of transportation in NM.

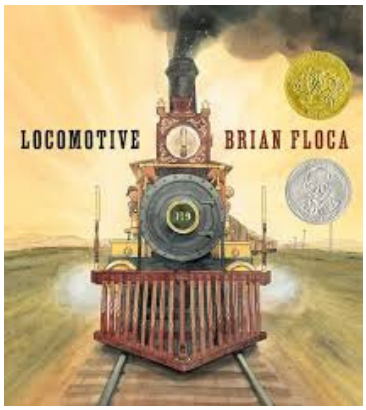
Videos

How the Transcontinental Railroad Changed the US Forever
Learn how the transcontinental railroad connected East and West but also exploited Chinese workers and displaced Native Americans in this short BBC video.

The History of Railroads for Kids
A Learn Brightly video for younger kids.

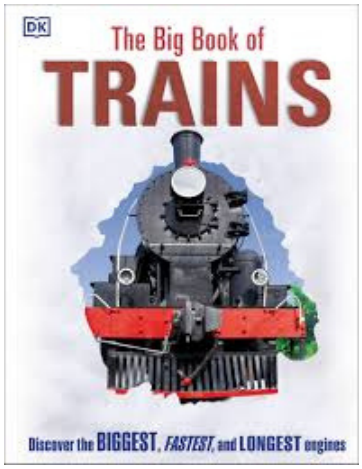
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Book List



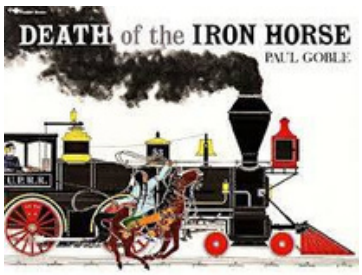
Locomotive
by Brian Floca

A Caldecott Medal-winning picture book that follows the early transcontinental railroad journey across the United States. It's a poetic, detailed look at riding the transcontinental railroad and how steam engines work.
ages 2-8



The Big Book of Trains
by DK

Covers train history from the 1804 locomotive to modern bullet trains, including steam vs. diesel mechanics and train types.
ages 3-9



Death of the Iron Horse
by Paul Goble

Explores the arrival of the railroad from an Indigenous perspective and the disruption it brought to Native lifeways. Based on a true event from 1867, Cheyenne warriors derail a steam locomotive for the first and only time in history, fighting to protect their way of life.
ages 5-9



Train: The Definitive Visual History
by DK

A comprehensive reference guide for older readers covering railroad evolution and locomotives in depth.
ages 10+

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