Student Workbook

California Education and the Environment Initiative

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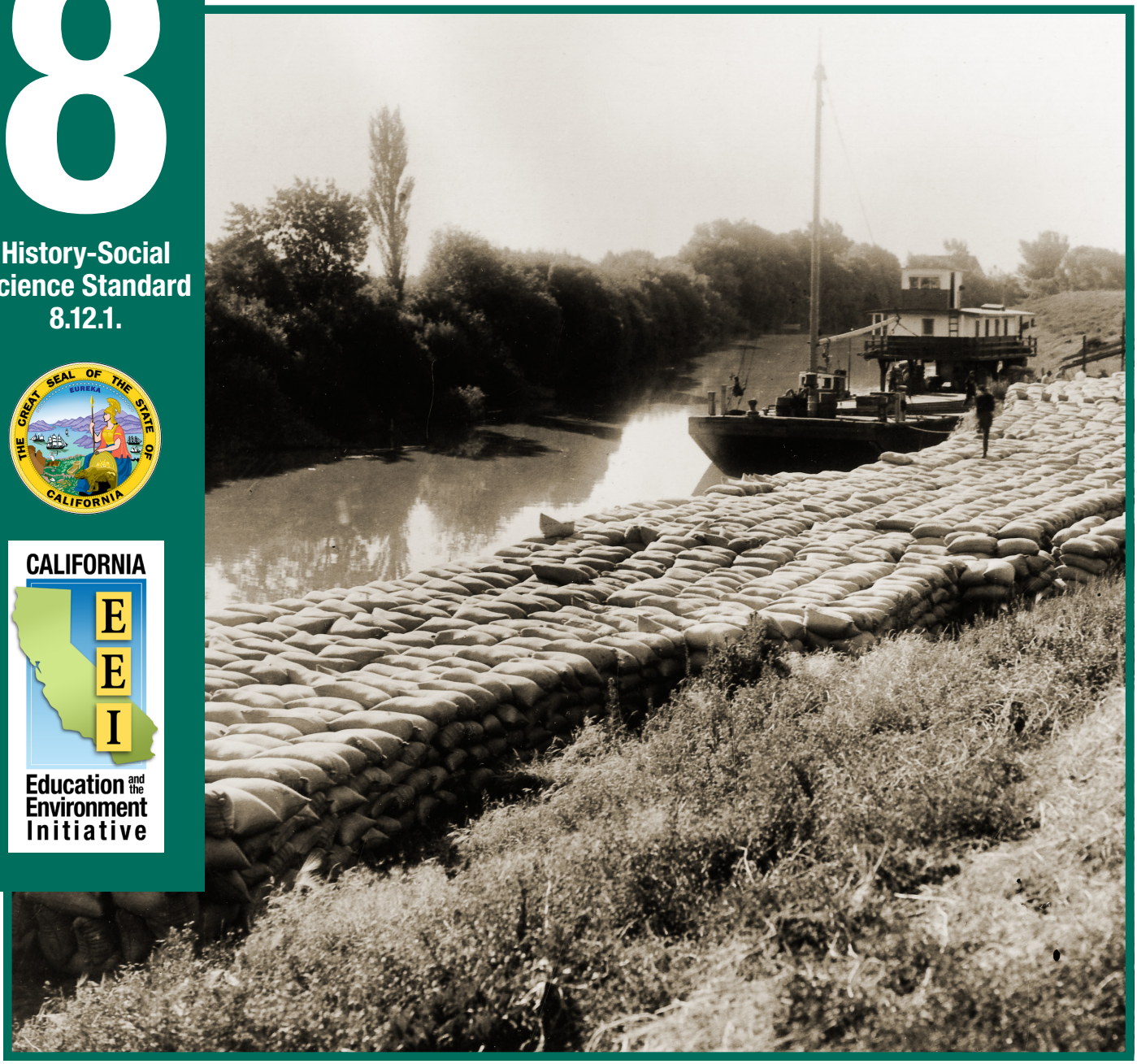
History-Social Science Standard 8.12.1.



Agricultural and Industrial Development in the United States (1877–1914)

California Education and the Environment Initiative

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The Education and the Environment Curriculum is a cooperative endeavor of the following entities:

California Environmental Protection Agency
California Natural Resources Agency
Office of the Secretary of Education
California State Board of Education
California Department of Education
California Integrated Waste Management Board

Key Leadership for the Education and Environment Initiative:

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Key Partners:

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Acidification: A chemical process through which certain chemicals, including pollutants, increase the acidity of water.

Agriculture: The practice of growing domesticated plants and animals for food, fiber, or other use by humans.

Assembly: The process of putting together different parts to form a complete unit.

Byproduct: Something, such as waste materials, produced when something else is made or consumed.

Climate: The prevailing, average weather conditions of a particular area over time.

Commerce: The activity of buying and selling, especially on a large scale.

Cost-benefit analysis: A method for evaluating an option or decision by weighing benefits against costs.

Deforestation: Clearing an area of trees.

Depot: A railroad or bus station, or a place to store supplies.

Disassembly: Breaking down a whole unit into its parts.

Distribution: Delivery of goods and services to retailers or consumers in a region or area.

Exposition: A large group of public exhibits or a fair.

Extraction: The removal of a natural resource or the separation of a metal from ore.

Habitat: The place where an organism lives and meets its needs.

Horticulture: The processes used to grow plants including fruits, vegetables, and flowers.

Industry: A business or group of businesses that manufacture or produce goods and services for sale.

Land use: The ways in which land is used for different types of human activities, such as agriculture, industry, housing, or habitat protection.

Livestock: Domesticated animals, such as cattle, horses, sheep, and pigs, that are raised for use or sale.

Manufacture: The act of processing goods or creating products often using machinery.

Market: (noun) A public place where people gather to buy and sell goods.

Mass production: The manufacture of goods through methods that make it efficient to produce large quantities.

Mechanization: Manufacturing goods with machines.

Natural resources: Materials, such as soil, water, minerals, and energy, that people use from nature and natural systems.

Pollution: The contamination of the environment (including air, water, and soil) with chemicals or other damaging materials.

Population density: The number of individuals of a certain species per unit of land, such as the number of people per square mile or square kilometer.

Slag: A byproduct produced during the blast furnace smelting process and other steelmaking operations.

Surplus: The quantity of goods or services above the quantity needed to meet one's own needs.

Technology: The use of engineering and science to resolve a problem, make a better product, or improve a process.

Toxic: Poisonous or deadly.

Name: _____

Instructions: Answer the questions below, using the information from ***California Connections: California at the 1893 World's Fair***. Use at least two vocabulary words from **Key Unit Vocabulary** in each answer. (5 points each)

1. Describe what California exhibited at the 1893 World's Fair.

2. How did California's environment contribute to its economic development?

3. How did new technologies contribute to California's economic development over time?

4. How will the new technologies presented at the World's Fair in 1893 affect the economy and landscape of California?

Objective of the Game: The more miles goods have to travel, the more expensive it is to ship something. To keep costs down, move the goods on the game board the *least* number of miles so that each location has:

- Meat
- Fruits and vegetables
- Wood (to build shelters)
- Manufactured goods
- Coal (for energy)

To play:

1. Set up the board so that all six pieces representing each good are on their indicated place on the game board. (For example, all six fruit cards are in California.)

2. Using the **Commerce Game Distance Chart** provided by your teacher to calculate mileage, move as many pieces as you wish from **one** location to **one** other location. No matter how many pieces are moved in one turn (one or twenty), the number of miles you record is the same.

3. After each move, record your move on the **Commerce Game Recording Chart** on the next page. Continue making moves until you have at least one fruit/vegetable piece, one meat piece, one wood piece, one coal piece, and one piece of manufactured goods (clothing) on each location on the board.

4. Try different strategies, using a different **Commerce Game Recording Chart** for each attempt. Try to reduce the total number of miles you move the goods in order to reach your objective.

Hint: If you get stuck, try seeing what result you get when you move each of the necessary pieces ***one at a time*** *from their starting place to each of the other places. Start by moving one fruit/vegetable piece from California to Minnesota, then one to Chicago, Texas, West Virginia, and New York. Once you get a total mileage, create a new strategy for moving pieces that you think will reduce the total number of miles.*

Commerce Game Recording Chart

Lesson 2

Players' Names:_____

Instructions: As you play the **Commerce Game**, have one team member record each move your team makes in the chart below. If playing the game more than once, have a different team member use their chart to record the team's moves.

Move	Type of good(s)	Quantity	From	To	Miles
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
				TOTAL MILES:	

Name: _____

Instructions: Three factors affecting development are listed below. Use complete sentences to explain how the factors affected the economies that developed in California and in Chicago in the 1800s. (3 points each)

AGRICULTURE

a. Climate:

b. Natural Resources:

c. Location:

Instructions: Read and respond to the questions below. (3 points each)

1. How are population and economic development connected?

Name: _____

2. How did Chicago play a major role in the nation's economic development?

3. Lacking an ideal climate, why do you think Chicago developed so rapidly?

Name: _____

You have been invited to the 1893 World's Fair to learn about the many new inventions that are bringing about the Second Industrial Revolution.

Part 1

Instructions: As you visit each exhibit, make notes on each invention in the chart below:

New Technologies	What does it do?	How is it changing the economy? What industries are affected?
Bessemer Process		
McCormick Reaper		
Balloon Frame		
Barbed Wire		
Disassembly Line		
Refrigerated Car		

Name: _____

Part 2

Instructions: Write a paragraph summarizing what you learned today about the connection between technology and economic development. Read the thesis statement below and use three examples from today's lesson to support it. Remember to end your paragraph with a concluding statement. (10 points)

Thesis Statement:
After looking at the different technologies of the 19th century, it is clear that scientific and technological knowledge led to a Second Industrial Revolution in agriculture, transportation, and industry.

Name: _____

Instructions: Discuss the following with your group and write your ideas on the chart below.

Name of Technology	What was work like before the technology was invented?	What was work like after the technology was invented and used?
Balloon Frame		
Disassembly Line		
Barbed Wire		
McCormick Reaper		

Name: _____

Instructions: In the chart below, describe how each of the "new" technologies of the 19th century affected the environment:

Effects	Railroad	Refrigerated Car/ Disassembly Line	Balloon Frame	Barbed Wire
Resources Used (extraction)				
Effects on Ecosystems				

Name: _____

Effects	Railroad	Refrigerated Car/ Disassembly Line	Balloon Frames	Barbed Wire
Byproducts				

Name: _____

Instructions: As you visit each station with your group, fill in the chart below with information about each development. (Each row is worth 5 points.)

Development	What was it?	Category	Effect on the Economy
Homestead Act of 1862			
Pacific Railway Act of 1862			
Internal Combustion Engine			
Deforestation of the American West			
Byproducts Industry			

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