

DISCOVER AMERICA

Course 19 - Teacher Guide



Morse's Telegraph and Edison's Electric Light

Table of **Contents**

Themes & Values
Learning Objectives
Key Terms
Introduction
Lesson
Inventor Trading Cards
Thumbs Up/Thumbs Down
Resources
Notes

Fourth Grade Teacher Guide



Key Themes

- Creative Liberty
- Innovation
- Experimentation to Improve Quality of Life
- Perseverance
- Resourcefulness

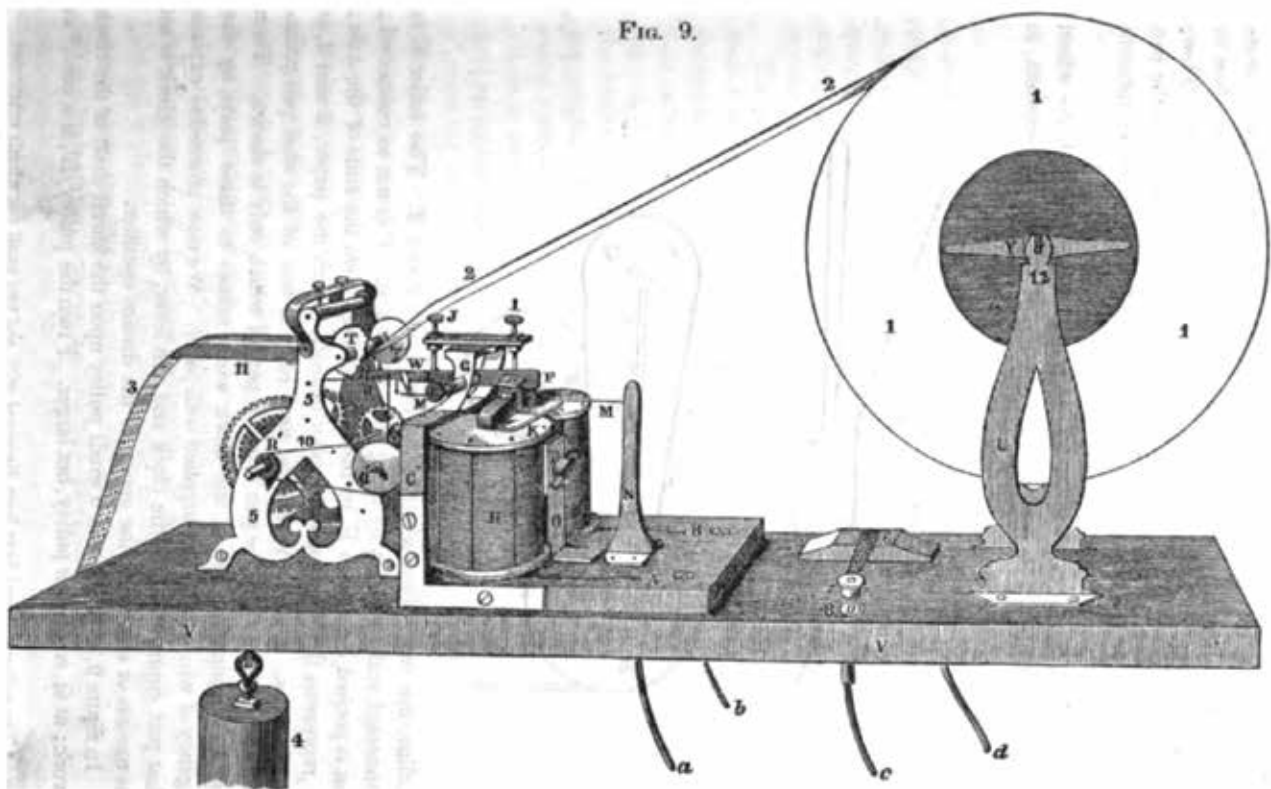
Core Values

- Community
- Life
- Faith
- Liberty

Learning Objectives

Students will be able to:

- Define resourcefulness.
- Define perseverance.
- Identify the importance and impact of communication.
- Evaluate the importance of enhancing or upgrading existing items.
- List two scientific advancements that influenced life over the centuries.



Morse & Edison - Fourth Grade

Key Terms

- 01 **entrepreneur:** someone who decides to create or run a business.
- 02 **filament:** the part of a lightbulb that lights up when an electrical current heats it.
- 03 **Morse code:** a communication language that uses a system of dots and dashes to represent numbers and letters.
- 04 **patent:** an exclusive right given to an inventor to prevent others from making or selling their invention for a certain period of time.
- 05 **telegraph:** a device that uses wire to transmit messages over long distances.
- 06 **transmit:** to send.
- 07 **vibration:** the rapid back and forth movement of an object.
- 08 **incandescent:** something that lights up when it is heated.
- 09 **resourcefulness:** the ability to meet challenges in a variety of ways.

Morse & Edison - Fourth Grade

Introduction

TELL Students

Today, we're going to learn about an amazing inventor named Thomas Edison. Thomas Edison was an innovative man who did something incredible that changed the way we use light in our homes. [Show Stock Image Thomas Edison]. You know those bright light bulbs you have at home? Well, a long time ago, they weren't as good as the ones we have today. They didn't shine for very long, and they were quite expensive. Thomas Edison wanted to make a better light bulb, one that could shine for a long time and one that was affordable for everyone. So, he and his team worked together to find the right material to use as a filament inside the light bulb. It was called a "carbonized bamboo filament," which is a fancy way of saying a special kind of string that glows when electricity passes through it. When Edison and his team used this new filament in their light bulbs, it was a huge success! The light bulbs stayed lit for a long time, and people had brighter and safer light in their homes without using smelly gas lamps or candles. Because of Thomas Edison's ability to persevere, we have safe and efficient light bulbs today!

ASK Students

What do you think it means to see past a problem?

What does it mean to persevere?

How did Thomas Edison improve life for us today?

WATCH

Star Spangled Adventures Cartoon

Ep. 19: Thomas Edison



Morse & Edison - Fourth Grade

Lesson

ASK Students

How does the light bulb work? How did teamwork help Thomas Edison?

TELL Students

Though he received little formal education, Edison became one of history's most well-known and successful inventors, patenting a record-setting 1,093 inventions throughout his life. (This is approximately equivalent to one patent every 11 days.) One day in 1888, he wrote down 112 ideas!

ASK Students

What is a patent? Why do you think Thomas Edison wrote down his ideas?

TELL Students

Thomas Edison was born in 1847 and had a sense of curiosity from a young age. When he was 13, he began selling snacks to railroad passengers, selling copies of the Detroit Free Press, and printing his newspaper while on the moving train! His paper grew and sold 400 copies per week. As a young boy, Edison was both an inventor and an entrepreneur. An entrepreneur is someone who decides to create or run a business. But what set him apart was his approach to invention. He didn't try to find a new problem to solve. Instead, he looked at what solutions had already been created and found ways to improve them. Edison referred to this as 'perfecting' rather than inventing. He took things that were already made and worked to make them better or less expensive.

ASK Students

What is "perfecting?" How was Thomas Edison resourceful?

WATCH

Learn More with Liberty Video: Finding Resources for Inventing



Thomas Edison

Morse & Edison - Fourth Grade

Lesson

ASK Students

What does incandescent mean? Who are the Muckers? How was Thomas Edison resourceful?

TELL Students

Is it resourceful to drive to your friend's home to ask them a question? Or, is it more resourceful to call and ask them a question? It is more resourceful and much faster to call your friend. It is essential to understand that communication today is much more convenient than it was in the past.

Communicating with someone far away used to be difficult and time-consuming. Before telephones were available, a device called a telegraph was used to communicate over long distances. A telegraph is an electrical device that uses wire to send messages. It prints out a message that can be read a long distance away. This was a better way to communicate than sending letters or traveling a long distance to deliver a message. Let's learn about a man who took the telegraph and improved it! His name is Samuel Morse. Morse didn't invent the telegraph. But, he improved older models so that people could use them efficiently.

ASK Students

How does a telegraph work? Did Samuel Morse invent the telegraph?

TELL Students

A telegraph is an electrical device that is used to send messages over long distances. It uses wire that carries electrical signals. It prints out a message that can be read a long distance away. This was a better way to communicate than sending letters or traveling a long distance to deliver a message.

Please read the following passage to learn more about Samuel Morse.

Samuel Morse was born in Charlestown, Massachusetts, on April 27, 1791. He went to Yale University and began his professional career not as an inventor but as a painter. In 1832, Morse became interested in telegraphy after overhearing a conversation on a ship. At the time, telegraph machines used multiple wires (one used 26, and another model used 5).

Morse & Edison - Fourth Grade

Lesson

Morse thought he could get the number of wires down to just one. He used a key, a battery, a single wire, and a receiver to develop Morse code to transmit messages using numbers and letters as a "code" made up of dots and dashes. A dot was quick and short, while a dash was long. Eventually, operators could listen to the clicks and beeps and translate the coded messages. Printing marks on paper was no longer necessary. On May 24, 1844, the first official telegraph was sent by Samuel Morse. The message was, "What hath God wrought!" This is a reference to Numbers 23:23 in the Bible.

ASK Students

What did Samuel Morse develop? What is Morse code? Why is communication important in our society?

Morse & Edison – Fourth Grade

Inventor Trading Cards

Objective: To familiarize fourth graders with the lives and inventions of Samuel Morse and Thomas Edison by creating trading cards with facts and illustrations.

Materials Needed:

1. Pictures of Samuel Morse and Thomas Edison.
2. Index cards or small pieces of cardstock paper.
3. Markers, colored pencils, or crayons.
4. Information sheets (facts about Morse and Edison).
5. Glue or tape.
6. Scissors.

Introduction:

- Show pictures of Samuel Morse and Thomas Edison and briefly introduce them as famous inventors.
- Explain that students will be creating trading cards to learn more about these inventors and their inventions.

Research:

- Provide students with encyclopedias and online resources containing facts about Samuel Morse and Thomas Edison. Include details about their inventions, achievements, and their impact on society.
- Encourage students to read the information carefully and take notes on key facts.

Trading Card Creation:

- Give each student an index card or a small piece of cardstock paper.
- Instruct them to create a trading card for either Samuel Morse or Thomas Edison.
- On one side, they should draw a picture of the inventor or one of their inventions.
- On the other side of the card, they should write down important facts about the inventor

and their contributions.

- Encourage creativity in designing the cards.

Trading Card Swap:

- Have students pair up and trade their cards with a classmate who researched the other inventor.
- Ask each pair to discuss and compare the information on the cards they received.

Presentation:

- Invite students to share interesting facts or discoveries they made about Morse and Edison during the trading card activity.
- Discuss the different inventions and their significance in history.

Reflection and Display:

- Have students reflect on what they learned and what they found most fascinating about these inventors.
- Display the trading cards on a bulletin board or in the classroom to showcase student work.

Morse & Edison – Fourth Grade

Samuel Morse Review

Read the following statements to the class. If the students think the statements are true, they will give a thumbs up. If the students think the information is false, they will give a thumbs down.

- a. Samuel Morse invented the telegraph. **(false)**
- b. A telegraph is a device that sends messages through short and long sounds represented by dots and dashes. **(true)**
- c. A system of dots and dashes that correlate to letters and numbers is known as Morse code. **(true)**
- d. Thomas Edison went to school for many years and received a great deal of formal education. **(false)**
- e. Thomas Edison was a successful inventor who filed 1,093 patents in his lifetime. **(true)**
- f. In one day, Thomas Edison documented 112 ideas. **(true)**
- g. Menlo Park was the first research facility built by Edison in 1875. **(true)**
- h. Thomas Edison invented the light bulb. **(false)**
- i. The existing light bulb was not burning long enough, so Thomas Edison perfected it. **(true)**

Morse & Edison - Fourth Grade

Resource List

National Council Standards for Social Studies

"The study of how people organize for the production, distribution, and consumption of goods and services." (NCSS, 1921)

"The study of people, places, and environments." (NCSS, 1921)

"The study of the past and its legacy." (NCSS, 1921)

"The study of relationships among science, technology, and society." (NCSS, 1921)

"The study of individual development and identity will help students to describe factors important to the development of personal identity." (NCSS, 1921)

https://www.pbs.org/wgbh/theymadeamerica/whomade/morse_hi.html

<https://lemelson.mit.edu/resources/samuel-morse>

<https://www.nga.gov/collection/artist-info.1737.html>

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<https://www.nga.gov/collection/artist-info.1737.html>

<https://history.house.gov/Exhibitions-and-Publications/Electronic-Technology/Telegraph/>

<https://lemelson.mit.edu/resources/samuel-morse>

<https://www.history.com/topics/inventions/telegraph>

<https://www.history.com/this-day-in-history/what-hath-god-wrought>

<https://lemelson.mit.edu/resources/samuel-morse>

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<https://www.history.com/topics/inventions/telegraph>

<https://www.newyorker.com/magazine/2019/10/28/the-real-nature-of-thomas-edisons-genius>

<https://www.energy.gov/articles/history-light-bulb>

<https://www.newyorker.com/magazine/2019/10/28/the-real-nature-of-thomas-edisons-genius>

<https://www.energy.gov/articles/history-light-bulb>

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