

DISCOVER AMERICA

Course 19 - Teacher Guide



Morse's Telegraph and Edison's Electric Light

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Key Themes

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

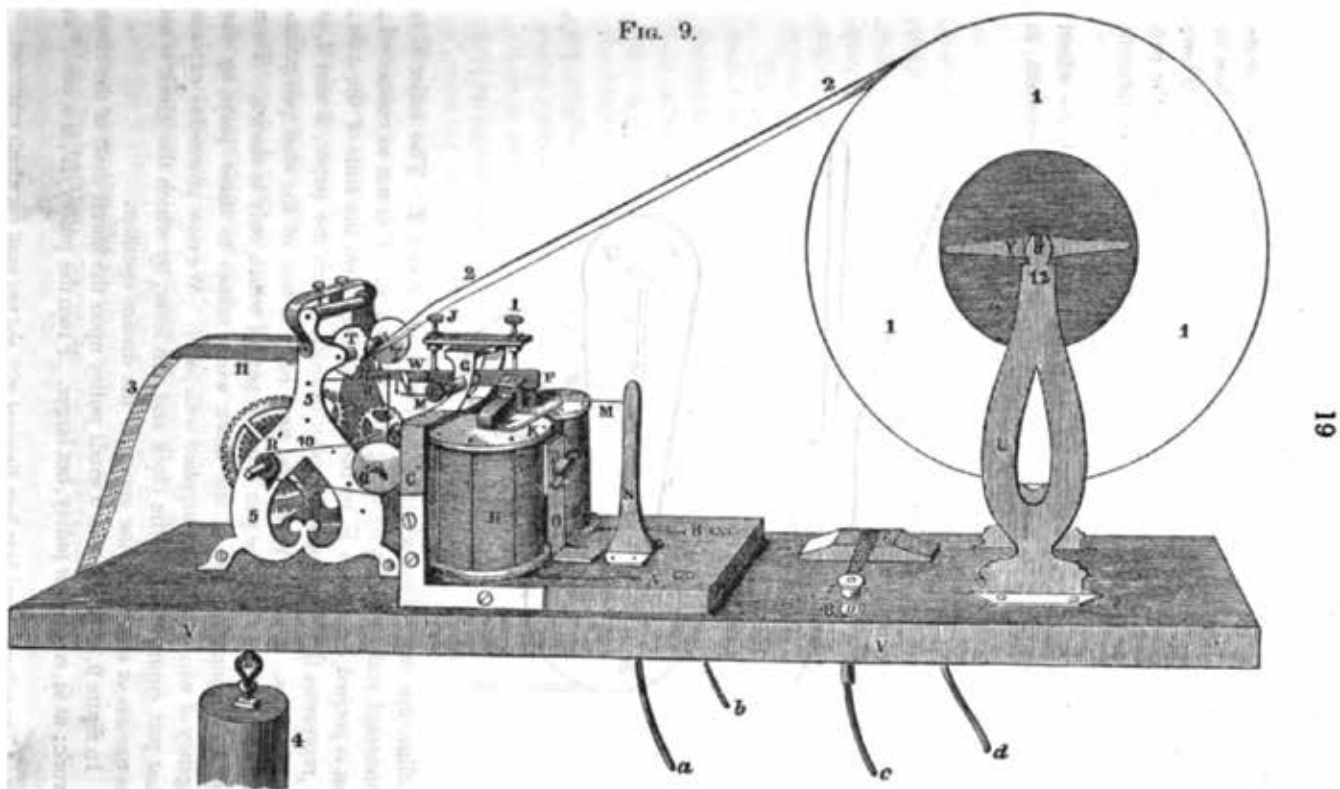
Core Values

- 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.
- Examine similarities and differences between Samuel Morse and Thomas Edison.



Morse & Edison - Fifth 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.

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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. 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 know about Thomas Edison?

What influence has the light bulb had on society?

WATCH

Star Spangled Adventures Cartoon

Ep. 19: Thomas Edison



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Lesson

ASK Students

How did Thomas Edison and the Muckers improve the light bulb? 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? What are some inventions that you believe Thomas Edison patented?

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.

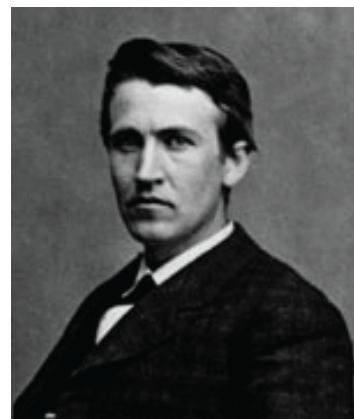
ASK Students

What is "perfecting?"

What was Thomas Edison's goal as he "perfected" things?

WATCH

Learn More with Liberty: Light Bulbs' Impact on Life & U.S. Economy



Thomas Edison

Morse & Edison - Fifth Grade

Lesson

ASK Students

How did the light bulb impact life in the United States? How did affordable light bulbs impact businesses in the United States? What role did resourcefulness play in improving the light bulb?

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?

What makes rapid communication significant for society?

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.

TELL Students

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

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Lesson

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 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. [Stock Image Morse Code Chart]. 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 are the similarities between Thomas Edison and Samuel Morse?

Morse & Edison – Fifth Grade

Inventor's Journey Timeline

Objective: To help fifth graders learn about the inventions and contributions of Samuel Morse and Thomas Edison through an interactive timeline activity.

Materials Needed:

1. Pictures of Samuel Morse and Thomas Edison.
2. Visual aids (images and diagrams of their inventions).
3. Large sheets of paper or a whiteboard.
4. Markers, colored pencils, or crayons.
5. Sticky notes or index cards.
6. Timeline templates (pre-printed or create your own).

Introduction:

- Show pictures of Samuel Morse and Thomas Edison and briefly discuss what students have learned about each.
- Discuss why inventors are important and how they impact society.

Timeline Preparation:

- Prepare a timeline template with dates and spaces for events or inventions related to Morse and Edison.
- Create separate sticky notes or index cards with key events and inventions of each inventor. Include the dates.

Group Activity:

- Divide the class into small groups and assign each group either Samuel Morse or Thomas Edison.
- Provide the timeline template, sticky notes, and markers to each group.
- In their groups, students should discuss and place the sticky notes/cards in chronological order on the timeline.

- Encourage students to add drawings or illustrations to represent each event or invention.

Presentation and Discussion:

- Ask each group to present their completed timeline to the class.
- As they present, discuss the significance of each event or invention and its impact on society.
- Facilitate a class discussion about the differences and similarities between Morse and Edison's inventions and innovations.

Creative Reflection:

- Have each student write a short paragraph reflecting on what they found most interesting about Samuel Morse and Thomas Edison's inventions.
- Display student reflections alongside the timelines.



Timeline Worksheet

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Morse & Edison – Fifth Grade

Speaking of Inventors

Objective: To research and present a short speech about one of the inventors, Samuel Morse or Thomas Edison, focusing on their most significant invention and its impact.

Materials Needed:

1. Access to research materials (books, internet, encyclopedias, etc.).
2. Note-taking materials (notebook, computer, or paper).
3. Presentation materials (poster board, visuals, props - optional).
4. A presentation schedule if you plan to have multiple students present on the same day.

INSTRUCTIONS:

Choosing an Inventor:

- Assign each student an inventor. Students may pick Samuel Morse, Thomas Edison, or any other inventor that you pre-approve.
- Encourage students to think about which inventor interests them the most.

Research:

- Instruct students to research their inventor and their most significant invention. Provide guidance on reliable sources and research techniques.
- Encourage students to take detailed notes on key facts, dates, and the impact of the invention.

Speech Outline:

- Have students create an outline for their speech. It should include an introduction, main points, and a conclusion.
- Remind them to focus on the most important information about their inventor and the invention.

Writing the Speech:

- Instruct students to write their speeches based on the outline, using their research notes.
- Emphasize the importance of clear and engaging language.

Visual Aids:

- If students choose to use visual aids or props, allocate time for them to create or gather these materials.

Practice:

- Encourage students to rehearse their speeches multiple times to become comfortable with the content.
- Provide feedback on pronunciation, pacing, and clarity.

Presentation:

- Organize a presentation schedule, allowing each student to present their speech to the class.
- Allocate a specific time for each presentation, including time for questions and answers.

Peer Evaluation:

- Consider having students provide constructive feedback to their classmates after each presentation.

Reflection:

- After all presentations are complete, have students reflect on the assignment and what they learned about each inventor.
- Encourage students to think about each inventor's impact on society.

Morse & Edison - Fifth 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>

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

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

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