First Grade

DISCOVER AMERICA

Course 19 - Teacher Guide

Morse's Telegraph and Edison's Electric Light

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First Grade

Teacher Guide

Key Themes

- Creative Liberty
- Innovation
- Community
- Experimentation to Improve Quality of Life

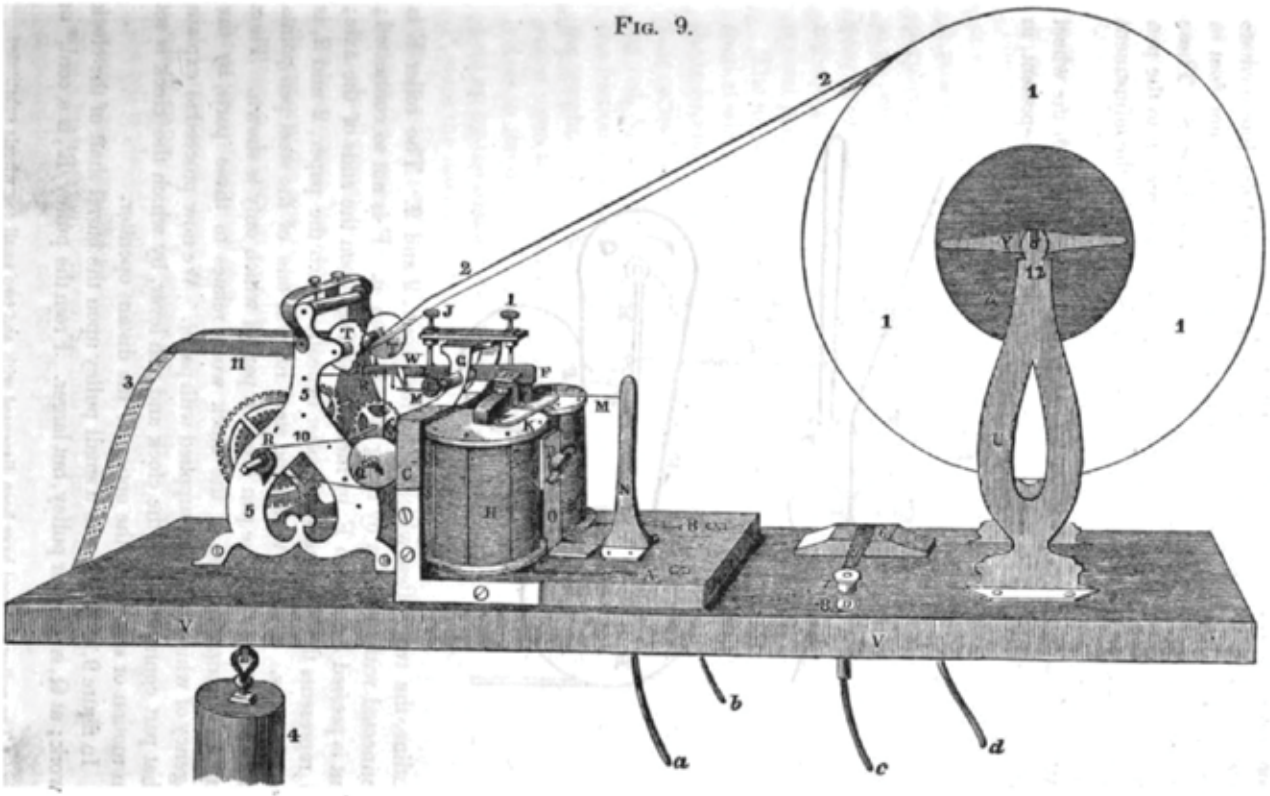
Core Values

- Community
- Life
- Faith
- Liberty

Learning Objectives

Students will be able to:

- Define Morse code.
- Explain the importance of communication.
- Evaluate the importance of enhancing or upgrading existing items.
- List two scientific advancements that influenced life over the centuries.



Morse & Edison - First Grade

Key Terms

01	**filament:** the part of a lightbulb that lights up when an electrical current heats it.
02	**Morse code:** a communication language that uses a system of dots and dashes to represent numbers and letters.
03	**patent:** an exclusive right given to an inventor to prevent others from making or selling their invention for a certain period of time.
04	**telegraph:** a device that uses wire to transmit messages over long distances.
05	**transmit:** to send.
06	**vibration:** the rapid back and forth movement of an object.

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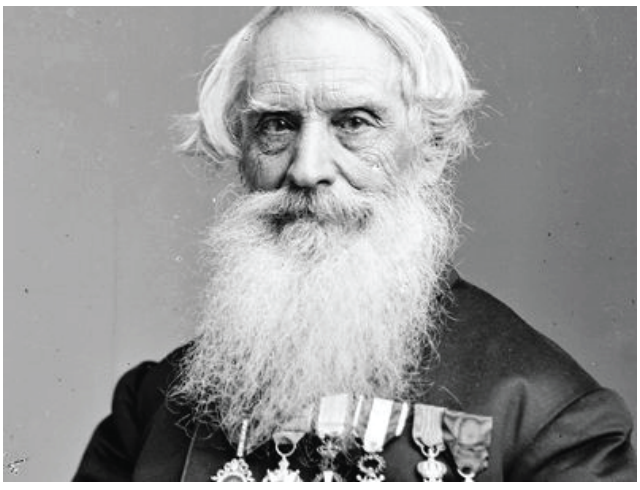
Introduction

TELL Students

Begin by asking students: When you need help with a problem or want to speak to your grandparents or a friend, how do you contact them? Many of you probably call them on the phone or maybe use your parent's cell phone to send a text message or an email. Some of you may communicate through video games on your digital devices. This type of communication allows for quick responses.

However, communication was not always fast or easy. Years ago, if you needed to contact someone, you had to walk to their home to talk to them. Or, you would write them a letter and mail it through the United States Post Office. Communication could take a long time, often delaying your answer or response for days or weeks.

Most often, you had to use a gas lantern or a candle to write a letter to someone because you needed light to see what you were doing. Gas lanterns and candles, if not appropriately watched, can be dangerous because they can tip over and cause a fire. Today, communication and electrical lights have improved because of the innovative ideas of Samuel Morse and Thomas Edison.



Samuel Morse

Thomas Edison

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Introduction

ASK Students

• Do you know anyone who takes old spare parts of one device and uses them to improve another device?

• Why do you think it was difficult to communicate quickly with other communities before the telegraph was invented? What problems would delayed communication create?

WATCH

Star Spangled Adventures Cartoon Ep. 19: Thomas Edison

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Lesson

TELL Students

Samuel Morse made the telegraph easier and cheaper to use. A telegraph is a machine that sends sounds that represent letters and numbers to communicate with someone far away. He developed a code of dots (short sounds) and dashes (long sounds) to correlate with numbers and letters and called it the Morse code. Samuel used items such as a homeade battery and old clock gears to improve the telegraph!

Key-type Morse telegraph transmitter.

Let's Learn More with Liberty Video: Expanding Access to Telegraphs (1st Grade) on Vimeo.

ASK Students

How did Samuel Morse improve communication? How did faster communication change the United States?

TELL Students

Thomas Edison was a successful inventor. He filed 1,093 patents throughout his lifetime. A patent is an exclusive right given to an inventor to prevent others from making or selling their invention for a certain period of time. In a single day, he wrote down 112 ideas!

Menlo Park

Edison built Menlo Park in 1875. Menlo Park was used for research and development. The research and development programs were divided into chemistry, physics, and electricity so that teams could work together and experiment on different things before selling them. Teamwork is important in making and improving things.

Edison took already-made things and made them work better. Sometimes, he made them less expensive. He called this process "perfecting" instead of inventing. Edison improved the lightbulb since the already-invented ones were expensive and didn't stay lit for long.

ASK Students

Think about how you can creatively improve things in our classroom and in your home. What would you like to improve?

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Light Bulb Bug Decorations

Objective: To engage first grade students in a creative activity while introducing them to the concept of light bulbs and the inventions of Thomas Edison.

Materials Needed:
1. Old, used light bulbs (1 per student).
2. Black aluminum decorative bendable wire.
3. Wire cutters.
4. Needle-nose pliers.
5. Construction paper, markers, crayons, or other decorative materials.
6. Glue and scissors (if using construction paper).

Cup Preparation:
- Punch a small hole at the end of each plastic cup.

Introduction:
- Begin by discussing Thomas Edison, the inventor of the light bulb, and explain that he was a creative person who came up with great ideas.
- Tell students that they will be making bug decorations using old light bulbs.

Planning:
- Have students think about and draw a picture or write down their plan for how they want their bug to look. Encourage students to be creative and come up with unique bug designs.

Creating the Legs:
- Instruct each student to cut six pieces of black aluminum wire of the same length for the bug's legs.
- Show them how to wrap one end of each wire around the metal portion (grooves) of the light bulb.
- Help them bend the wire into the shape of the legs. Repeat this for all four legs.

Crafting the Antenna:

- Provide two shorter pieces of wire for the bug's antenna.
- Show students how to shape and attach these wires to create the bug's antenna.

Decorating:

- Let the students add color and decorate their bugs using markers, crayons, or other decorative materials. They can give their bugs eyes, spots, stripes, or any design they like.
- If preferred, they can also use construction paper to cut out additional bug features and glue them onto the light bulb.

Conclusion:

- Gather students and have each one share their bug creation with the class.
- Ask them to talk about the bugs they made and how they used their creativity, just like Thomas Edison did when he invented the light bulb.

Display and Take Home:

- Display the light bulb bug decorations in the classroom, and allow the students to take them home to show their families.

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Perfecting Worksheet

You can creatively improve already-made items!

Before: Draw a picture of an object you would like to improve.

After: Draw a picture to show how you will improve the item.

Write a sentence about one item you improved.

How did you improve the item?

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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

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

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

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

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

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Notes