

Lesson Title: WWI Communication Technologies

Author: The National Museum of Military Vehicles



Mission:

This Lesson Plan has been developed by the National Museum of Military Vehicles (NMMV) to facilitate scholastic visits to our institution. This Lesson Plan provides instructors with the framework to develop a detailed lesson plan for a field trip to the NMMV, by providing references to Wyoming State educational standards. This Lesson Plan is intended to serve as a starting point, recognizing that every School District has different standards and formats for their Lesson Plans.

Description:

During World War I, communication tools rapidly evolved to meet the demands of the battlefield. The ability to send and receive messages directly impacted military success, yet soldiers often faced serious challenges in staying connected. These lessons will explore how communication methods developed during the war and examine both the advantages and limitations of the tools used.

Grade Level: 6-8 and 9-12

Theme: How communication technologies shaped WWI and their lasting impact

Lesson Duration: 3 class periods (45 minutes each) with a Visit to the National Museum of Military Vehicles

Learning Objectives

Grades 6-8

- Analyze WWI communication technologies and their tactical, technological, and ethical implications.
- Evaluate how innovations changed warfare and influenced society.
- Compare WWI communication methods with those in later wars.
- Develop critical thinking about the benefits and limitations of technology.

Grades 9-12

- Critically evaluate how communication innovations transformed WWI and modern warfare.
- Trace long-term impacts of WWI communication developments.

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- Analyze primary sources and technical data.
 - Explore the diffusion of military technologies into civilian life.
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WWI Communication Tools Vocabulary

Why Communication Mattered in WWI

Term	Definition
Communication	The exchange of information between people or groups, especially important during war to coordinate actions.
Constraints	Limitations or challenges that made communication difficult, such as distance, terrain, or technology.
Map	A visual representation of land, used to plan movements and understand geography during wartime.
Dispatch	A message sent quickly from one place to another, often containing important military information.
Front Line	The area where soldiers are actively fighting; communication here was often urgent and dangerous.

Wired Communication Tools

Term	Definition
Telegraph	A device that sent coded messages over wires using electrical signals and Morse code.
Telephone	A tool that allows people to speak to each other over long distances using wires.
Fullerphone	A special type of telephone used in WWI that reduced noise and kept

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Term	Definition
	messages secure from enemy interception.
Morse Code	A system of dots and dashes used to send messages through sound or light signals.
Signal Corps	A military group responsible for setting up and maintaining communication systems during war.

Wireless and Long-Distance Communication

Term	Definition
Wireless (Radio)	A way to send messages without wires, using radio waves; allowed communication across long distances.
Trans-Atlantic Cable	Underwater cables that connected continents and allowed messages to travel between Europe and North America.
Aviation Communications	Systems used by pilots and ground crews to share information during flights, including radios and signals.

Museum Visit: Non-Electronic Methods

Term	Definition
Carrier Pigeon	A trained bird that carried written messages tied to its leg across battlefields.
Courier	A person who physically carried messages from one place to another, often on foot or horseback.
Trench Runner	A soldier who ran through trenches to deliver messages between units, often under fire.

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Term	Definition
Signal Flags	Flags used in patterns to send visual messages across distances.
Signal Lamp	A light used to flash Morse code or other signals, especially at night or over long distances.

Key Concepts & Topics

- Technologies: Telegraph, Fullerphone, radio, wireless sets, code talkers, aviation communications.
- Tactical Issues: Eavesdropping, jamming, trench logistics, terrain/weather.
- Ethical/Social Issues: Propaganda, censorship, privacy, misinformation.
- Historical Case Study: Zimmerman Telegram.
- Postwar Legacy: Civilian broadcasting, telephone networks, regulatory changes.
- Modern Connections: Encryption, internet, mobile networks, cybersecurity.

Daily Lesson Sequence

Day 1: Introduction: Why communication mattered in WWI (maps, stories, constraints).

Day 2: Telegraph, telephone, Fullerphone, Morse code, Signal Corps.

Day 3: Wireless/radio, trans-Atlantic cables, aviation communications.

Museum Visit Lessons:

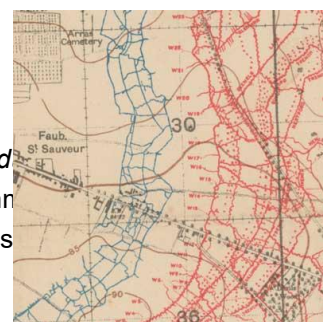
Non-electronic methods: pigeons, couriers, trench runners, flags, lamps.

Case Study: Zimmerman Telegram—interception and consequences.

Day 1: Introduction – Why Communication Mattered in WWI

Objective: Understand the importance of communication in WWI.

1. Show a WWI battlefield map and ask students how



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soldiers might have communicated across trenches.

[WWI Battlefield Map](#)

Trench map showing British (blue) and German (red) trenches just east of Arras, revised to 4 March 1917

2. Share a short narrative or diary entry from a WWI soldier emphasizing communication challenges.

[WWI Letters](#)

3. Discuss the consequences of poor communication in war.

4. Students brainstorm modern communication tools and compare them to early 20th-century methods.

5. Exit Ticket: 'One reason communication was critical in WWI was...'

Day 2: Telegraph, Telephone, Fullerphone, Morse Code, Signal Corps

Objective: Explore early electronic communication tools and their military applications.

1. Introduce each technology with visuals (telegraph, telephone, Fullerphone) with the article [War Communication During WWI](#)

2. Play Morse code audio and decode a simple message together. [Morse Code Creator](#)

3. Discuss how these tools improved battlefield communication. [Supplemental article; Morse Code](#)

4. Reflection Prompt: 'Which technology do you think was most effective and why?'

Day 3: Wireless/Radio, Trans-Atlantic Cables, Aviation Communications

Objective: Examine the evolution of wireless communication and its strategic impact.

1. Engage students in a discussion to open with the question prompt: "What part of battlefield communication would be most important and why?" Some examples may be sending a warning, calling for help from the battlefield, emergency calls, etc. See what kids come up with and allow them to have conflicting viewpoints as long as they have a why to back it up.

2. Introduce students to the evolution of battlefield communication with these short, engaging videos:

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- [Beyond Wires and Pigeons - Communications in World War 1](#): Covers the shift from runners and pigeons to wireless radios, highlighting the challenges and breakthroughs of WWI communication.
- [How WW1 Kickstarted Our Love For Radio | Wicked Inventions](#): Explores how WWI accelerated radio development and laid the groundwork for modern broadcasting.
- [World War One - A Radio Exploration](#): Offers historical context and personal stories tied to radio's wartime role.

3. Review how trans-Atlantic cables worked using diagrams.

Use these resources to explore the mechanics and strategic importance of undersea cables:

- [Bacon's Chart of the Atlantic Telegraph \(Library of Congress\)](#): Includes maps, engravings, and diagrams showing cable routes and construction.
- [Transatlantic Telegraph Cable - Wikipedia](#): Offers historical context and technical details.
- [From Australia to Zimmermann \(Oxford\)](#): Explains how cable interception shaped wartime intelligence, including the famous Zimmermann Telegram.

4. Discuss how aviation helped communication dynamics.

- **Observation planes** relayed artillery adjustments via Morse code.
- **Voice radios** were tested but unreliable; pilots often dropped handwritten notes instead.
- **New telecom kits** emerged to support airborne coordination and intelligence sharing.

5. Research a WWI radio operator's role and write a journal entry from their perspective.

Students research the role of a WWI radio operator and write a fictional journal entry. Use these sources:

- [Diaries and Memoirs – Library of Congress](#): First-hand accounts of wartime experiences.
- [Radio on the Frontlines – DPLA](#): Describes trench radios and horse-pack sets.
- [Quizlet Flashcards: Young Radio Operator](#): Offers context for a sapper's experience setting up wireless systems.

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Museum Visit Lesson

Non-Electronic Methods – Pigeons, Couriers, Trench Runners, Flags, Lamps

Objective: Understand alternative communication methods and their limitations.

Lesson will include:

Stations with images and short descriptions of each method

Students role-play as trench runners delivering messages.

Discussion on risks and benefits of these methods.

Design a semaphore flag or signal lamp pattern.

Exit Ticket: 'Which non-electronic method would you trust most and why?'

Case Study – Zimmerman Telegram

Objective: Analyze a pivotal moment in WWI communication history.

By the end of this lesson, students will be able to:

- Explain the historical context of the Zimmerman Telegram.
- Analyze primary source documents (intercepted and decoded telegram).
- Evaluate the impact of the telegram on U.S. involvement in WWI.
- Communicate historical information through role-play and persuasive writing.

Lesson will include:

Presentation of the Zimmerman Telegram's Background

Examination of the Intercepted Telegram and Decoded Version

Discussion on the Telegram's Impact

Role-Play: British Intelligence Officers Brief U.S. Officials

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Visiting NMMV: Additional Interactive Resources

- Students will explore inside tanks and vehicles to see the communication tools or lack of. This will give students the visual idea of being a part of the war with what was available for communication.
 - Students will see a signal lamp and how it was mounted to a vehicle for use.
 - Visiting will include classroom time with hands on artifacts of semaphore flags and morse code demonstrations.
 - WWI artifacts viewing of letters, carrier pigeon replica, and signal flags.
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Post Museum Visit:

Assessment: Short Essay

- Prompt: “Explain how the Zimmerman Telegram influenced the United States’ decision to enter World War I. Use evidence from the telegram and historical context.”
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Resources

- Primary sources: telegrams, letters, radio transcripts, code talker accounts.
 - Visuals: Fullerphones, signal lamps, telegraph equipment.
 - Multimedia: Morse code audio, Hello Girls recordings (if available).
 - Maps: Trans-Atlantic cables, front lines, communication routes.
 - Modern analogues: Articles/videos on mobile, satellite, internet.
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Standards Alignment

Social Studies Standards Alignment

Grades 6-8

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Aligned to:

- **SS8.1.1:** Explain the rights, duties, and responsibilities of a U.S. citizen.
- **SS8.1.3:** Explain the historical development of the U.S. Constitution and treaties (e.g., Zimmerman Telegram as a case study).
- **SS8.1.6:** Understand basic structures of various political systems (e.g., wartime communication and governance).
- **SS8.5.2a:** Analyze how geography and technology influenced historical events (e.g., trench warfare and communication logistics).

Grades 9-12

Aligned to:

- **SS12.1.3:** Analyze the historical development of the U.S. Constitution and treaties and their impact on governance.
- **SS12.1.5:** Demonstrate understanding of U.S. and Wyoming Constitutions and tribal sovereignty (Zimmerman Telegram and wartime diplomacy).
- **SS12.1.1:** Analyze freedoms, rights, and responsibilities in a democratic society (e.g., censorship, propaganda).
- **SS12.5.1:** Apply geographic knowledge to analyze historical events (e.g., trench maps and terrain challenges).

Computer Science Standards Alignment

Grades 6-8

Aligned to:

- **8.CS.HS.01:** Design and refine a project combining hardware and software to exchange data (e.g., Morse code activity).
- **8.NI.C.01:** Critique procedures to protect electronic data/information (Zimmerman Telegram and encryption).

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- **8.IC.SLE.02:** Discuss legal, social, and ethical impacts of software and communication technologies (propaganda, misinformation, censorship).

Grades 9-12

Aligned to:

- **L1.AP.A.01:** Create a prototype using algorithms to solve real-world problems (e.g., Morse code decoding).
- **L1.IC.SLE.04:** Discuss legal, social, and ethical impacts of software development and use (Zimmerman Telegram, propaganda).
- **L1.DA.CVT.01:** Create interactive data representations (e.g., mapping communication routes).
- **L1.AP.PD.01:** Plan and develop programs by analyzing problems and documenting solutions (e.g., simulating battlefield communication).

English Language Arts (ELA) Standards Alignment

Grades 6-8

Aligned to:

- **RI.6.3:** Analyze how a text presents information (e.g., soldier diaries and telegrams).
- **W.6.1, W.6.2, W.6.7:** Write arguments and informative texts (e.g., persuasive writing on the Zimmerman Telegram).
- **SL.6.1:** Engage in collaborative discussions (e.g., debates on communication ethics).

Grades 9-12

Aligned to:

- **RI.9-10.1, RI.9-10.2:** Analyze informational texts and determine central ideas (e.g., primary sources like telegrams).
- **W.9-10.1, W.9-10.2, W.9-10.7:** Write arguments and conduct research (e.g., essay on Zimmerman Telegram's impact).

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- **SL.9-10.1, SL.9-10.4:** Participate in discussions and present findings (e.g., role-play as intelligence officers).
 - **L.9-10.1, L.9-10.2:** Demonstrate command of grammar and usage in writing.
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Primary Sources

1. Zimmerman Telegram (1917)

This is the transcript of the infamous Zimmerman Telegram, a secret diplomatic communication from Germany to Mexico proposing a military alliance against the United States during World War I. Its interception and publication helped sway U.S. public opinion toward entering the war.

Source: Library of Congress

Link: <https://www.loc.gov/exhibitions/world-war-i-american-experiences/about-this-exhibition/arguing-over-war/for-or-against-war/the-zimmerman-telegram/>

2. WWI Soldiers' Letters and Trench Accounts

These transcriptions reveal the personal experiences of American soldiers in the trenches during World War I. They include letters, unit histories, and battlefield reports that provide insight into the daily life and emotions of soldiers.

Source: National Archives

Link: <https://www.archives.gov/files/citizen-archivist/images/10-18-2018-searching-transcriptions.pdf>

3. WWI Radio Communication Transcripts and Audiotapes

This collection includes audiotapes and transcripts from historical radio broadcasts, including those related to military and international affairs. While not all are WWI-specific, they provide context for the evolution of radio communication.

Source: Smithsonian Institution Archives

Link: <https://www.si.edu/object/archives/sova-sia-faru0603>

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