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The Civil War: A High-Tech War for its Time

Michelle Loughran

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The Civil War – A “High-Tech” War for Its Time

Lesson Plan by Michelle Loughran

Overview:

This lesson focuses on the technological advances during the time of the Civil War. Through the use of primary sources, students will investigate how technological advancements of the time period were used during the war.

Goal:

The students will become familiar with primary sources and gain an understanding of the ways in which advancements in technology and engineering were used during the Civil War by both the Confederacy and the Union. They will investigate how the high-tech initiatives driven by President Lincoln helped the Union, and ultimately helped our nation prosper through innovation and expansion of these inventions.

Objectives:

- Students will understand that they are viewing primary sources.
- Students will analyze and make inferences about the primary source given.
- Students will collaborate in small groups to research the impact that their given piece of technology had on the Civil War.
- Students will share their findings with the class.

Investigative Question:

How were these “high-tech” inventions of the time period used during the Civil War? How did their use at during the war cause further development and expansion of these innovations?

1. Telegraph
2. Railroads
3. Surveillance Balloons
4. Iron-clads
5. High-powered weapons
6. Photography
7. Submarines

Time Required:

Three 60 minute class periods for introduction of lesson, research, and groups to report out what they've learned. Research would span over the two days. Groups and topics assigned to each group will have been done ahead of these class periods.

First day - Introduction of lesson, primary source evaluation, and beginning of research

Second day – Finish research

Third day - groups report out their findings, and evaluate

Recommended Grade Range:

Grade 4-6

My lesson was taught to a 5th grade class during their curriculum unit on the Civil War within their social studies and language arts block of time.

Subject / Sub-Subject: Library/Technology - Social Studies/Civil War

Standards:**Illinois Social Studies Standards –****Apply the skills of historical analysis and interpretation.**

SS 16.A.2c Ask questions and seek answers by collecting and analyzing data from historic documents, images and other literary and non-literary sources.

Understand Illinois, United States and world environmental history.

SS 16.E.2b (W) Identify individuals and their inventions (e.g., Watt/steam engine, Nobel/TNT, Edison/electric light) which influenced world environmental history.

Common Core ELA Standards –

CC.5.W.7 Research to Build and Present Knowledge: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

CC.5.SL.1 Comprehension and Collaboration: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.

Credits: Michelle Loughran, Fry Elementary School, Naperville, IL

PREPARATION:

Materials Used:

- [Teacher's Guide to Analyzing Photographs & Prints](#)
- Pictures and links for each of the inventions (see below)
- Computers/tablets for student use to research the invention used during the Civil War
- Databases to use to access information, such as World Book Online Encyclopedia or Webpath Express
- Books about the inventions or excerpts from books
- Note-taking research organizer for group to document their findings (see below)
- Evaluation Rubric

Resources Used:

Balloon Surveillance

Prof. T. Lowe making a balloon ascension on a reconnoitering expedition to Vienna, Va.

<http://hdl.loc.gov/loc.pnp/cph.3b04739>

Unknown

1861

Professor Lowe in his balloon

<http://hdl.loc.gov/loc.pnp/stereo.1s02744>

Unknown

1862 May 31

Professor Lowe's military balloon near Gaines Mill, Virginia

<http://hdl.loc.gov/loc.pnp/ppmsca.33091>

Brady, Mathew B.

1862 June 1

Fair Oaks, Va. Prof. Thaddeus S. Lowe observing the battle from his balloon "Intrepid"

<http://hdl.loc.gov/loc.pnp/cwpb.01560>

Unknown

1862 May 31

Submarine

Submarine Infernal machine intended to destroy the "Minnesota"

<http://hdl.loc.gov/loc.pnp/cph.3c27603>

Unknown
1861

Iron-clads

Confederate ironclad Stonewall at Ferrol, Spain, March, 1865
<http://hdl.loc.gov/loc.pnp/ppmsca.33848>

Unknown
1865

Ironclad USS Essex at Baton Rouge, Louisiana
<http://hdl.loc.gov/loc.pnp/ppmsca.34991>

McPherson & Oliver
1862

U.S. ironclad gunboat Essex
<http://hdl.loc.gov/loc.pnp/stereo.1s02823>

Unknown
1863 March

James River, Va. Deck and turret of U.S.S. Monitor
<http://hdl.loc.gov/loc.pnp/ppmsca.31295>

Gibson, James F.
1862

Railroad Locomotives

Engine W. H. Whiton, and President's car, Alexandria, January, 1865
<http://hdl.loc.gov/loc.pnp/ppmsca.08257>

Russell, Andrew J.
1865 Jan

"Gen. Haupt" locomotive, used by Gen. Herman Haupt during the Civil War (1861-1865)
<http://hdl.loc.gov/loc.pnp/cph.3a19451>

Unknown
between 1863 and 1865

Military railroad operations in northern Virginia: soldier and another man standing at railroad tracks in front of locomotive

<http://hdl.loc.gov/loc.pnp/ppmsca.10393>

Russell, Andrew J.

1862 or 1863

City Point, Va. "Gen. J. C. Robinson" and other locomotives of the U.S. Military Railroad

<http://hdl.loc.gov/loc.pnp/cwpb.01858>

Unknown

Between 1860-1865

Eastern view of round house and depot, Orange & Alexandria Railroad

<http://hdl.loc.gov/loc.pnp/ppmsca.08260>

Russell, Andrew J.

Between 1861-1865

Excavating for "Y" at Devereux Station, Orange & Alexandria Railroad

<http://hdl.loc.gov/loc.pnp/ppmsca.07293>

Russell, Andrew J.

1863

Telegraph

Signal Telegraph Machine and operator – Fredericksburg

<http://hdl.loc.gov/loc.pnp/ppmsca.21043>

Waud, Alfred R.

1862 ca. December

The Army telegraph - setting up the wire during an action The Army telegraph - the operator at work

<http://hdl.loc.gov/loc.pnp/cph.3c11072>

Waud, Alfred R. & Davis, Theodore R.

1863

Field Telegraph Station

<http://hdl.loc.gov/loc.pnp/stereo.1s02838>

Unknown
1864

Field battery wagon and camp, Military Telegraph Corps

<http://hdl.loc.gov/loc.pnp/ppmsca.34049>

O'Sullivan, Timothy H.

June 24, 1864

Grant telegraphing the news of the crossing of the river Rapidan--May 1864

<http://hdl.loc.gov/loc.pnp/ppmsca.21342>

Waud, Alfred R.

May 3-4, 1864

High-powered Weapons

Battery No. 4 near Yorktown mounting ten 13 inch mortars each weighing 20,000 pounds.

South end

<http://hdl.loc.gov/loc.pnp/ppmsca.35036>

Hartford, Conn. : Taylor & Huntington

1862 May

Ten Inch Columbiad, and Magazine Entrance, Sand Bag Revertment (i.e. revetment), Battery Dantzler, (Howlett's) on James River

<http://hdl.loc.gov/loc.pnp/stereo.1s02892>

Browne, William Frank

Between 1861 and 1865

Ordnance Depot at Broadway Landing-Siege train awaiting shipment-U.S. guns on left,

Confederate captured ordnance on right

<http://hdl.loc.gov/loc.pnp/stereo.1s02893>

Browne, William Frank

Between 1864 and 1865

Seven Inch Brooke Rifle Gun in Battery Brooke-Fort Brady (U.S.) in extreme distance over terminus of gun

<http://hdl.loc.gov/loc.pnp/stereo.1s02895>

Browne, William Frank

Between 1861 and 1865

Eight inch Brooke rifled gun, weighing 21,987 lbs., in unfinished battery wood-hurdle revertment (i.e. revetment), anchored by grape vines

<http://hdl.loc.gov/loc.pnp/stereo.1s02897>

Browne, William Frank
Between 1861 and 1865

15-inch (i.e. 13-inch) mortar, "Dictator" in the works in front of Petersburg, Va. View from the north, September 1, 1864

<http://hdl.loc.gov/loc.pnp/stereo.1s02905>

O'Sullivan, Timothy H.
1864 September 1

[Three soldiers posing by a mounted cannon with a wall of sandbags behind them]

<http://hdl.loc.gov/loc.pnp/stereo.1s02913>

Unknown
Between 1861 and 1865

Ordnance Depot at Broadway Landing

<http://hdl.loc.gov/loc.pnp/stereo.1s02921>

Browne, William Frank
Between 1861 and 1865

[Rear view of a cannon with a soldier sitting adjacent to it facing forward]

<http://hdl.loc.gov/loc.pnp/stereo.1s02922>

Unknown
Between 1861 and 1865

Park of captured guns at Rocketts, Richmond, Va.

<http://hdl.loc.gov/loc.pnp/stereo.1s02769>

E. & H. T. Anthony (Firm)
1865

[Morris Island, S.C. Battery of 100-pdr. Parrott guns inside Fort Putnam]

<http://hdl.loc.gov/loc.pnp/cwpb.03115>

Unknown
1865

[Fort Pulaski, Ga. The "Beauregard" gun]

<http://hdl.loc.gov/loc.pnp/cwpb.00787>

O'Sullivan, Timothy H.
1862

Seven Inch Brooke Rifle Gun in Battery Brooke-Fort Brady (U.S.) in extreme distance over terminus of gun

<http://hdl.loc.gov/loc.pnp/stereo.1s02895>

Browne, William Frank
Between 1861 and 1865

[Savannah, Ga., vicinity. Army engineers removing 8-inch Columbiad gun from Fort McAllister]

<http://hdl.loc.gov/loc.pnp/cwpb.03149>

Unknown
1864 December

Gibson's horse battery (C. 3d U.S. Art'y.) near Fair Oaks, Va. June 1862

<http://hdl.loc.gov/loc.pnp/cph.3g07986>

Unknown
1862 June

Group, Major Robertson and friends

<http://hdl.loc.gov/loc.pnp/stereo.1s02782>

Gibson, James F.
1861-1865

The Lincoln Gun

<http://hdl.loc.gov/loc.pnp/ppmsca.32742>

Unknown
1864

Photography

Letter from Mathew Brady to President Abraham Lincoln, asking Lincoln to sit for a photograph

<http://www.loc.gov/pictures/resource/cwp.4a40920/>

Brady, Mathew B.
1865 March 2

[Bermuda Hundred, Va. Photographer at Butler's signal tower]

<http://hdl.loc.gov/loc.pnp/cwpb.01829>

Unknown

1864

Photographer at Manassas, July 1862

<http://hdl.loc.gov/loc.pnp/ppmsca.32800>

O'Sullivan, Timothy H.

1862

Newsboy in Camp

<http://hdl.loc.gov/loc.pnp/ppmsca.33163>

Gardner, Alexander

1863

Sam. A. Cooley, photographer Tenth Army Corps

<http://hdl.loc.gov/loc.pnp/stereo.1s02985>

Cooley, Sam A.

Between 1861 and 1865

Brady's photo outfit in front of Petersburg, Va. 1864(?)

<http://hdl.loc.gov/loc.pnp/ppmsca.33171>

Unknown

1864

Photographers and Wagon

<http://hdl.loc.gov/loc.pnp/ppmsca.33170>

Unknown

1864

President Lincoln on battle-field of Antietam, October, 1862

<http://hdl.loc.gov/loc.pnp/ppmsca.12544>

Gardner, Samuel

1866

[Unidentified soldier in Union uniform with gauntlets...]

<http://hdl.loc.gov/loc.pnp/ppmsca.36464>

Unknown

Between 1861 and 1865

[Freeman Mason of Company K, 17th Vermont Infantry holding a tintype of his brother, Michael Mason, killed at Savage's Station, Virginia, in 1862]

<http://hdl.loc.gov/loc.pnp/ppmsca.37071>

Unknown

Between 1864 and 1865

[Unidentified soldier in Union sergeant's uniform and Hardee hat with revolver and knife]

<http://hdl.loc.gov/loc.pnp/ppmsca.37037>

Unknown

Between 1861 and 1865

Specific Texts Used by Instructor and Groups for Research:

Allen, Thomas B. Mr. Lincoln's high-tech war : how the North used the telegraph, railroads, surveillance balloons, iron-clads, high-powered weapons, and more to win the Civil War. Washington, D.C. : National Geographic, 2009.

Baicker, Karen. Primary sources for the interactive whiteboard. : Colonial America, Westward Movement, Civil War. New York: Scholastic, c2011.

Floca, Brian. Locomotive. 1st ed. New York: A Richard Jackson book/Atheneum Books for Young Readers, 2013.

Herbert, Janis, 1956-. Abraham Lincoln for kids: his life and times with 21 activities. 1st ed. Chicago: Chicago Review Press, 2007.

Herbert, Janis, 1956-. The Civil War for kids: a history with 21 activities. 1st ed. Chicago: Chicago Review Press, 1999.

Poulakidas, Georgene. The Civil War. 1st ed. New York: PowerKids Press/Primary Source, 2006.

Sandler, Martin W. Civil War. New York: HarperCollins, 1996.

Sandler, Martin W. Lincoln through the lens: how photography revealed and shaped an extraordinary life. New York: Walker, 2008.

Walker, Sally M. Secrets of a Civil War submarine: solving the mysteries of the H.L. Hunley. Minneapolis, MN: Carolrhoda Books, 2005.

Wheeler, Tom. Mr. Lincoln's t-mails: the untold story of how Abraham

Lincoln used the telegraph to win the Civil War. New York: Collins, 2006.

The Visual dictionary of ships and sailing. 1st American ed. London; New York: Kindersley/Houghton Mifflin, 1991.

PROCEDURE

Description of Procedure:

1. **Connect** – Introduce the lesson by discussing with students their current study of the Civil War and how some inventions of that time period were considered “high-tech” and worthy of our investigation because the impact of their use has been far-reaching and continues today.

2. **Wonder** – Display the list of seven inventions that we are going to investigate:
 - Surveillance Balloons
 - Submarines
 - Iron-clads
 - Railroad Locomotives
 - Telegraph
 - High-powered weapons
 - Photography

Explain to students that as we work in groups today and the next day we will look into at least one of these and try to answer the question: How were these “high-tech” inventions used during the Civil War, and did their use at that time cause further development and expansion of these innovations? Students can also formulate their own questions about one or more of these inventions and their use during the Civil War. An organizer with possible questions to research will be given to guide their exploration. Groups of students will have been formed ahead of time based on interest in the invention. Note-taking organizer and rubric will be presented to students so that they are aware of the expectations and can ask any questions.

3. **Investigate** – Students will be given an example of a primary source and together we will look at the Primary Source Analysis for Photographs and Prints. Then they will complete an analysis of a photo on one of the inventions that I have preselected for each of the groups. Students will also be given any books or excerpts about their invention to use for research. They will also be directed to use the databases on the computers/tablets that we have to find out all that they can about the invention and

how it was used during the Civil War. Students will be given a note-taking organizer to document their findings. Students will then work in groups to work on the task.

4. **Construct** – In their groups students will draw conclusions about the invention and its usefulness during the Civil War, how it became so, and if it's still useful today. They will prepare to present their findings in a quick share with the whole class.
5. **Express** – Students will present their findings to the rest of the class that should generate further discussion.
6. **Reflect** – The rubric for the lesson will be given to groups of students to self-evaluate this project. The teachers will also evaluate using the same rubric based on observations throughout the project. Students will be encouraged to ask further questions about their research, take on one of the other inventions for further investigation.

Extensions:

If interest and time allows, groups could take a different invention/primary source to investigate further.

Evaluation:

Students will self-evaluate their work and collaborative group skills using a rubric provided to them. The classroom teacher and LMC director will also evaluate each group using the same rubric.

Group Member Names:

Date:

Civil War "High-Tech" Invention Research Organizer

What is the name of your "high-tech" invention from the Civil War era?

What are some questions you have about this invention?

What does this invention do and how does it work?

What was the intended purpose for this invention?

How was this used during the Civil War?

Was this invention beneficial to the outcome of the Civil War? How so, if so?

What were the obstacles to using this equipment?

Was there further development of this invention after the Civil War? Did it transform into something else? If so, what?

Is this invention still used today, if so, how so?

What sources did you use to gather this information?

Does your group believe that this invention was helpful to the war? If so, is it still helpful today and did it lead to further innovation?

Civil War "High-Tech" Invention Research Project Rubric

Student Name: _____

**Homeroom
Class:** _____

CATEGORY	Superior - 4	Good - 3	Fair - 2	Unsatisfactory - 1
Research	Information shows evidence of detailed research and in-depth understanding	Information shows evidence of research and partial understanding.	Information shows evidence of research and understanding but lacks depth in several places.	Information lacks evidence of research or demonstrates an inadequate level of understanding.
Resources	Used multiple resources - Books, Internet, Primary Source Analysis Tool	Used some resources but not all - Books, Internet, Primary Source Analysis Tool	Used minimal resources.	Didn't use resources.
Use of Class Time	Used time well during each class period. Focused on getting the project done well. Never distracted others.	Used time well during each class period. Usually focused on getting the project done. Never distracted others.	Used some of the time well during the class periods. There was some focus on getting the project done, but occasionally distracted others.	Did not use time well during each class period to focus on the project OR distracted others often.
Group Skills	Worked collaboratively with group, each member contributing equally.	Lack of collaboration shown or unequal distribution of work load.	Minimal collaboration skills or unequal distribution of work load.	Inability to collaborate and some group members not contributing.
Oral Presentation of Findings	Clear and concise explanation of the invention and the impact on the Civil War.	Findings were presented clearly and concisely with minimal mistakes or inaccuracies.	Unclear explanation of findings.	Presentation of findings is unclear and lacks proper explanation.

The Civil War – A “High-Tech” War for Its Time
Lesson Reflection
By Michelle Loughran
June 5, 2014

The lesson I delivered for the Level II course on primary sources in the Civil War was well received by the fifth grade students I worked with. Considering it is the end of the school year and they will be leaving elementary school, I was pleased that they were still excited to learn about something slightly different than what they had been studying in social studies about the Civil War. So even though they had built some background knowledge about the Civil War, the material we looked at was new and interesting to them. To take a look at the war through the lens of invention and innovation was something that I had wanted to reinforce in this lesson. While taking the Level II course on primary sources of the Civil War, we had read the book *The Fiery Trial* by Eric Foner. One part that stuck with me from the book was what an innovator and open-minded person that Lincoln was and how things could have been quite different, in many ways, had he not been president. I hoped that my students could take away that aspect of the lesson that I was teaching. Different groups were researching different “high-tech” innovations of the Civil War era. I wanted them to understand that their use during this time period caused further innovation that had a far-reaching impact on our country.

The groups and topics for research had been determined ahead of time which saved a lot of time. Students were given the opportunity to write down their top three topics to study and then groups were formed based on interest. With three people to a group, everyone was able to get one of their choices of the seven topics. It was very important for me to have the students choose their topic because that way they would be more engaged in the research. Many of the students were interested in researching high-powered weapons, not surprising for fifth grade. Ultimately, everyone seemed happy with their groups and topics so I’m glad that we were able to determine that fairly easily ahead of time to make the lesson run smoothly and make the best use of our time in the lab.

The time for the lesson did have to be shortened on the day of the observation because it is the only air conditioned room in the school and with it being so warm; we had to decrease our time due to the increased demand for the space. But we did have a good hour on the first day, and we were able to finish up in the other lab on the subsequent days.

There was some inconsistency with our network earlier in the week, so to avoid the chance that we would lose connectivity, I went ahead and printed the pictures from the Library of Congress website that I wanted the students to use in the lesson. In looking back, I probably gave them too many photos and information at once. When using the Primary Source Photo Analysis Tool, it would have been better for them to only have had one picture in their hands to avoid a bit of confusion as to what to do with it all. Due to the fact that they are younger students, they were unable to handle too much information all at once without losing their attention span, especially at the end of the school year. In the future, I will change that and give them one picture to start with to analyze, then after that activity, follow with the introduction of the

research and disbursing the rest of the photos and articles/books. It's just difficult when you have limited time in a lab and a lot of material to cover. But the time spent changing that one thing would have been worth it.

One other thing I would consider in the future is having the students' research and read about their topic before giving them an organizer to write their questions and answers on. The time spent actually reading and learning would be valuable rather than them just trying to answer the questions and get finished as quickly as possible. It could go either way though. Sometimes without the accountability of the organizer, time could be wasted off task. Something to consider though, based on the make-up of the class and knowledge of the students.

The students were still very engaged during the lesson, even by the second and third day, and learned quite a bit. Many of the groups decided to make short PowerPoints to present their findings with the whole class. They thought that the Library of Congress pictures were so good that they wanted to share some of them with the entire class when they spoke about what they had learned. All in all, they really enjoyed the project and learned quite a bit!