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HISTORY DAY

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**Helping Life and Aiding Death:
Science, Technology, and Engineering at
Work during World War I**

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Grade Level:

6 - 8

Objectives:

At the conclusion of this lesson, students will be able to

- Collect information about World War I era technological innovations from the Smithsonian collection
- Analyze each innovation using part of the engineering design process to determine the necessity of the innovation on the battlefield
- Defend a statement about the high level of casualties during World War I

Guiding Question:

How does the engineering process advance innovations in warfare to enable a nation to better engage in war while also contributing to a higher number of casualties?

Connections to Common Core:

CCSS.ELA–Literacy.RH.6–8.7 Integrate visual information with other information in print and digital texts.

Connections to C3 Framework:

D2.His.16.6–8. Organize applicable evidence into a coherent argument about the past.

Documents Used:

Artifacts and Descriptions:

75mm French Artillery Shell

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=37&back=1>

Bread Tin, Canteen and Belt

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=85&back=1>

Gas Mask

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=263&back=1>

German Stick Grenade

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=273&back=1>

Liberty 12 Model A Engine

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=785&back=1>

M1915 Vickers Machine Gun, .30 Caliber

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=396&back=1>

M1918 Trench Knife

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=369&back=1>

Model 1910 Entrenching Tool

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=220&back=1>

Springfield M1903 Rifle, .30 Caliber with Bayonet and Sling

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=641&back=1>

Lesson Description:

Overview: This lesson is designed to provide a practical application of the engineering process so students can draw inferences on the necessity of innovations for solving battlefield problems. Students will also be challenged to analyze the double-edged sword of these innovations that often contribute to greater casualty rates.

Time: One to two class periods

Materials:

- Devices with internet access
- Innovations of World War I chart
- Writing utensils

Lesson Preparation:

- Make one copy of the Innovations of World War I chart per student
- Students should understand the steps of the engineering process and how it is utilized by engineers to create innovations.
- Students should have a basic knowledge of battlefield and national conditions that existed throughout World War I (i.e. trench warfare, industrialized nations, etc.)

Procedure:

- Students should go to <http://amhistory.si.edu/militaryhistory/> and click on "Collection Search."
- Select World War I in the "Conflicts" section and "Select All" in the "Categories" section.
- Click, browse, and locate the nine artifacts to review. Be sure to enlarge each of the images.
- Students should complete the "Innovations of World War I" chart using the information on the website and supplementing with a history textbook.
- Using the collective information from chart, write a one to two paragraph essay defending the following statement: "World War I was the deadliest war to date"

because innovations of the time enabled more soldiers on the battlefield using deadlier weapons than ever before.”

Assessment Materials:

- Innovations of World War I Chart
- completed essay

Methods for Extension:

- Research one or more of the innovations from your table to find out what it replaced or how it was able to be mass-produced at the time. Create a graphic (or write an essay) showing how the military came to develop it using the Engineering Design Process. Consider what soldiers used before that innovation.
- Is the sum of the parts greater than the whole? Select three innovations and make a “materials list” of all the pieces that make up the final product. Trace the process, machines, and raw materials necessary to manufacture each piece. Reflect on how these finished goods are representative of broader technological advancements.

Adaptations:

- Complete only the Innovations of World War I chart and write a summarizing paragraph on the impact the inventions had on World War I.
- Complete four or five innovations on the table (as selected by the teacher) and write a one paragraph final essay supporting the argument.

Bibliography

Secondary Sources

“Object Record: 75mm French Artillery Shell.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=37&back=1>.

“Object Record: Bread Tin, Canteen and Belt.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=85&back=1>.

“Object Record: Gas Mask.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=263&back=1>.

“Object Record: German Stick Grenade.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=273&back=1>.

“Object Record: Liberty 12 Model A Engine.” Smithsonian National Museum of American History. Accessed February 13, 2014.

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“Object Record: M1915 Vickers Machine Gun, .30 Caliber.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=396&back=1>.

“Object Record: M1918 Trench Knife.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=369&back=1>.

“Object Record: Model 1910 Entrenching Tool.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=220&back=1>.

“Object Record: Springfield M1903 Rifle, .30 Caliber with Bayonet and Sling.” Smithsonian National Museum of American History. Accessed February 13, 2014.

<http://amhistory.si.edu/militaryhistory/collection/object.asp?ID=641&back=1>.

Name: _____ Date: _____ Class: _____

Innovations of World War I

With the Industrial Revolution in full swing and mass production methods being used in factories, innovations were rapidly produced and put to use on the battlefield. This enabled countries to put more soldiers on the battlefield with better equipment, including deadlier weapons. As a result, World War I was the deadliest war of its time.

Directions: Consider the Engineering Design Process, the Industrial Revolution, along with your knowledge of World War I and previous wars to complete this table.

- The Engineering Design Process**
1. Identify the Problem
 2. Identify Criteria and Constraints
 3. Brainstorm Possible Solutions
 4. Generate Ideas
 5. Explore Possibilities
 6. Select an Approach
 7. Build a Model or Prototype

Innovation	Description	Impact on the battlefield (What did it make possible that was not possible before? What battlefield problem did it resolve?)
75mm French Artillery Shell		
Bread Tin, Canteen and Belt		
Gas Mask		
German Stick Grenade		

Liberty 12 Model A Engine		
M1915 Vickers Machine Gun, .30 Caliber		
M1918 Trench Knife		
Model 1910 Entrenching Tool		
Springfield M1903 Rifle, .30 Caliber with Bayonet		

Using evidence to support an argument about the past

Using this table to help you support your response, compose a one to two paragraph essay defending the following statement: “World War I was the deadliest war to date because innovations of the time enabled more soldiers on the battlefield using deadlier weapons than ever before.”

- Be sure to include the statement in your introduction and conclusion
- Cite examples from your knowledge of several innovations outlined above
- Consider the Engineering Design Process, Industrial Revolution, World War I and previous wars