

Unit: Lowell and the Industrial Revolution

Author: Jeff Frenkiewich: 8th Grade, Milford, NH

Lesson Topic: Human-Environment Interaction & Technology

Grade Level: Middle School

State Standards:

Class Time: Two class periods (about 90 minutes)

Objectives:

- Students will evaluate the role of technology in our lives today.
- Students will be able to create an argument as to which technology has been most important to their own lives.
- Students will be able to see how the industrial revolution drastically changed the U.S. and world.
- Students will judge whether moving to a mill town was a good choice for people in the nineteenth century.

Prerequisite knowledge/Background Information:

Materials:

- List of inventions
- Paper

Procedure:

1. Warm-up the class by having the students write a paragraph arguing which invention has changed life the most.
2. Record answers for a brainstorming list for the follow-up activity
3. Discuss the importance of inventions.
4. Discuss how inventions played a huge part in changing life in the 1800s.
5. After the discussion, start the Activity:
 - a. Have the class look at the 19th century inventions list (Appendix A)
 - b. Read about each invention.
 - c. Sort the 11 inventions into 4 groups. The inventions should be grouped by the area of life they impacted the most (transportation, farming, communication, manufacturing)
 - d. Have the students decide which of these inventions changed life the most or was most important in U.S. history. Be ready to argue!
6. Discuss student answers. Discuss which regions of the country these inventions probably impacted the most and why.
7. Assign: Invention Essay (Appendix B)

Assessment

Students will write a persuasive essay

Appendix A

1797 Eli Whitney invents Interchangeable Parts

Today, Eli Whitney from Connecticut contracted to manufacture 10,000 muskets for the U.S. Army. The process Whitney will use is much different from how guns were made in the past. At the time, a single person, without standardized measurements, would make an entire musket. If the gun broke, the owner would have to return to the original maker for repairs. Whitney divided the labor into several discrete steps and standardized parts to make them interchangeable.

1807 Steamboat

Today, Robert Fulton a former miniaturist and landscape painter launched the "Clermont." The "Clermont" is a steamboat. It traveled 150 miles upstream between New York and Alban at an average speed of 5 mph. Many fear that the boat will explode at any moment, but for now the ship is cruising.

1837 Steel Plow

Today, John Deere introduced his own design for the first cast steel plow. The large plows are made for cutting the tough prairie ground, and are called "grasshopper plows." The plows are made of wrought iron and have a steel share that could cut through sticky soil without clogging. By 1855, John Deere's factory will be selling over 10,000 steel plows a year.

1817 Erie Canal

Today, engineers proposed a plan to supplement natural water systems by digging a 363-mile canal to connect the Hudson River with Lake Erie. Up until now, the only way to travel across land was slow and arduous. The "Seneca Chief" will make the inaugural run through the Erie Canal in 1825.

1831 Reaping Machine

Today, Cyrus McCormick introduced his mechanical reaper. This reaper cuts grain much faster than a man with a scythe. McCormick plans to sell the first unit around 1840 in New England. Fearing that New Englanders will not appreciate his invention, McCormick plans to take his operation to Chicago where he is sure he will prosper. By 1871 his company will be selling 10,000 reapers a year.

1833 Sewing Machine

Today, Walter Hunt invented the first lock-stitch sewing machine. Unfortunately, he says he is losing interest and does not plan to patent his invention. Later, Elias Howe will secure a patent on an original lock-stitch machine, but will fail to manufacture and sell it. Still later, Isaac Singer will infringe on Howe's patent to make his own machine. Singer will become rich from his stolen invention.

1843 Vulcanized Rubber

Today, Charles Goodyear perfected a process for "vulcanizing" rubber. Rubber, so named because it could erase pencil, had long been considered a waterproofing agent, but in its natural state, it melted in hot weather and froze solid in the cold. After ten years of tireless work and abject poverty,

Charles Goodyear combining rubber with sulfur to create a soft, pliable substance unaffected by temperature.

1844 Telegraph

Today, Samuel F.B. Morse demonstrated his telegraph by sending a message to Baltimore from the chambers of the Supreme Court in Washington, D.C. The message, "What hath God wrought?" will mark the beginning of a new era in communication.

1793 Cotton 'Gin

Today, Eli Whitney introduces his Cotton Engine or 'Gin. The Cotton 'Gin cleans the seeds out of the raw cotton. The Cotton 'Gin will be able to clean 50 lbs. of cotton a day compared to a fraction of that amount if hand cleaned. Although Whitney has a patent for his new machine, many people in the south are already thinking of ways to steal his invention without paying the copyrights.

Appendix B

Name: _____

Invention Project

Introduction: The late 18th and 19th century saw an influx of new technology that greatly changed life for people. The cotton gin, mechanical reaper, steam engine, and telegraph were just a few of the inventions that impacted American society. Technology is perhaps the one factor that can change life the greatest in the shortest amount of time.

Task: Write a persuasive research paper arguing what invention changed life the most or has the greatest impact on life today. (There is no wrong answer, but your answer must be backed up with evidence to support your opinion.)

Student Score	Teacher Score	Component
Introduction		
		A well-written introduction is written that includes a vignette of what life would be like without this invention and includes a thesis statement. (A vignette is a short story that brings home a point.)
History		
		A complete history of your invention is included which included the date of invention, name of inventor, and significant details about why this person invented this technology and the process of its invention.
Impact on Today		
		A persuasive argument is made for why this invention is most important to us today. This portion should describe, in detail, how this invention affects us today and why we need it in our daily lives.
Rebuttal		
		Well-constructed arguments against your thesis are provided with detailed counter-arguments for why your opinion is still right. (Why might other people disagree this your opinion? Why are you still right?)
Works Cited		
		Works Cited is in proper format with at least three sources listed. (At least one book.)
4: Much Evidence 3: Some Evidence 2: Needs		

Improvement 1: Unsatisfactory Evidence		
---	--	--

_____/20 Student Score

_____/20 Teacher Score

Note: This essay will not be graded unless it is typed (12 pt. Times New Roman) and double-spaced.