Discussion Guide and Lesson Plans

This guide serves students, instructors, and community groups. **Part One** provides background information. **Part Two** features "previewing" and "post-viewing" activities for classrooms and community organizations. **Part Three** provides sample curricula adaptable for multiple subject areas: History, Economics, Civics, Language Arts, Social Studies, and STEM. Teachers will want to modify lessons for their particular uses, and we hope some instructors will be inspired to design lesson plans of their own.

The overall purpose is to help viewers of all ages think more deeply about the changing nature of work in the Age of Artificial Intelligence, and how our nation can prepare for challenges ahead. Civic groups, high school teachers, college instructors, and curious citizens should find all three parts useful.

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About The Film

Cyberwork and the American Dream examines the history of technology and future of work. From Luddites at the start of the Industrial Revolution to the present, people have feared being replaced by machines. Dystopian predictions about technology fascinate and frighten us even though science-based free enterprise has improved personal comfort, prolonged lives, and promoted democracy. From *Frankenstein* to *The Hunger Games*, popular media have exploited and heightened these anxieties.

CyberWork seeks to begin a better conversation. Preparing for the future is hard, but fear only makes it harder. This film provides students and other audiences a historical framework for understanding the process of "creative destruction" that defined the steam, electrical, and computer revolutions, sparking both turmoil and reform. The documentary brings together scientists, tech entrepreneurs, and scholars in a balanced debate among experts on action needed now or soon to prepare for the next wave of disruption prompted by Artificial Intelligence.

The film is divided into three parts. It begins with a history of industrialization and the repeated waves of "creative destruction" whereby one occupation replaced another. The documentary then explains Artificial Intelligence, including its potential and limits. The last third explores the economic disruption AI will bring, and exposes viewers to debates surrounding what America needs to do to get ready.

CyberWork and the American Dream offers a balanced alternative to the hyperbole and doomsday prophecies that tend to characterize portrayals of Artificial Intelligence. The film discusses challenges in realistic terms and gives hope to viewers that their future is in their own hands.

Key Concepts

- First, Second, and Third Industrial Revolutions
- Artificial Intelligence and the Fourth Industrial Revolution
- Neural Networks
- Algorithms
- Big Data
- Robotics
- Labor Saving Devices
- Creative Destruction
- Access, Rule of Law, and Transparency
- Patent System
- Pursuit of Happiness
- Population and Longevity
- Social Safety Net
- Education and National Prosperity
- Decline of Employment Benefits

PART ONE: Background Information

The First Industrial Revolution

In the middle of the eighteenth century, around the time the Thirteen American Colonies rebelled against England, an unexpected wellspring of inventiveness bubbled up in the British Isles. For the first time in history, average working people began inventing tools of all kinds to make products by machine instead of by hand. Two critical developments led the way: a steam engine to power large machines, and spinning devices that proved mechanical contraptions could spin and weave quicker, faster, and better than humans. This First Industrial Revolution revolutionized the daily lives of common people. Although it had no precise start or stop date, scholars generally describe the First Industrial Revolution as spanning the decades between the 1760 and 1850.

James Watts invented the first efficient, multi-use steam engine. Born in Scotland to parents of average means, he made a living repairing instruments for the University of Glasgow. This sparked his curiosity about how to make instruments function better. In 1763, the university asked him to repair a crude steam-driven water pump. Intensely curious about how steam might power all kinds of machines, Watts devised an engine that not only pumped water far more efficiently, but could also be harnessed to other mechanical devices from printing presses to passenger ships. For example, rather than horses pulling wooden carriages, steam engines allowed locomotives to pull iron "carriages." Watts coined the term "horsepower" to measure exactly how much force each engine generated. In 1776, he received a patent from the British government to protect his exclusive right to sell these unique machines. Because Watt's engine powered other large mechanical inventions, it became the preeminent symbol and most widely applied tool of the First Industrial Revolution.

James Hargreaves helped transform the textile industry around the same time. An uneducated spinner with thirteen children to support, the Englishman conceived a better way to make thread out of raw cotton when a spinning wheel overturned and Hargreaves noticed that its spindle rotated more freely if positioned horizontally rather than vertically. In 1764, he began building what he called "spinning jennies" with cranks to turn multiple spindles, all producing cotton thread simultaneously. ("Jenny" was a slang term for machine.) Hargreaves made the contraption for his own use, but in 1770 took out a patent to sell it commercially.

Hargreaves's invention inspired tinkerers to mechanize yet other parts of the textile industry, including weaving. Their inventions put spinners and hand weavers out of business. James Hargreaves became so unpopular that an unemployed mob destroyed his first "jennies" and ran him out of town. Elsewhere, unemployed workers called themselves "luddites" in honor of a mythical King Ludd who lived in Sherwood Forest (a lá Robin Hood). They swore to crush the devices that had replaced them, and in the process became the enduring symbol of opposition to new technology.

Although no single invention started the First Industrial Revolution, the steam engine and spinning jenny sparked a wave of invention that rapidly transformed the British economy. Traditional centers of cotton textile production in India and China declined in the face of competition from British machine-made fabric. In mere decades, mechanized weaving replaced ancient textile workshops and left millions in Britain and elsewhere searching for new footholds in the economy.

In the United States at this time, cotton was a principal crop on Southern plantations manned by enslaved workers. To keep up with British demand, New England inventor Eli Whitney developed the cotton "gin," a machine that processed raw cotton for spinning far more quickly than people. (Here, too, "gin" was slang derived from the word "engine.") Whitney's invention spurred a further expansion of the British textile industry and incentivized American planters to plant more acres in cotton and extend slavery to the farthest horizons. Soon, inexpensive but finely woven fabrics made clothing more affordable and plentiful for everyone. In America, the expansion of cotton also provoked a Civil War over the rights of the states to enslave people.

The new employment opportunities of the First Industrial Revolution attracted huge numbers of

migrants from rural communities and even foreign countries to industrializing cities. Machine manufacturing, food processing, and iron smelting forged giant metropolises like London, Chicago, and New York, and urban economies that grew along with them.

Factory life was difficult, however. Laborers worked long hours for minimal pay, often in unsafe, crippling conditions. Even children worked in factories, putting in long shifts alongside adults. Writers like Charles Dickens publicized the harsh conditions of the early industrial era in novels such as *Oliver Twist* (1837) and *David Copperfield* (1849). As it did for enslaved Americans, industrialization came at a high price. Yet for the first time in human history, population boomed, life expectancy improved overall, and per capita income edged upward as people earned wages and as mechanization helped farmers grow more food. Immigration and advancing technology stimulated westward expansion. Steam-powered railroads spanned the continent and became a quintessential example of the First Industrial Revolution in America.

The Second Industrial Revolution

Historians roughly date the Second Industrial Revolution from 1870 to 1914, at the start of the First World War. The Second Industrial Revolution continued the inventive process with new sources of power. Lightweight engines powered by oil, natural gas, and electricity replaced bulky steam engines. These smaller, more efficient engines had a variety of transportation applications, including automobiles, buses, and airplanes. Communications advanced rapidly, too. Telephones, telegraphs, and radios put millions of people in touch with one another. Everything seemed to speed up. Even plants grew faster with the invention of new chemical fertilizers.

What defined the Second Industrial Revolution most prominently, however, was electricity. In the big cities of the First Industrial Revolution, people had only gas lamps or kerosene lanterns to light their homes, stores, streets, and factories. Many activities had to be done during daylight hours, which limited the length of the workday and also the capacity of the economy.

With the advent of electricity, new products multi-

plied quickly and could be produced 24 hours a day. Great Britain installed the first public power station in 1881. Thomas Edison patented a commercially viable light bulb in 1897. It was the first bulb cheap and safe enough for home use. Electric streetcars replaced horse-drawn carriages in the major cities of Europe. By 1910, municipalities could power a residential neighborhood from a single power station. Cheap electricity and tiny engine components made other machines feasible, such as washers and dryers, vacuum cleaners, sewing machines, and refrigerators. These inventions reduced the labor involved in running a home and gradually paved the way for women to enter the workforce while still raising children. This increased overall output.

Other innovations of the Second Industrial Revolution were organizational rather than scientific. American carmaker Henry Ford was first to apply the principle of assembly-line production. Workers remained rooted in one spot while components of a new automobile passed by them on an electric conveyer belt. Workers simply performed their one task (welding or assembling) before the conveyor belt passed the new car to yet another worker for the next task. Based on "Scientific Management," such arrangements led to new fields such as industrial engineering. As factories and businesses grew ever larger, cities did so along with them. Over time, water supply networks, sewage systems, communication systems, public schools, electrical power lines, and modern transportation networks created what's called an industrial infrastructure.

The Second Industrial Revolution saw the greatest increase in economic growth in the shortest period of time in human history. Living standards improved as the prices of manufactured goods fell dramatically. With continued prosperity came continued population growth. By 1880, the U.S. population had grown so greatly that it took more than seven years to tabulate the U.S. Census results for that year. The government announced a contest for a better way to count data. The winner, a New Yorker named Herman Hollerith, invented a machine that took all the data from the 1880 census and tabulated it in 5.5 hours. The next census, in 1890, became the first "electric census," using Hollerith's punch-card based machines. Powered by electricity and informed by

scientific principles, these great tabulators took up entire rooms. They paved the way for the next major human innovation and ushered in the modern world.

The Third Industrial Revolution

The Third Industrial Revolution, sometimes called the Digital Revolution, began sometime between 1950 and 1960 with the development of the mainframe computer. Called "main frames" after the large cabinets that housed their central processing units, early computers were used primarily by governments and large corporations to store data and make statistical calculations. Computer technology evolved rapidly, however, from semiconductors and mainframe computing to the first microprocessors in 1971 and birth of personal computers around 1975. Mainframes that stored information for internal use were eventually replaced by networks of "servers" that store and process information around the planet for millions of miniaturized computers (desktops, laptops, and now phones), all of which are far more powerful than the biggest mainframes of the 1960s and 1970s. The memory and processing "chips" that computers use to analyze and store data increased continuously in capacity. Scientists call this "Moore's Law." In 1965, Gordon Moore, a scientist and founder of the company Intel, predicted that the number of circuits that manufacturers could fit onto a single silicon wafer (a "chip") would double every two years while falling in price. His estimate proved true.

By the end of the 1980s the basic elements of the modern digital age were in place. Consumer goods like televisions, which used to be tuned in by antenna (analog), were reengineered and linked to the Internet in ways that allow us to stream movies today. Automobiles, telephones, clocks, and small appliances of all types were similarly reengineered to be more powerful, useful, and efficient. The move from analog to digital technologies in the Third Industrial Revolution revolutionized the communications, transportation, and energy industries. It further globalized supply and production chains by allowing humans to coordinate their activities more rapidly and efficiently. Computers facilitated a process known as "outsourcing." For example, instead of all the parts of a car being made in one place, components might be manufactured and partially assembled in multiple locations across the planet.

Artificial Intelligence and the Fourth Industrial Revolution

Mathematician John McCarthy, the son of working class immigrants, coined the term "Artificial Intelligence" (AI) in 1955 to describe the potential for computers to be programmed to "think" about information and respond flexibly to human commands. Previously, every process executed by a computer had to be preplanned. Traditional computer programs were like recipes that instructed the machine exactly what to do at each step. If the machine encountered a situation not anticipated by the programmer, the computer stopped functioning or "crashed." This was known as a "bug" in the program. All the work a person had put into the process might be wiped from the computer's memory.

McCarthy's vision wasn't realized for four decades, however. Scientists were stymied by numerous difficulties in achieving machine learning, not the least of which was limited data storage capacities and slow processing speeds. Not until 1993, when IBM's "Deep Blue" computer defeated chess champion Garry Kasparov, was Artificial Intelligence shown to work.

AI the next generation of computer software that uses a new type of algorithm called a "neural network." Instead of following a series of steps written by a programmer, a neural network uses massive amounts of data to teach itself the best solution to a problem. A human defines the goal such as, "Drive this car quickly and safely to the closest store that sells organic eggs." The neural network accesses all the available data on the Internet about the car, closest store, fastest route, nearby merchants that carry organic foods, safe driving techniques, recent traffic jams, and so on. It then analyses that information to find the best way to achieve the goal. The human doesn't know exactly how the software arrives at the right answer. If the software makes a mistake, the human provides feedback such as, "those eggs weren't fresh." The neural network updates itself and informs other neural networks to watch for "sell by" dates. The human doesn't have to "debug" the program. It debugs itself based on a feedback from the person.

AI and neural networks are now used in many industries. One example is aviation. Human pilots supervise commercial aircraft and sometimes over-

ride computers if they appear to be malfunctioning, but pilots no longer do most of the work. Modern aircraft are generally flown by a computer autopilot that tracks the plane's position using motion sensors and dead reckoning, corrected as necessary by GPS (Global Positioning Systems). Software systems land most commercial aircraft. In a 2015 survey, Boeing pilots reported spending an average of only seven minutes physically manipulating their controls during a typical flight. Airbus pilots, whose planes are even more fully automated, spent half that time.

Like steam, electricity, and computers in previous generations, Artificial Intelligence will have countless applications, many of which have not yet been invented. Incorporated into robots, AI will save humans countless hours. A common example today is a vacuum robot. Using sensors, the robot scans a room, "learns" the position of chairs, couches, and stairs, and then vacuums around them without being instructed by the user. Scholars debate—and no one knows—exactly the extent to which AI will transform our world. In the film, Andrew Ng, one of the world's leading experts, asserts that it is "the new electricity." If that's true, new applications will increase exponentially. Like earlier inventions, AI is not meant to replace humans but allow them to be more productive and free up time for other pursuits.

Algorithms

In mathematics and computer science, an "algorithm" is a procedure for solving a problem. The word goes back to the Persian inventor of the branch of mathematics known as Algebra. The scholar's last name, Al-Khwarizmi, was translated into Latin as Algorithmi. Applied to Artificial Intelligence, algorithms are strings of instructions to perform calculations, process data, estimate probabilities, and complete specific tasks.

Algorithms are the basis for software programs that allow computers to recognize faces, translate speech, identify patterns in data, and solve problems based on logic. Common examples include Google's Internet browser, Amazon's recommendation engine, Waze's satellite navigation routing system, and people-finders like Skype and Facebook.

Neural Networks

Artificial neural networks are one of the main tools of machine learning. These are software programs based on algorithms that use a "network" of inter-connected data points. Essentially, they write their own instructions (computer codes). They use information provided by humans to achieve goals set by humans. While inspired by processing patterns in animal nervous systems, neural networks remain significantly different from biological brains that are far more perceptive, flexible, and creative.

To picture how machine learning works, imagine a factory conveyor belt. After the raw material (data) is placed on the conveyor belt, it travels along a production line. At each stop, the data is examined for a different set of features. For example, if the job of the neural network is to recognize a bottle of water, the first stop might analyze the brightness of the object's pixels. At the next stop, the network might analyze the distribution of pixels to determine the shape of the object. At the end of the production line, the computer gives its results. Human beings then measure the software's accuracy. For example, if the neural network has mistaken a bottle of whiskey for a bottle of water, the human programmer marks the answer "wrong." The machine goes back and reprocesses the data again (and again) until its margin of error approaches zero. After awhile, the network carries out its task without further human help.

These "deep learning" neural networks are being applied to an increasingly wide variety of fields, including speech and sound recognition, drug design, medical analysis, board games, financial investment, and many other specialties, producing results that are statistically more accurate than those of human experts.

The ability to "think" about data does not mean that AI is "sentient," however. Neural networks are devised to achieve specific outcomes using large amounts of data. Even when attached to robots, neural networks solve only the problems assigned them by humans. These programs are "intelligent" only in the sense that they learn from their mistakes. Scientists call this "narrow intelligence," as opposed to "general intelligence," which humans possess but no computer is expected to have anytime in the

foreseeable future. Human intelligence is self-aware, learns from an example of one, and informed by emotion. Narrow AI is task specific and data-driven. Narrow AI can identify a picture of a bottle of water. General intelligence knows what to do with the bottle.

One commonsense way to think about the difference between narrow and general intelligence is that people talk to—but not with—their phones. A user may ask a phone for driving directions, but the phone itself has no curiosity or questions about the information it provides. It has no real mind.

Big Data

A common term to describe the inputs that neural-networks need in order to produce accurate results, "big data" describes extremely large and continuously expanding data sets beyond the ability of any human to process. No one can write fast enough, long enough, or small enough to manage the amount of data that the tiniest computer chip can store, sort, and analyze. Big data collection was made possible in recent years by the improvements in storage and digitization that Gordon Moore predicted in 1965. Neural networks use big data to identify patterns, make recommendations, and perform mechanical tasks that range from prescribing medicine and performing surgery to flying airplanes and vacuuming carpets.

Robotics

Robotics is a branch of technology that designs, builds, and programs machines to carry out specific actions either autonomously or semi-autonomously. In industry, most robots are machines with long arms that perform endlessly repetitive tasks like welding the parts of a new car. Some robots operate under close human supervision, such as those used to perform surgery. Instead of using her or his own hands, which are bigger, shakier, and less precise than mechanical instruments, a surgeon uses a computer to direct the robot's arms and delicate instruments.

Some manufacturers have created robots like "Pepper" in the film to identify faces. They even identify

expressions that the robot categorizes as emotions based on examples that humans have previously fed into the computer's database. Such robots can greet customers by name and provide information on prices or the aisle locations of specific products. They are programmed to express polite and sympathetic greetings, much like voice-activated "shopping assistants" on phones and home devices. Robots are essentially another kind of labor saving device for tasks previously done by human workers. Some robots use artificial intelligence, but most do not.

Labor Saving Devices

Labor saving devices are all the inventions that make it easier for people to complete particular tasks, reducing the time and number of hands necessary for a job. So, for example, a mechanical thresher makes it possible for one person to harvest fifty acres of corn in a day instead of the job taking several people a week by hand. This increases what economists call "productivity:" the amount of work each individual can accomplish.

People have developed tools to make work easier since the stone age, but during the Industrial Revolution the attitude spread held that if a job was difficult for a human or an animal, then a mechanical device could and should be invented to reinvent the task entirely. Cars and tractors replaced horses and oxen, and people found ways to automate household tasks, too. Labor saving devices have revolutionized the world many times over, continuously raising human productivity.

Creative Destruction

The Austrian economist Joseph Schumpeter coined the term "creative destruction" in 1942 to describe a painful paradox of free markets. Capitalism offers economic incentives for creativity that have made the world wealthier. But every product that improves upon another destroys the market for the earlier item. Old companies go out of business and employees lose their jobs. Some individuals are worse off not just in the short term, but permanently if unable to adapt. Attempts to soften the impact by preserving old jobs merely short-circuit progress.

Historically, creative destruction has kept up with population growth, producing an adequate number of new jobs and raising living standards overall.

Milton Friedman, an economist who won the Nobel Prize in 1976, told the story of asking a construction supervisor in an impoverished country why his men used shovels to build new roads instead of bulldozers. His host replied that bulldozers would take away jobs. Friedman replied that by this logic the supervisor ought to issue teaspoons in order to employ even more men.

For real human beings in real time, Schumpeter's enduring term captures a painful truth: progress is not easy. Old jobs are destroyed. A compassionate society tries to cushion the transition.

Access, Rule of Law, and Transparency

Scholars believe that advances in technology were due primarily to modern social systems that were friendlier to innovation than the aristocratic systems that preceded them. There are three key ways in which modern societies are comparatively more open and equal than before. The film calls them Access, Rule of Law, and Transparency.

Access is an ideal woven into democracy even when imperfectly achieved. Essentially, it is the conviction that open systems function better than closed ones. Where individuals can freely participate in government and the economy, a society becomes not only freer and more personally fulfilling, but also wealthier and more peaceful. The philosophical justification for access is that "All men are created equal," as stated by the American Declaration of Independence. It has been the nation's work since 1776 to put this concept into practice by making opportunity accessible regardless of race, gender, ethnic background, sexual orientation, or physical disability. The process hasn't been easy or automatic. Human history is long and customs are deeply rooted. But the nation has changed its laws and practices over time to align more closely with its revolutionary ideals. This has widened the pool of people who contribute to innovation.

Rule of Law is the belief that government should not have arbitrary power. Rules should be made by elected representatives and enforced impartially. In the U.S., state and federal legislatures determine the "rules" by which everyone is supposed to play. Courts hold both government and citizens accountable. History shows that the breakdown of "rule of law" leads to individual criminality and government tyranny. Innovation dries up. People don't want to risk others stealing their ideas, and businesses don't wish to lose their investments either to corrupt elites or popular mobs. Rule of law is fundamental to social stability.

Transparency is another widely held modern value. At the time of Columbus, navigational maps of the earth's surface were state secrets. Royal governments felt no obligation to report treaties or internal deliberations to their subjects. Then, around the time of the First Industrial Revolution, the United States and a growing circle of nations increasingly came to accept that transparency in political and economic dealings was more useful than secrecy. Scholars spy the first American references to transparency in the 1778 Articles of Confederation. At the time, it was illegal to publish the proceedings of the British Parliament, but the Articles required the Constitutional Congress to publish a monthly journal of proceedings. The U.S. Constitution of 1789 made similar requirements of the new federal government. In his 1792 farewell address, George Washington reminded his countrymen that "honesty is always the best policy."

Transparency serves access and rule of law as both depend upon a free flow of information.

Patent System

The history of American patents spans more than three centuries, even before the Constitution was adopted. In the colonial period, people who invented new products could petition the Royal government, which had the power to grant them an exclusive right to sell their invention. But the British imperial system was aristocratic, making patents hard to obtain and defend. The Crown was also discriminatory towards the colonies. The causes of the Revolution included the limits on what colonists could make. For example, Parliament's "Hat Act" of 1732 restricted the manufacture, sale, and exportation of colonial hats.

Following Independence, the American founders

envisioned intellectual property as one of the forms of property that government should defend. Article One, Section 8 of the U.S. Constitution gave Congress the power "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

This meant that only the inventor could profit from her or his work for the duration of a patent. For example, in 1917 a Swedish immigrant named Gideon Sundback submitted diagrams and a model to the U.S. Patent Office for a new device to fasten clothing. After that, for a limited period of time, any company wishing to make "zippers" had to pay Sundback's company for the use of his idea. Once the patent lapsed, any manufacturer could freely copy Sundback's innovation.

The Patent Office was democracy in motion. Any person could file for a patent regardless of race, gender, national origin, and so on. The talents of the whole country—including immigrants—were put to use.

Pursuit of Happiness

The American Declaration of Independence of 1776 famously stated, "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the *pursuit of Happiness."*

The final phrase was a play on English philosopher John Locke. Locke had earlier spelled out a "contract theory of government" at the end of the violent seventeenth century, following a long period of dynastic turmoil and civil war. In words that came to symbolize the transformation of British government, Locke asserted in 1688 that kings and queens rule not by divine appointment, but at the consent of the people they serve. If rulers fail to protect their subjects' "life, liberty, and property," the people are entitled to replace them.

In his draft of the U.S. Declaration of Independence, Thomas Jefferson substituted the phrase "pursuit of happiness" for the word "property,"

but he meant much the same thing as John Locke. Citizens were entitled to improve their lot in life. Government must protect, rather than deprive citizens of the fruits of their labor. It should devise and enforce laws that advance the people's physical welfare. If government failed, the people could change the government. In the United States, this led to representative government and "universal suffrage," meaning the right to vote for all adults.

Population and Longevity

Throughout most human history, population and economic growth was slow and incremental. It took humankind 120 centuries to reach a population of one billion.

Then, in little more than little more than two centuries, the number of humans on the planet shot from one billion to seven billion. Improvements in farming—from the introduction of fertilizers to mechanical threshing—created more reliable food supplies. Science brought a better understanding of how diseases like cholera and typhus are transmitted, leading to improvements in public hygiene. Industrialization led to wages and savings, stimulating a middle class. People lived longer than ever and fewer of their children died. Average life expectancy was around age thirty in 1800, at the start of the Industrial Revolution. In one hundred years, life expectancy climbed to around age fifty. Today, most people can expect to live close to age eighty unless—ironically—they harm themselves by indulging habits that would have been impossible in earlier generations, such as overeating or abusing "recreational" drugs.

Social Safety Net

Humans have a long history of helping one another out in times of trouble. All major world religions require adherents to practice charity towards the needy. The parable of the Good Samaritan in the Christian Bible is one of countless examples. For this reason, churches, temples, mosques, and other religious bodies were among the first institutionsvto provide organized assistance to the poor.

Yet industrialization created challenges that exceeded

the capacity of private charity. Urbanization combined with creative destruction left big, diverse population groups at risk during economic downturns or at times of exceptional innovation. One feature of all industrial economies was that they began experimenting with new forms of social service to mitigate hardship towards the end of the nineteenth century. But the Great Depression and World War II proved the critical turning point. These events drove home that failing to respond compassionately risked catastrophe.

In 1920, for the first time, more Americans lived in towns earning wages than on farms growing their own food. When the depression hit in 1929, unemployment rose to 25%. In the United States, a long period of Republican Party dominance came to an end when voters decided that President Herbert Hoover was unequal to the challenge. Under Franklin Roosevelt, government devised new programs to help families. In some parts of the world, democratic governments simply crumpled under the weight of economic failure. Germany, Italy, and Japan embraced authoritarian governments that promised better economic performance—and attacked their neighbors to achieve it.

The Great Depression produced a variety of federal and state initiatives, some of which continue to the present. One of the great architects of this system was Frances Perkins, an experienced reformer whom Roosevelt recruited to head of the Department of Labor, where she served longer than any other labor secretary in U.S. history. A canny politician, Perkins led campaigns that established a minimum wage and maximum workweek. Most importantly, she chaired the committee that wrote the Social Security Act of 1935, creating a federal pension system and fostering state unemployment insurance. Perkins' achievements did not end the Great Depression, but helped democracy weather it. Although her safety net has been amended many times since the 1930s, the basic institutional structure remains the same and is premised on the idea that unemployment is largely cyclical. Creative destruction periodically wipes away old jobs, but innovation brings new jobs at higher pay because individual workers are more productive.

Today, some people worry that AI and robots render this premise moot: the changes that are coming are just too rapid and too fundamental. Policy debates center around what changes need to be made in the social safety net to cope with job loss and stagnant wages, especially among the least educated. A Universal Basic Income is one of many proposals. Economist Milton Friedman was one of the first to propose that government provide a minimal income for all citizens to prevent the worst forms of poverty. President Gerald Ford signed a modified plan called the Earned Income Tax Credit, which today still provides a small amendment to personal income for employed individuals who fall below a certain income.

As the film shows, experts disagree on the best way to reform the current system, but most believe it is inadequate.

Education and National Prosperity

Even before the invention of income support programs in the 1930s, there was another way that governments strove to provide. The American Revolution gave rise to the idea that a free country needed free schools if citizens were to exercise votes intelligently and thrive economically. Horace Mann, who never had more than six weeks of schooling in a year, proselytized the "Common School Movement." Head of the Massachusetts's Board of Education (founded in 1837), Mann called public schools "the greatest discovery made by man" and "the great equalizer." There is "nothing so costly as ignorance," he believed. An uneducated society is unstable. "Jails and prisons are the complement of schools," he wrote. "So many less as you have of the latter, so many more must you have of the former."

Grammar schools spread across the U.S. from the 1830s and 1880s. Reading, writing, and arithmetic proved tools for success in industrializing economies. Unlike most parts of the world, towns offered children a no-cost education. Pupils learned from common textbooks such as *McGuffey Readers* and Noah Webster's *American Spelling Book*. Immediately after the Civil War, the federal government established a Department of Education to "promote the cause of education across the country."

A "high school movement" soon began, decades in ad-

vance of universal secondary education in Europe (not established there until after World War II). Schooling per pupil in the U.S. went up by 0.8 years every decade. Each generation improved over the last. They also became wealthier than their parents. In 1900, only six percent of Americans graduated high school. By the 1950s, roughly 60 percent did. Per capita income increased and economic inequality declined. The nation's productivity climbed as well. With the help of new tools, educated workers produced more goods per capita than previous generations. Americans achieved the world's highest income in the same years that they became the world's best-educated people.

Until the 1970s. Since then, improvement between generations has nearly ceased. The percentage of Americans who graduate high school is relatively constant at around 75 percent, and math and reading scores have not gone up in fifty years. Instead of exceeding their parents' accomplishments, many students are now stubbornly defined by them. Educational success is least among pupils from low-income backgrounds. As shown by Eric Hanushek, one of the scholars in the film, Horace Mann's beloved public schools are no longer closing the gap between "haves" and "have-nots."

This is in contrast with competitors. The United States, which invented public education, no longer leads, as in the nineteenth and twentieth centuries. European and Asian pupils have caught up with and now exceed American students. In the most recently published international scores (2015), the U.S. rank 31st behind most European and Asian nations.

Decline of Employment Benefits

During much of the last century, middle class Americans relied on employers to provide "benefits" in addition to wages. These included health insurance plans, retirement pensions, short-term disability insurance, paid vacations, and contributions towards unemployment insurance. Today, many employers have reduced these benefits, paying only into the Social Security Fund, which provides a small pension to workers after retirement.

There are two important problems with this development beyond the fact that such pensions don't cover the full cost of living. Social Security relies heavily on current contributions to support people who retired a long time ago. The size of the elderly population has boomed as longevity improves. This puts an enormous strain on the fund. Some economists predict that Social Security will be bankrupt by 2034. Additionally, many people who work in the informal "gig economy" neither pay into Social Security nor receive a pension. Increasing numbers of individuals, such as drivers for Uber or Lyft, are considered independent contractors. These people receive few if any benefits. They are at real risk in a recession or during another wave of innovation that could eliminate their jobs entirely, such as the advent of driverless cars.

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- Claudia Goldin and Lawrence Katz, *The Race Between Education and Technology* (Harvard 2008).
- Robert J. Gordon, *The Rise and Fall of American Growth* (Princeton, 2016).
- Jerry Kaplan, *Artificial Intelligence: What Everyone Needs to Know* (Oxford, 2016).
- Garry Kasparov, *Deep Thinking: Where Machine Intelligence Ends and Human Creativity Begins* (Public Affairs, 2017)
- David Kennedy, *Freedom From Fear: The American People in Depression and War* (Oxford 1999).
- B. Zorina Khan, *The Democratization of Invention* (Cambridge University, 2005)
- Andrew McAfee and Erik Brynjolfsson, *Machine, Platform, Crowd* (Norton, 2017)
- Deirdre McCloskey, *Bourgeois Equality* (University of Chicago, 2016)

Sources and Resources

Population and Economic Growth:

https://ourworldindata.org/world-population-growth

Future of Jobs:

https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Future%20of%20Organizations/What%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/MGI-Jobs-Lost-Jobs-Gained-Report-December-6-2017.ashx

Education in America:

http://factsmaps.com/pisa-worldwide-ranking-average-score-of-math-science-reading/
https://www.educationnext.org/test-scores-really-mean-economy/
https://www.educationnext.org/achievement-gap-fails-close-half-century-testing-shows-persistent-divide/
https://www.pewresearch.org/fact-tank/2017/02/15/u-s-students-internationally-math-science/
https://nces.ed.gov/pubs93/93442.pdf

Common Uses of Artificial Intelligence

https://www.microsoft.com/en-us/ai?activetab=pivot1%3aprimaryr5
https://builtin.com/artificial-intelligence/examples-ai-in-industry

DIY: How to Program A Neural Network

https://www.kaggle.com/learn/overview
http://neuralnetworksanddeeplearning.com/chap1.html

History of the Safety Net

https://www.ssa.gov/history/fperkins.html
http://siteresources.worldbank.org/SPLP/Resources/461653-1114187700010/SSN_USA_Chapter1.pdf
https://www.brookings.edu/blog/the-avenue/2018/03/29/rethinking-worker-benefits-for-an-economy-in-flux/

PART TWO: Conversations Before and After the Film

Pre-Viewing Discussion Questions for Teachers:

Following are discussion questions for use by teachers who need to know how to align the film with the Common Core Curriculum standards adopted by most states. http://www.corestandards.org/standards-in-your-state/

The teacher will preface the documentary by posing the following questions for students.

1. What is meant by "industrialization?" How did the Industrial Revolution arise in the U.S. and Britain? Why there, and what was the relationship between the two societies? [CCSS.ELA-LITERACY.RH.11-12.1] then,

2) The idea of a Social Safety Net is a major theme in Cyberwork. Consider this statement from a recent report on the U.S. safety net:

> "Work is at the core of the American dream. It brings the promise of income, dignity, and security. The US social safety net has largely reinforced this work ethic. Its framework includes a large role for employer provided benefits connected to public programs, policies, and workplace laws and regulations."[1]

List examples of the U.S. social safety net that are currently in existence. How do these programs benefit society? Do they sometimes backfire? Are they adequate? [CCSS.ELA-LITERACY.RH.11-12.1

3) Horace Mann (1796-1859), "Father of the Common School Movement," was the foremost proponent of education reform in antebellum America. He argued that the common school, a free, universal, non-sectarian, and public institution, was the best means for creating the virtuous citizenry necessary to sustain American political institutions and forestall social disorder, and the educated workforce required to expand the economy.[2]

How would Mann react to the current American educational system? Does it currently embody his visions for inculcating citizenship and preparing people for work? [CCSS.ELA-LITERACY.RH.11-12.

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1. Loprest, Pamela J., and Demetra Smith Nightingale. "Full Report." Urban Institute, 22 July 2018, www.urban.org/research/publication/nature-work-and-social-safety-net/view/full_report.

2. "Horace Mann And The Creation Of The Common School." Social Welfare History Project, 10 Dec. 2017, socialwelfare.library.vcu.edu/programs/education/horace-mann-creation-common-school/.

Post-Viewing Discussion Questions for Teachers:

This film can be used to enhance history, language arts, science, civics, and economics lessons. The questions below are prompts for class discussions, small group discussions, individual writing assignments, peer presentations, as well as blog posts. To answer the questions, students may need to do additional research.

1. Dr. Elizabeth Cobbs listed many historical examples of the fear of progress, including governmental actions to prohibit it: from the Ottoman Empire's ban of the printing press, to the Ming Chinese emperor's halt on voyages of discovery, to the Pope's ruling that Galileo's theory of heliocentrism was heretical, to Queen Elizabeth's prohibition against weaving machines that might put hand-knitters out of work. How do these examples compare to contemporary reactions against new technology? Is there validity in the fear of artificial intelligence? Can you identify examples (evidence) to support Dr. Cobbs's claim that fear "sells movie tickets?" CCSS.ELA-LITERACY.RH.11-12.3

2. Identify the main differences between the First Industrial Revolution in America and the Second. What was the main relationship between the two events and what spurred the advent of the second wave of innovation? How much time passed between the First and Second Industrial Revolutions? CCSS.ELA-LITERACY.RH.11-12.3

3. In *Cyberwork*, the Third Industrial Revolution is traced to the invention of the mainframe computer in the 1960s, and American society is described as being on the cusp the Fourth Industrial Revolution with the spread of AI. Compared to the time lapse between the First and Second Industrial Revolutions, the Third and Fourth seem close together. What are some of the reasons this shift has happened so quickly? What does that mean for government policy? CCSS.ELA-LITERACY.RH.11-12.3

4. What are the current major federal safety net programs in the United States of America? What are the differences between federal and state programs? Are any of the current federal safety net programs at risk of elimination? (If so, which ones, and why?) [CCSS.ELA-LITERACY.RH.11-12.2]

Pre-Viewing Discussion Questions for Community Groups:

(Questions to think about while viewing):

1. Where does American inventiveness come from? Why have we been successful as a society?

2. What do you think of when you hear the term "Artificial Intelligence?"

3. Do you have any concerns about AI?

4. How confident are you that there will be enough jobs in the future, and that they will pay adequate wages and benefits?

5. What do you think of the state of the American "safety net?" Is it adequate to the challenges ahead?

Post-Viewing Questions for Community Groups:

1. What was the historical connection because human equality and inventiveness? Does it still describe our society?

2. How does popular culture stoke fears about Artificial Intelligence? Which fears seem justified and which do not?

3. How does "machine learning" work? Does that seem like a better—or less frightening—description than "Artificial Intelligence?"

4. What are the current major federal safety net programs in the United States? Which seem to work as intended, and which have negative unintended consequences? How might we fix or replace them?

5. What do you think of the proposal for a Universal Basic Income? How might it work? What might be the advantages and disadvantages?

6. Discuss the "motivational divide" mentioned by Thomas Friedman. What is the responsibility of the individual in getting retraining and what is the responsibility of businesses and government in providing it? How might you assign percentages to individual responsibility and government responsibility?

7. What kinds of things would you like robots to do, and where do you draw the line?

8. Experts in the film point out that some of the most important jobs of the future will be ones that require "heart." Traditionally, caregiving jobs have paid low wages. How might they be better compensated—if these are to be the best jobs of the future? Since women mostly performed them in the past, where does that leave men? Does the AI Revolution come with a gender gap? If so, how can we bridge it?

PART THREE: Lesson Plans

CyberWork and the American Dream explores multiple themes drawn from History, Economics, Civics, Language Arts, Social Studies, Science, and even Mathematics. Below are two sets of lesson plans that take off from the film rather than trying to cover every potential subject. Our hope is that teachers will use, modify, or replace these lessons plans with ones of their own.

The first lesson places innovation within the historical context of the Founders' commitment to equality. The second curriculum teaches students to match swings in electoral politics with economic events and the development of a federal "safety net."

I. LESSON ONE: Founding Era Connections to American Industry

By Beth Doughty

Unit Overview:

In 1776, a great shift occurred in the American colonies, driving the American colonists to declare their independence from the United Kingdom. This event did not occur in isolation, or without great thought and intent. The novel idea that *all men are created equal* spurred Americans to part from Britain and write provisions into their new Constitution that encouraged ordinary citizens to profit from their own brain power and creativity.
Over the course of 4-5 class periods, students will look at the ideas that drove the First Industrial Revolution and empowered average Americans. Students will watch the documentary *Cyberwork and the American Dream* and then closely examine, explain, and evaluate excerpts from four different primary sources: John Locke's *Two Treatises of Government, Common Sense* by Thomas Paine, *The Declaration of Independence*, and Alexander Hamilton's *Report on the Subject of Manufactures*. These excerpts will allow them to analyze the philosophical foundations of the United States and how ideas helped spur the First Industrial Revolution. Students will also connect these founding documents to modern American industry.

The students will be assessed through the completion of worksheets and participation in discussions.

Unit Objectives:

Students will be able to:

- Close read informational text for comprehension and critical analysis.
- Compare and contrast the viewpoints expressed in the primary sources.
- Cite textual evidence to support claims and reasoning in response to critical thinking questions and prompts.
- Chart the chronology of historical events and their relationship to each other as well other time periods in history.
- Connect the four separate primary source documents to each other.
- Connect the four primary source documents to the claims made in the documentary, *Cyberwork and the American Dream.*

Number of Class Periods: 4-5

Grade Levels: 8-12

Common Core State Standards:

CCSS.ELA-LITERACY.RH.6-8.1: Cite specific textual evidence to support analysis of primary and secondary sources.

CCSS.ELA-LITERACY.RH.9-10.1: Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

CCSS.ELA-LITERACY.RH.6-8.2: Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

CCSS.ELA-LITERACY.RH.6-8.3 Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

CCSS.ELA-LITERACY.RH.9-10.3: Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

CCSS.ELA-LITERACY.RH.6-8.4: Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

CCSS.ELA-LITERACY.RH.9-10.4: Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

CCSS.ELA-LITERACY.RH.6-8.6: Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

CCSS.ELA-LITERACY.RH.9-10.6: Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

CCSS.ELA-LITERACY.RH.6-8.8: Distinguish among fact, opinion, and reasoned judgment in a text.

CCSS.ELA-LITERACY.RH.9-10.9: Compare and contrast treatments of the same topic in several primary and secondary sources.

CCSS.ELA-LITERACY.W.8.9-12.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.SL.8.1; Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.9-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

Lesson Plan:

Materials:
(One per student; the teacher will need to decide if it is best to make the copies back-to-back or on separate sheets of paper)

- Copies of the worksheet: *Two Treatises of Government* by John Locke - Primary Source Analysis, Parts One & Two.

- Copies of the worksheet: *Common Sense* by Thomas Paine - Primary Source Analysis , Parts One & Two.

- Copies of the worksheet: *The Declaration of Independence* - Primary Source Analysis, Parts One & Two.

- Copies of the worksheet: *Alexander Hamilton's Final Version of the Report on the Subject of Manufactures* - Primary Source Analysis, Parts One & Two.

- OPTIONAL: copies of article from the Brookings Institute: "Alexander Hamilton's Manufacturing Message." [https://www.brookings.edu/articles/alexander-hamiltons-manufacturing-message/]

- OR provide the link to the students and have them read the article online.

- Teacher copies of these worksheets to be projected to class: Document Based Question, Quotes from Historians, and Quotes from Secondary Sources

- Projection device

- Pencil or pen *(one per student)*

Day one: Watch the documentary *Cyberwork and the American Dream*.

Day two: Students will have watched the documentary *Cyberwork and the American Dream* the previous day.

Before passing out the worksheets on *Two Treatises of Government, Common Sense, The Declaration of Independence*, and the *Report on Manufactures*, the teacher will project the Document-Based Question worksheet to the class. The teacher will lead the class in a discussion of their thoughts to possible answers to the Document-Based Question. (Teacher can determine if a whole-class discussion would be best, or if it would be beneficial to have small group discussion before the whole-class discussion).

After the discussion of the Document-Based Question, and before passing out the worksheets, remind students that as the documentary shows, historical events do not occur in isolation. Previous events are related to and influence subsequent ones. These four documents allow us to chart a historical relationship between the works of John Locke, Thomas Paine, Thomas Jefferson, and Alexander Hamilton, and their significance for the First Industrial Revolution in America.

Pass out the worksheets. It will probably take two class periods for the students to complete each of the three worksheets, unless they are also assigned for homework.

Day three (or four): Students will continue to work on the worksheets. If the worksheets have been completed as homework, teacher will lead a whole-class discussion based on the answers to the questions, and collect the completed worksheets.

Day four (or five): Before this day, teachers should read this article related to Alexander Hamilton's *Report on Manufactures* from the Brookings Institute:

Katz, Bruce, et al. "Alexander Hamilton's Manufacturing Message." Brookings, 28 Sept. 2016, www.brookings.edu/articles/alexander-hamiltons-manufacturing-message/.

This article will give the teacher background to the situation in America fifteen years after the *Declaration of Independence*, when the Founders conflicted over how to foster national success. Thomas Jefferson supported continued agrarianism, while Alexander Hamilton believed the nation should pursue industrialization. If it is appropriate for the reading level of the students, the teacher may assign this reading ahead of time or lead a guided reading of the article. At a minimum, the teacher should read and understand the ideas in the article in order to connect Hamilton's proposals for fostering human potential in *The Report of Manufactures* with the preceding excerpts on political rights.

Pass out the worksheets that have students undertake primary source analysis of three quotations from Alexander Hamilton's *Report of Manufactures*. Have students complete worksheets.

When done, project the <u>Quotes from Secondary Sources</u> worksheet overhead. On the last day, lead a whole-class discussion on these quotes, and on the data and claims from Katz and Lee at the end of this curriculum.

EXTENSION ACTIVITIES:

1. Project the <u>Quotes from Historians</u> worksheet that has <u>both</u> quotes on the same sheet. Lead a discussion with the whole-class defining what each of these historians are saying in these two quotes. (<u>Optional change</u>: have the students work in small groups to restate each of the quotes and share with the entire class)

    Post the print out of the individual <u>Quotes from Historians</u> at two locations on the opposite side of the classroom. Ask the students to stand up and move next to the quote that they agree with more. Ask for volunteers to explain why they agreed with that quote more.

2. Have students create a timeline that lists the publication of the four documents analyzed in this unit (date & location): *The Two Treatises of Government, Common Sense, The Declaration of Independence,* and *The Report on Manufactures*. Students could add short biographies of the four authors to the timeline, with requirements for the bios to be set by the teacher.

3. Have students create a Google Map where students add pins and descriptions that include the authors, the publication date and location of each of these documents. The teacher could provide other founding documents to include in this activity, or direct the students to identify at least five of their own choices. Do not allow students to reuse any of the same authors. When done, have the students include a comparison statement in their map that draws some conclusions about where these documents were mostly published.

Document Based Question

*In just a few hundred years, industrialization transformed life
on our planet, and charted a path to the stars ...*

Why did inventions suddenly take off?

Quotes from Historians

Ideas That Drove Invention

"As Adam Smith said, 'The liberal plan of equality, liberty, and justice,' was amazingly productive in the economy and had of course the immediate effect of making people free."

Deirdre McCloskey (Historian, University of Illinois)

"It's absolutely crucial to our understanding of the Industrial Revolution to see that it was in part a shift away from the aristocratic values of previous eras to the middle-class values — the work ethic."

Niall Ferguson (Historian, Hoover Institution)

Name: _____ Per: _____ Date: _____

Two Treatises of Government by John Locke - Primary Source Analysis (Part One):

Directions: Before you answer the questions related to this text, read through each excerpt and note which words you need to first define or clarify. Take notes in the margins or in the spaces surrounding the text.

Excerpts from Two Treatises of Government
by John Locke

London, 1690

Excerpt A:
[Regarding the idea that man has the right to the Pursuit of Happiness]

"The State of Nature has a Law of Nature to govern it, which obliges every one: and reason, which is that Law, teaches all of Mankind, who will but consult it; That all being equal and independent, no one ought to harm another in his Life, Health, Liberty, or Possessions."

Excerpt B:
[Regarding the idea of the State of Nature]

"A State also of Equality, wherein all the Power and Jurisdiction is reciprocal, no one have more than another, there being nothing more evident."

Excerpt C:
[Regarding the idea of the State of Nature]

"This equality of Men by Nature . . . looks upon as so evident in itself and beyond all question."

Source: "Creating the United States Creating the Declaration of Independence."
Two Treatises of Government - Pursuit of Happiness - Creating the Declaration of Independence - Creating the United States | Exhibitions - Library of Congress, www.loc.gov/exhibits/creating-the-united-states/interactives/declaration-of-independence/pursuit/enlarge4.html.

Name: _____ Per: _____ Date: _____

Two Treatises of Government by John Locke - Primary Source Analysis (Part Two):

Directions: Look over your notes and summary you completed in Part One of this activity. Provide clear and complete responses to the questions below:

1. In <u>Excerpt A,</u> Locke discusses the idea of *obligation*. What is the obligation being discussed here? Who is expected to meet this obligation and why?

_____
_____
_____
_____

2. In <u>Excerpt B</u>, Locke argues that there is an evident state of equality. What is this state and how would he say this equality might be measured?

_____
_____
_____
_____

3. Restate in simpler terms the claim that is made by Locke in <u>Excerpt C</u>:

_____
_____
_____
_____

Extension Activities:

4. Do some quick research and identify the purpose and audience John Locke was writing for when he published *Two Treatises of Government* in 1690.

_____
_____
_____

5. John Locke uses persuasive language throughout the entire text of *Two Treatises of Government*. Look back at <u>Excerpts A, B, and C</u>. Identify and list words below that could be classified as persuasive language. Explain why you identified those words as persuasive.

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_____
_____

Name: _____ Per: _____ Date: _____

Common Sense by Thomas Paine - Primary Source Analysis (Part One):

Directions: Before you answer the questions related to this text, read through each excerpt and note which words you need to first define or clarify. Take notes in the margins or in the spaces surrounding the text.

Excerpts from Common Sense by Thomas Paine

Printed and sold in Philadelphia by W. & T. Bradford, February 14, 1776.

Excerpt A:

"Where there are no distinctions, there can be no superiority; perfect equality affords no temptation."

Excerpt B:

"But it is not so much the absurdity as the evil of hereditary succession which concerns mankind. Did it ensure a race of good and wise men it would have the seal of divine authority, but as it opens a door to the foolish, the wicked, and the improper, it hath in it the nature of oppression. Men who look upon themselves born to reign, and others to obey, soon grow insolent; selected from the rest of mankind their minds are early poisoned by importance; and the world they act in differs so materially from the world at large, that they have but little opportunity of knowing its true interests, and when they succeed to the government are frequently the most ignorant and unfit of any throughout the dominions."

Source: "COMMON SENSE;" The Project Gutenberg E-Text of Common Sense, by Thomas Paine., www.gutenberg.org/files/147/147-h/147-h.htm.

Name: _____ Per: _____ Date: _____

Common Sense by Thomas Paine - Primary Source Analysis - (Part Two):

Directions: Look at your notes and the summary you completed in Part One of this activity. Provide clear and complete responses to the questions below:

1. In Excerpt A, Paine begins the quote with this phrase, "Where there are no distinctions…" What does Paine mean by the word "distinctions?" Explain how you know this.

_____
_____
_____

2. In Excerpt A, identify the temptations to which Paine is referring in this quote, and explain your reasoning.

_____
_____
_____
_____

3. In Excerpt B, Paine argues that hereditary succession "hath in it the nature of oppression." Why does he mean by this? What evidence does he offer to support his claim? (Use specific textual evidence to support your claim, and make sure to write in complete sentences).

_____
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4. Restate in one sentence the main arguments that Paine is making in Excerpt B:

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_____
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_____

5. Reflect upon this assessment of the publication of *Common Sense*, "Without the pen of the author of 'Common Sense,' the sword of Washington would have been raised in vain." Explain what is meant in this statement. How did the publication of *Common Sense* contribute to or affect the American Revolution? Explain your thoughts. Do additional research as necessary.

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Name: _____ Per: _____ Date: _____

The Declaration of Independence - Primary Source Analysis (Part One):

Directions: Before you answer the questions related to this text, read through the excerpt and note which words you need to first define or clarify. Take notes in the margins or in the spaces surrounding the text.

Excerpt from The Declaration of Independence
In Congress, July 4, 1776.

"The unanimous Declaration of the thirteen united States of America, When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation.

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.--That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed, --That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organizing its powers in such form, as to them shall seem most likely to effect their Safety and Happiness."

Source: "Declaration of Independence: A Transcription." National Archives and Records Administration, National Archives and Records Administration, www.archives.gov/founding-docs/declaration-transcript.

Name: _____ Per: _____ Date: _____

The Declaration of Independence - Primary Source Analysis - (Part Two):

Directions: Look over your notes and summary you completed in Part One of this activity. Provide clear and complete responses to the questions below:

1. The *Declaration of Independence* is essentially a break-up letter. Look again at the first paragraph of the Excerpt in Part One, and explain the justification that is being given for the American colonists to separate from Great Britain, which led ultimately led to the American Revolution. Connect your answer to at least one of the previous documents you have analyzed: *Two Treatises of Government or Common Sense*.

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2. Do some quick research. Why was Thomas Jefferson chosen to write *The Declaration of Independence*?

_____
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3. In the documentary *Cyberwork*, historian Elizabeth Cobbs argues that inventions suddenly took off with the first Industrial Revolution as a result of a new idea that gained traction around 1776 that empowered inventors: the idea that all people are created equal, and thus have their own right to profit from their own brain power. Support her claim with evidence from the second paragraph of the Excerpt of *The Declaration of Independence* that you analyzed in Part One of this assignment. Write in complete sentences.

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Name: _____ Per: _____ Date: _____

Alexander Hamilton's Final Version of the Report on the Subject of Manufactures
Primary Source Analysis:

Directions: Read each quote and respond to the related questions. Remember to read through the excerpt and note which words you need to first define or clarify. Take notes in the margins or in the spaces surrounding the text.

Excerpts from Alexander Hamilton's Final Version of the Report on the Subject of Manufactures

[Philadelphia, December 5, 1791 - Communicated on December 5, 1791]
[To the Speaker of the House of Representatives]

Source: "Founders Online: Alexander Hamilton's Final Version of the Report on the Subjec ..." National Archives and Records Administration, National Archives and Records Administration, founders.archives.gov/documents/Hamilton/01-10-02-0001-0007

Excerpt A:

"That manufacturing establishments not only occasion a positive augmentation of the Produce and Revenue of the Society, but that they contribute essentially to rendering them greater than they could possibly be, without such establishments. These circumstances are—

1. The division of Labour.

2. An extension of the use of Machinery.

3. Additional employment to classes of the community not ordinarily engaged in the business.

4. The promoting of emigration from foreign Countries.

5. The furnishing greater scope for the diversity of talents and dispositions which discriminate men from each other.

6. The affording a more ample and various field for enterprize.

7. The creating in some instances a new, and securing in all, a more certain and steady demand for the surplus produce of the soil."

Name: _____ Per: _____ Date: _____

<u>Alexander Hamilton's Final Version of the Report on the Subject of Manufactures</u>
<u>Primary Source Analysis:</u>

[Note that when Hamilton wrote his Report on the Subject of Manufactures, fifteen years had passed since the publication of the Declaration of Independence. Consider how intervening events may have affected the economy of the United States as you analyze these excerpts.]

1. Who is the intended audience for this document? Why is the audience important to keep in mind when reading this document? _____
_____
_____
_____
_____

2. In <u>Excerpt A</u>, Hamilton is listing the benefits to American society by the creation of manufacturing establish-ments. Identify two arguments in favor of industrialization from Hamilton's list of seven that you believe are the most persuasive. Explain why you think so.
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Name: _____ Per: _____ Date: _____

Alexander Hamilton's Final Version of the Report on the Subject of Manufactures
Primary Source Analysis

Excerpt B:

"The Cotton Mill invented in England, within the last twenty years, is a signal illustration of the general proposition, which has been just advanced. In consequence of it, all the different processes for spining Cotton are performed by means of Machines, which are put in motion by water, and attended chiefly by women and Children; [and by a smaller] number of [persons, in the whole, than are] requisite in the ordinary mode of spinning. And it is an advantage of great moment that the operations of this mill continue with convenience, during the night, as well as through the day. The prodigious affect of such a Machine is easily conceived. To this invention is to be attributed essentially the immense progress, which has been so suddenly made in Great Britain in the various fabrics of Cotton."

1. Identify the labor forces in America that Hamilton claims will benefit from the adoption of cotton mill operations that are already being used in England. [You may wish to keep in mind that Hamilton was raised by an abandoned single mother and had to go to work as a child]

_____
_____
_____
_____

2. Applying your own general knowledge of the economy of the United States in the late 1700s. Which region(s) of America would benefit most from the establishment and increased usage of cotton mills? Explain your reasoning and provide specific evidence to support your claims.

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Name: _____   Per: _____   Date: _____

<u>Alexander Hamilton's Final Version of the Report on the Subject of Manufactures</u>
<u>Primary Source Analysis</u>

Excerpt C:

"This is a much more powerful mean of augmenting the fund of national Industry than may at first sight appear. It is a just observation, that minds of the strongest and most active powers for their proper objects fall below mediocrity and labour without effect, if confined to uncongenial pursuits. And it is thence to be inferred, that the results of human exertion may be immensely increased by diversifying its objects. When all the different kinds of industry obtain in a community, each individual can find his proper element, and can call into activity the whole vigour of his nature. And the community is benefitted by the services of its respective members, in the manner, in which each can serve it with most effect."

---

1. Hamilton is claiming that there are additional benefits to American society by supporting national industry. State in your own words the benefits provided in <u>Excerpt C</u>.

_____
_____
_____
_____
_____

2. Compare the benefits listed in *Report on the Subject of Manufactures* to the excerpts from *The Two Treatises of Government, Common Sense*, and *The Declaration of Independence* that you have analyzed. What connections do you see between the four documents? Explain.

_____
_____
_____
_____
_____

Quotes from Historians

21st Century American Industry

"Although manufacturing represents just over 11 percent of the U.S. economy today, it accounts for 70 percent of industry-funded R&D and employs over 36 percent of the nation's engineers. The innovations developed in the manufacturing sector not only spur on technological advances in production but also benefit the service sector, which relies heavily on innovations first imagined over the course of the manufacturing process."

Bruce Katz and Jessica Lee
December 5, 2011
(The Brookings Institute)

Questions to discuss:

- How would Hamilton have reacted to this information?

- How does this information align with Hamilton's views, predictions, or goals?

- How would the authors of the other documents we examined (Locke, Paine, Jefferson) have reacted to this data?

- This quote is from 2011. Do you think it is still a fair and true description of industry in the United States today?

LESSON TWO: Economic Upheaval and Presidential Actions That Supported Innovation
By Beth Doughty

Unit Overview:
For a "hook activity" students will be provided with graphics and maps created the show election results drawn from www.270towin.com on presidential elections from 1928-1952. This was a time of great economic and political upheaval, and an era that saw the creation of new social programs to help working Americans.

Students will be asked to draw conclusions about events during and between the election years. These topics may include: the activities of different political parties, total electoral votes, electoral votes apportionment for each state, presidential candidates, etc.

Students will then be given historic newspaper articles related to economics, industry, social network programs, and political policy. Students will see that industrialization and its consequences have been a driving force in American history, regardless of which political party dominated at the time.

Unit Objectives:
Students will be able to:
- Read historical maps for comprehension and critical analysis.

- Compare and contrast the historical data expressed in the primary sources.

- Cite textual evidence to support claims and reasoning in response to critical thinking questions and prompts.

- Understand the historical chronology and the relationship of events in one time period to events in another.

- Identify and connect economic events in American society to the results of presidential elections from 1928-1952.

- Read historical newspapers and draw inferences from the articles as they relate to innovation and reform.

- Students will create a presentation (poster, Microsoft PowerPoint, Google Slideshow, Prezi, etc.) that answers the guiding question, "How can America make sure our economy improves everyone's standard of living, as in the past?" using specific evidence from historic newspapers.

Number of Class Periods: 3-4

Grade Levels: 8-12

Common Core State Standards:

CCSS.ELA-LITERACY.RH.6-8.1:Cite specific textual evidence to support analysis of primary and secondary sources.

CCSS.ELA-LITERACY.RH.9-10.1: Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.

CCSS.ELA-LITERACY.RH.6-8.2: Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

CCSS.ELA-LITERACY.RH.6-8.3:Identify key steps in a text's description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

CCSS.ELA-LITERACY.RH.9-10.3: Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.

CCSS.ELA-LITERACY.RH.6-8.4: Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

CCSS.ELA-LITERACY.RH.9-10.4: Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.

CCSS.ELA-LITERACY.RH.6-8.6: Identify aspects of a text that reveal an author's point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

CCSS.ELA-LITERACY.RH.6-8.8: Distinguish among fact, opinion, and reasoned judgment in a text.

CCSS.ELA-LITERACY.W.8.9-12.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-LITERACY.SL.8.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 8 topics, texts, and issues, building on others' ideas and expressing their own clearly.

CCSS.ELA-LITERACY.SL.9-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9-12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

CCSS.ELA-LITERACY.RH.6-10.7: Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

CCSS.ELA-LITERACY.RH.11-12.7: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

CCSS.ELA-LITERACY.W.11-12.6: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

<u>Lesson Plan:</u>

Materials:

- Copies of the worksheets: First Impressions: Examining Presidential Election Years 1928-1952 *(one per student)*

- Copies of the Electoral College Maps. There are seven different maps. The teacher will need to make enough copies for students to divide into seven different discussion groups. Students should not get a copy of all seven maps, only the one for their group.

- Copies of optional worksheet to record group findings instead of recording notes on a digital document: <u>Group Notes: Examining Presidential Election Years 1928-1952</u>

- Copies of the seven historic newspaper articles (or links to the historic newspapers uploaded online):

  - 1926-Hoover Looks to Future
  - 1931-Hoover Emergency Committee on Employment and Industry
  - 1934-FDR Federal Emergency Relief Administration
  - 1937-FDR Social Security Act
  - 1941-FDR Work Project Administration
  - 1946-Truman G.I. Bill
  - 1954-Eisenhower New Industry
    (Teacher can decide to jigsaw the lesson, and just provide one article that is related to the Presidential Election Map that the student group has already analyzed, or a copy of each of the seven different historic newspaper articles.)
  - Copy of <u>Concluding Idea</u> document to project to students (or one copy for each student)
  - Access to technology for students to perform additional research
  - Projection device
  - Pencil or pen (one per student)

<u>Day one:</u> Watch the documentary *Cyberwork and the American Dream.*

<u>Day two:</u> As a hook activity, each student will be given a copy of the document that has a map of one of the seven different electoral years (1928, 1932, 1936, 1940, 1944, 1948, or 1952). Teachers can randomly pass out the maps, and then have students move into groups later after they have done some analysis, or pre-arrange groups and pass out the maps with groups already pre-determined (whatever works best for each class of students). Make sure that students will be evenly divided into seven different groups.

After the students have been given their map, give each student a copy of the worksheet: <u>First Impressions: Examining Presidential Election Years 1928-1952.</u> Do not let students discuss the maps yet. Have the students individually analyze their map. Guiding questions are in the worksheet. Encourage the students to fill up the chart and write on the back if needed.

After about 5-10 minutes, have the students move into their groups by election year.

Have students choose a recorder, and have that student open a document on a computer to record notes or questions from the group. If computers are not available, have recorder take notes on paper. Encourage students to create comprehensive lists for their group, recording all the different data, including additional facts they have gathered. Students should share their map with the rest of the class via a projection device in chronological order so all students can see the variation between election years. Each group should provide a quick summary of its findings.

<u>Days three and four:</u>

Provide the students the newspaper article that is related to their historical map.

E.C. Map Documents	Title of Newspaper Article Document
1928 Electoral College Map	1926-Hoover Looks to Future
1932 Electoral College Map	1931- Hoover Emergency Committee on Employment and Industry
1936 Electoral College Map	1934- FDR Federal Emergency Relief Administration
1940 Electoral College Map	1937-FDR Social Security Act
1944 Electoral College Map	1941-FDR Work Project Administration
1948 Electoral College Map	1946-Truman G.I. Bill
1952 Electoral College Map	1954-Eisenhower New Industry

Have the students read the article related to their map (from chart above), then have them connect the information in their article to the Electoral College Maps they examined during the previous class period.

FINAL PRODUCT: Each group will create a poster, Google Slideshow, Microsoft +PowerPoint, or Prezi presentation that includes these elements.

#1: A response to this guiding question:

"How can America make sure our economy improves everyone's standard of living, as in the past?"

#2: Evidence from the historic newspapers they analyzed that supports the concluding idea from _Cyberwork and the American Dream:_

 "Technology itself is not a threat to prosperity. The threat is in neglecting to learn, and neglecting our institutions. History shows that access, transparency, and rule of law spurred inventiveness. Safety nets helped workers over rough spots, education got them ready for new technology. If we want to be peaceful and prosperous, we must safeguard these traditions, and take on the future."

#3: Students must address at least one of the underlined words or phrases in their final project and include the specific way that this was addressed in their historic newspaper article.
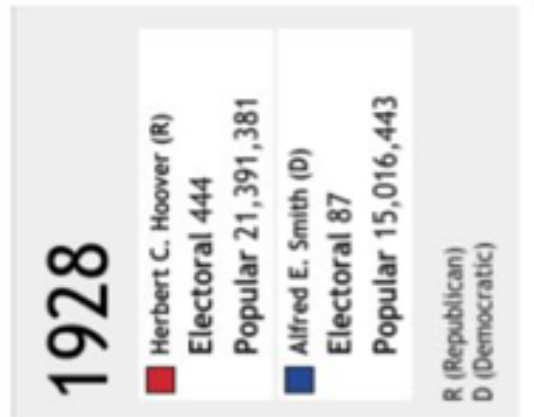
**Lesson adaption for advanced students:
Have students participate in a Socratic Seminar using the concluding idea and guiding question for discussion prompts******
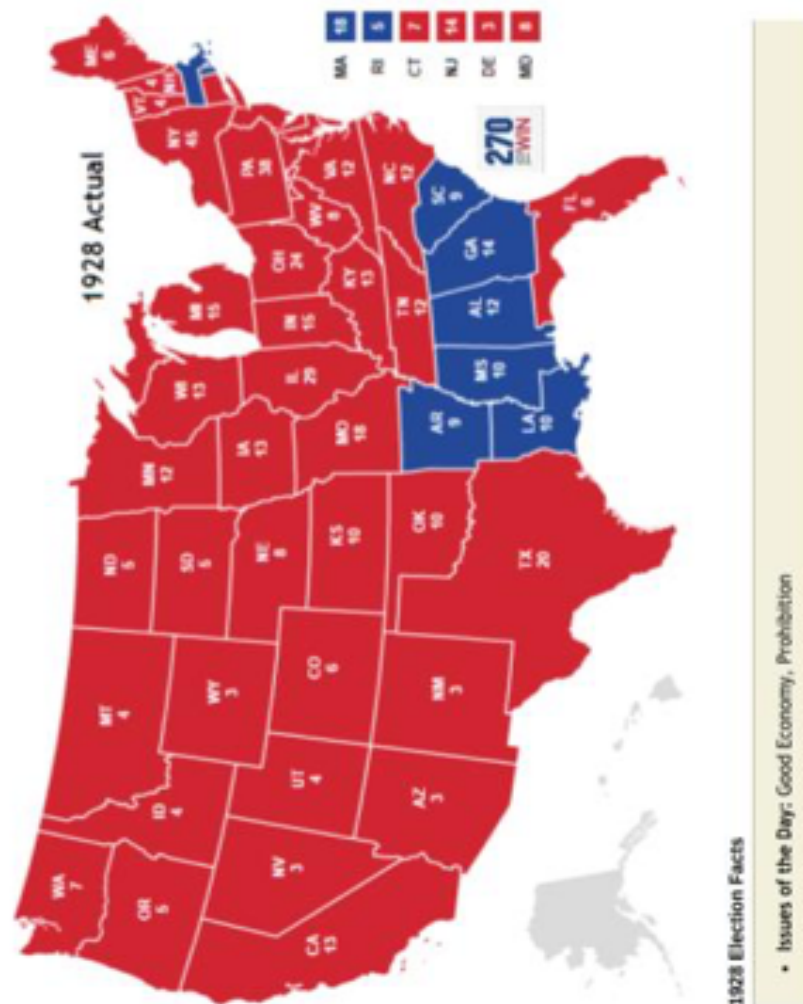
OPTIONAL EXTENSION ACTIVITIES:

1. Have the students go to www.270towin.com and explore the other historical presidential maps.

      a. Encourage them to interact with the other historical maps and modify the votes to see the effect on the maps.

      b. Have students look at the predictions for the upcoming election. Notice that there are multiple maps with different predictions for the upcoming election. Have them consider why there is variance between the maps for the upcoming elections.

      c. For the upcoming election prediction maps, determine which votes seem to be most affected by issues related to industry and the economy.

2. Have students write a letter to the editor taking on the persona of someone from the historic era they examined, and discuss an innovation from that time period and call for change or support for the innovation. CCSS.ELA-LITERACY.W.11-12.2.B

Comparing the Presidential Election Results: 1928 - 1952
by Beth Doughty (2019)

Electoral College Presidential Election Results - 1928

1928

Herbert C. Hoover (R)
Electoral 444
Popular 21,391,381

Alfred E. Smith (D)
Electoral 87
Popular 15,016,443

R (Republican)
D (Democratic)

1928 Actual

270 TO WIN

MA 18
RI 5
CT 7
NJ 14
DE 3
MD 8

1928 Election Facts

• Issues of the Day: Good Economy, Prohibition

Electoral College Presidential Election Results - 1932

1932

- Franklin D. Roosevelt (D)
  Electoral 472
  Popular 22,821,857
- Herbert C. Hoover (R)
  Electoral 59
  Popular 15,761,841

D (Democratic)
R (Republican)

1932 Actual

1932 Election Facts

- Roosevelt is a distant cousin of 26th President, Theodore Roosevelt
- Issues of the Day: Great Depression, Prohibition

Source:
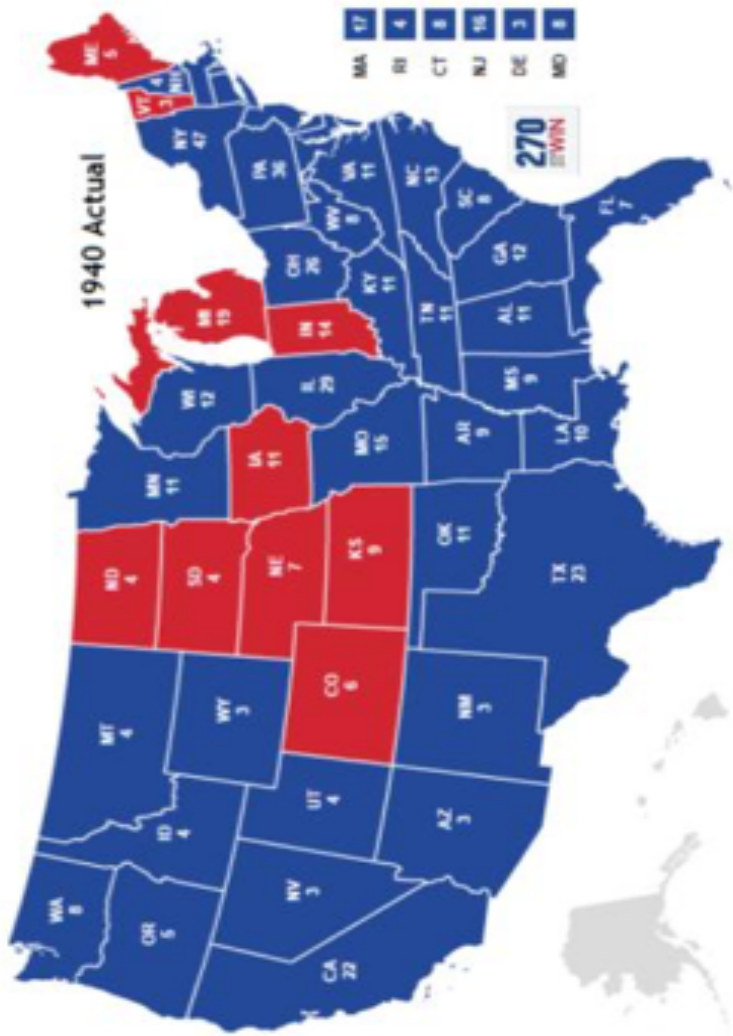https://www.270towin.com/historical-presidential-elections/timeline/

Electoral College Presidential Election Results – 1940

1940

■ Franklin D. Roosevelt (D)
Electoral 449
Popular 27,244,160

■ Wendell L. Willkie (R)
Electoral 82
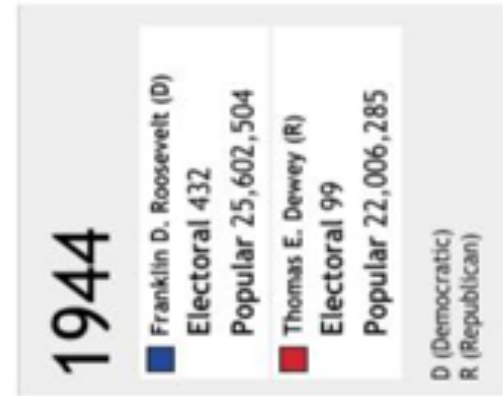Popular 22,305,198

D (Democratic)
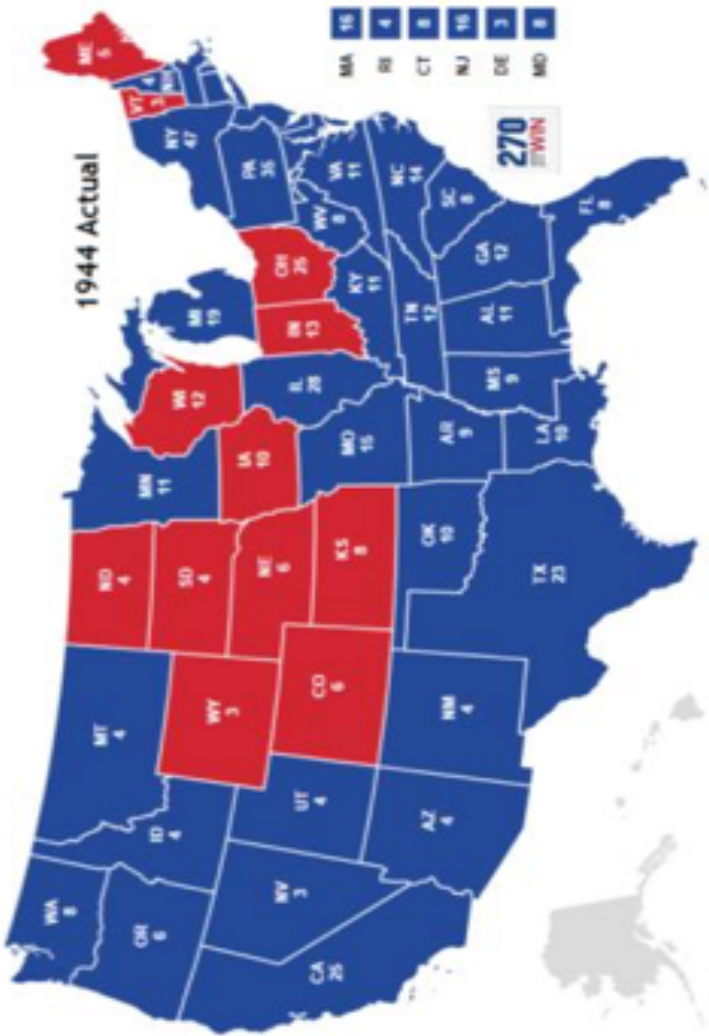R (Republican)

1940 Actual

1940 Election Facts

- Roosevelt becomes first (and only) President elected for a 3rd consecutive term
- Issues of the Day: U.S. Neutrality in European Conflict

Electoral College Presidential Election Results - 1944

1944

■ (blue)	Franklin D. Roosevelt (D) Electoral 432 Popular 25,602,504
■ (red)	Thomas E. Dewey (R) Electoral 99 Popular 22,006,285

D (Democratic)
R (Republican)
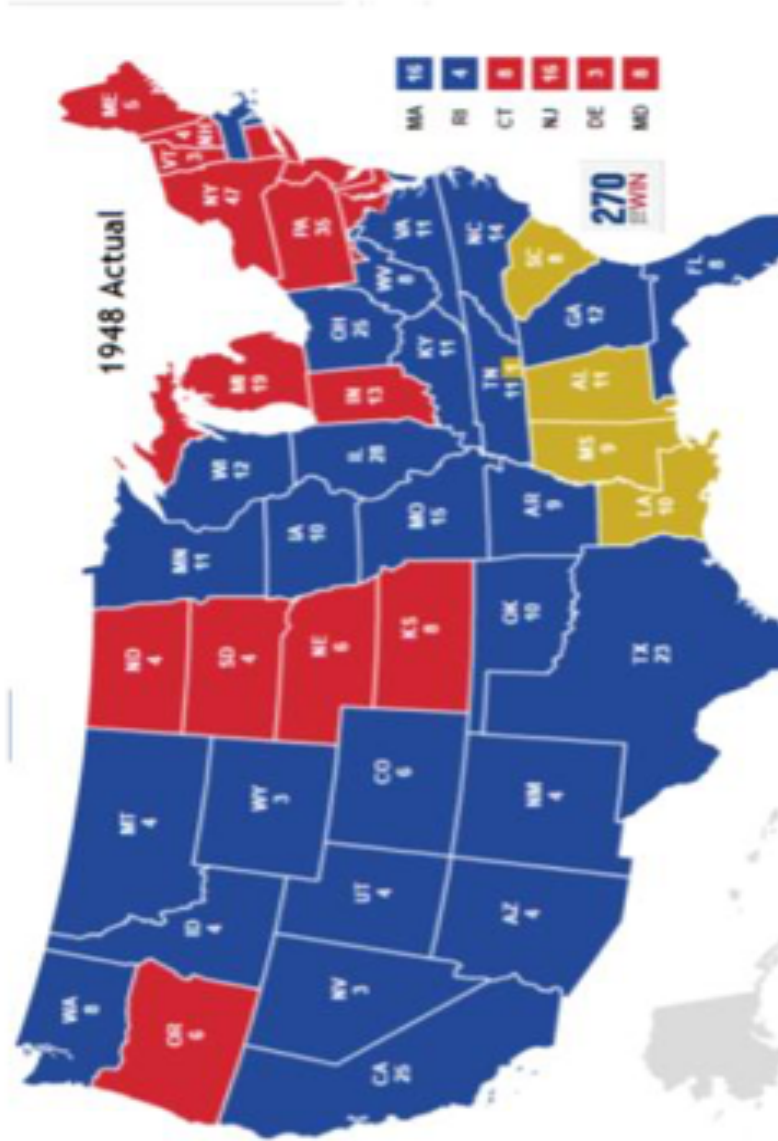
1944 Actual

270 WIN

MA 16
RI 4
CT 8
NJ 16
DE 3
MD 8

1944 Election Facts

- Vice-Presidential Succession: Roosevelt died on April 12, 1945, replaced by Harry S. Truman
- Roosevelt becomes first (and only) President elected for a 4th consecutive term
- Issues of the Day: World War II

Developed by Beth Doughty, Elizabeth Cobbs, and Melissa Bolthouse © 2019

Electoral College Presidential Election Results - 1948

1948

- Harry S. Truman (D)
  Electoral 303
  Popular 24,105,695
- Thomas E. Dewey (R)
  Electoral 189
  Popular 21,969,170
- J. Strom Thurmond (SR)
  Electoral 39
  Popular 1,169,021
- Henry Wallace (P)
  Electoral 0
  Popular 1,157,328

D (Democratic)
R (Republican)
SR (States' Rights Democratic)
P (Progressive)

1948 Actual

1948 Election Facts

- 22nd Amendment ratified in this cycle: Limits Presidents to two elected terms
- Thurmond nominated by splinter group of Southern Democrats upset over Civil Rights in Democratic platform
- Progressive candidate Henry A. Wallace received 1,157,172 votes, but no Electoral Votes
- Truman won Tennessee; however one Elector cast a vote for Thurmond
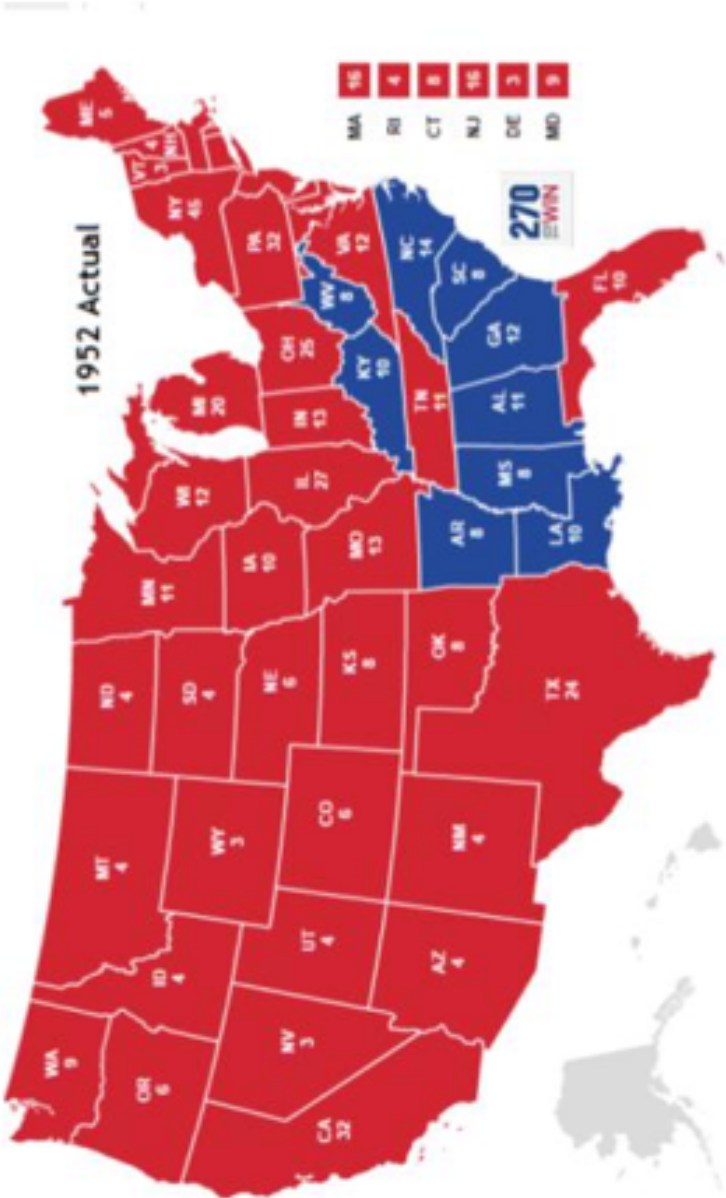- Issues of the Day: Marshall Plan, Berlin Airlift

Electoral College Presidential Election Results - 1952

1952

Dwight D. Eisenhower (R)
Electoral 442
Popular 33,778,963

Adlai Stevenson (D)
Electoral 89
Popular 27,314,992

R (Republican)
D (Democratic)

1952 Actual

270 TO WIN

MA 16
RI 4
CT 8
NJ 16
DE 3
MD 9

1952 Election Facts

• Issues of the Day: Korean War, Communism

Source:
https://www.270towin.com/historical-presidential-elections/timeline/

Name: _____ Per: _____ Date: _____

First Impressions: Examining Presidential Election Years 1928-1952

Directions: Before you talk to anyone else, look over your electoral map and fill in the chart below.

Some questions to consider: What facts jump out at you? What surprises you? What is new information that you never knew before? What do you not understand? What would you like to research and learn more about?

The year of your electorial map	
Notes on your map go here:	

Name: _____ Per: _____ Date: _____

Group Notes: Examining Presidential Election Years 1928-1952

This is what our group noticed about our Presidential Election Year Map:

The year of your electorial map	
Group notes on your map go here:	

Concluding Idea:

"Technology itself is not a threat to prosperity. The threat is in neglecting to learn, and neglecting our institutions. History shows that access, transparency, and rule of law spurred inventiveness. Safety nets helped workers over rough spots, education got them ready for new technology. If we want to be peaceful and prosperous, we must safeguard these traditions, and take on the future."