

Module 7: The Industrial Revolution and Its Impact

Topic 1 Content: Inventions and Discoveries

Introduction

The screenshot shows a dark-themed interactive interface with a title bar at the top that reads "Inventions and Discoveries". In the center, the text "Inventions of the Industrial Revolution" is displayed in large white font. Surrounding this central text are five interactive cards, each with a red dot in the top-left corner:

- Introduction**: A tooltip box is open over this card, containing the text: "Click on each of the red dots to explore some of the inventions and discoveries made during the Industrial Revolution. These changes transformed the lives of humans all over the world." The card features a small image of a steam engine.
- Processing**: Features an image of a textile spinning machine.
- Steam Engine**: Features a large image of a steam engine.
- Medicine**: Features an image of a microscope.
- Textiles**: Features a detailed diagram of a textile machine.

Whitney's Cotton Gin

Inventions and Discoveries

Cotton Gin

Whitney's Cotton Gin

- Invented by Eli Whitney
- Increased cotton production
- Increased demand for slave labor

Steel Processing

Steam Engine

Medicine

Inventions of the Industrial Revolution

Textiles

An American by the name of Eli Whitney invented the cotton gin that separated the seeds from picked cotton. This device allowed more people to start growing cotton because it was much more profitable. As a result, America became the major supplier of raw cotton to England. Since most of the cotton in America was grown on land using slave labor, the demand for slaves grew in order to produce more cotton.

Bessemer Process

Inventions and Discoveries

Bessemer Process

- Henry Bessemer refined steel-making techniques and used it to make steel on an industrial scale
- His process drastically lowered the cost of creating steel
- Made Great Britain one of the chief exporters of steel

Inventions of the Industrial Revolution

Cotton Gin

Steel Processing

Steam Engine

Medicine

Textiles

Henry Bessemer refined existing techniques for making steel and developed a process for making it on an industrial scale. His patented process drastically lowered the cost of creating steel and helped make Great Britain one of the chief exporters of steel. As steel production increased because of its lower cost, its use transformed all aspects of life, from newly built bridges to the creation of new industries.

Watt's Steam Engine

The screenshot shows a digital interface with a dark background and a title bar that reads "Inventions and Discoveries". The interface is organized into several categories, each with a representative image and a red plus icon in the top-left corner:

- Cotton Gin**: An image of a cotton gin machine.
- Steel Processing**: An image of a steam-powered rolling mill.
- Steam Engine**: An image of a steam engine, with a pop-up window overlaid on it.
- Medicine**: An image of a microscope.
- Textiles**: An image of a textile spinning machine.

The central text reads "Inventions of the Industrial Revolution". The pop-up window for "Watt's Steam Engine" contains the following text:

- An improvement on the earlier Newcomen Steam Engine
- Efficient source of power that fueled factories across Britain
- Used to create the first locomotive

Later inventors such as James Watt would improve the design of the Newcomen Steam Engine, and eventually steam power was used to create the first locomotive that could travel at a record speed of five miles per hour. The steam engine locomotive led to the creation of railroads, which began to spread across England. Rail transport significantly affected society and increased industrial development as it became faster and cheaper to transport supplies, raw materials, and manufactured goods. The railroad industry provided thousands of new jobs, and more people were able to travel much farther distances than ever before.

Medical Advances

The screenshot shows a digital interface with a dark background. At the top, a title bar reads 'Inventions and Discoveries' with navigation arrows. Below this, five categories are displayed in a grid-like fashion, each with a small icon and a title. The categories are: Cotton Gin (with a cotton gin illustration), Steel Processing (with a steel mill illustration), Steam Engine (with a steam engine illustration), Textiles (with a textile machine illustration), and Medical Advances (with a microscope illustration). A tooltip is overlaid on the 'Medical Advances' category, containing the following text:

Medical Advances

- Advancements in science and medicine altered lives in new and growing cities
- Small pox vaccination
- Discovery of bacteria

The central text 'Inventions of the Industrial Revolution' is prominently displayed in the background of the interface.

During the Industrial Revolution, advancements in science and medicine altered the lives of people living in the new and growing cities. Two of the most important were the development of the smallpox vaccination and the discovery of bacteria.

Edward Jenner first came up with his idea for vaccines from the popular myth that milkmaids did not contract the smallpox virus after being exposed to the cowpox virus. To test his theory, he gave cowpox to a child, and then a few weeks later, gave the child the smallpox virus. The child was immune to the deadly smallpox virus, and therefore, did not contract the virus. This discovery was the foundation for his smallpox vaccination.

Remember that during the Age of Discovery, the Native American populations declined rapidly because Europeans brought smallpox with them from the old world. Eventually, the smallpox vaccination led to the eradication of the disease by the 1970s. It became the first disease eliminated in human history.

Another important scientific development during this time came about after Louis Pasteur discovered bacteria in wine, beer, and milk. This led to his development of a process called pasteurization, in which a liquid is heated to a certain temperature, thereby killing enough of the bacteria to make the food safe.

Textile Factories

The screenshot shows a digital interface with a dark background and a title bar at the top that reads "Inventions and Discoveries". Below the title bar, there are four cards, each with a red plus icon in the top-left corner. The cards are labeled: "Cotton Gin" (top-left), "Steel Processing" (top-middle), "Steam Engine" (top-right), and "Medicine" (bottom-left). Each card contains a black and white illustration of the respective invention. In the center of the interface, the text "Inventions of the Industrial Revolution" is displayed in a large, white, sans-serif font. A semi-transparent grey pop-up window is overlaid on the "Steel Processing" card. The pop-up has a title "Textile Factories" and a close button (an 'x' in a circle) in the top-right corner. It contains a bulleted list of four items:

- Machines led transformation from cottage industry to factory system
- James Hargreaves' spinning jenny
- Urbanization
- Increased used of female and child labor since it was cheaper

A number of inventions transformed the textile industry from a cottage industry, in which most of the work took place in people's homes, to a factory system, in which people operated large, expensive machines in factories.

One such invention was James Hargreaves' spinning jenny, which allowed the spinning and weaving of cloth to be done by machines rather than by hand. These inventions had a dramatic impact on people's lives as they moved to cities to become workers running the machines in the new factories rather than working from home. As work became mechanized, many businesses hired women and children since they could pay them lower salaries.