THE INDUSTRIAL REVOLUTION

CFE 3259V

OPEN CAPTIONED
UNITED LEARNING INC.
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Grade Levels: 8-12
19 minutes
1 Instructional Graphic Enclosed

DESCRIPTION

The Industrial Revolution began in England in the 1750s, and civilization underwent massive and unprecedented change. Reviews its causes, its impact on cottage industries, farms and towns, and the development of factories. Other changes included new machinery, inventions, changes in education, and the growth of a middle class. Countries today face their own industrial revolutions and subsequent problems.

INSTRUCTIONAL GOALS

- To identify the conditions that allowed England to start an industrial revolution.
- To examine how machines can increase productivity.
- To compare life under the cottage industry and factory systems.
- To explain how the steam engine expanded the Industrial Revolution.
- To evaluate the importance of iron ore and coal to the Industrial Revolution.
- To describe the development of industrial cities.
- To relate the importance of a transportation network to industrial development.
- To illustrate the continuing industrialization that is occurring today.

BEFORE SHOWING

1. Read the CAPTION SCRIPT to determine unfamiliar vocabulary and language concepts.
2. Trace students' ancestry to relatives who lived on farms or were involved in agriculture. Follow the family tree to see if industrialization affected how and where family members lived.
3. Discuss a familiar industrial site, and determine what raw materials are used there, and from where they come.

4. Identify the English colonies of 1750 on a map, and name the products they exported to, and imported from, England.
5. Contrast hand-crafted and manufactured goods.

DURING SHOWING

1. View the video more than once, with one showing uninterrupted.
2. Compare rural and urban scenes in the video with local rural and urban areas.
3. Point out the speed at which machines work.
4. Note the obvious hazards in working around machines.
5. Identify transportation systems from the early Industrial Revolution that are still in use today.

AFTER SHOWING

Discussion Items and Questions

1. Compare the raw material needs of the first industrial revolution with the material needs of local industry.
2. Explain why some areas of the state are more industrialized than others.
3. Compare rural life with urban living.
    a. Which is more satisfying?
    b. Which is more financially rewarding?
    c. What are the advantages and disadvantages of each?
4. Discuss the danger and monotony of factory work.
5. Elaborate on the need for laws or rules to protect factory workers.
6. Compare the differences between rich and poor today and the differences between rich and poor two hundred years ago.
7. Generalize the power needs of industry past, present, and future.
8. Discuss the environmental effects of industrialization.

9. Examine the past, present, and future transportation needs of society and industry.
10. Debate the effect of industrialization in lessening the social inequality that existed with landowning aristocrats controlling most of the nation's wealth.
11. List and discuss goals of reform movements during the Industrial Revolution and evaluate their success.

Applications and Activities

1. Illustrate industry's effect on the environment through a picture collage of mines, industrial waste, air pollution, water pollution, logging, and other hazards.
2. List the three factors that allowed England to become an industrial nation. Compare those factors to the sources of local industries.
3. Examine the items of trade between England and its colonies. Note that manufactured textile and iron goods sold by England were valued higher than the raw materials imported from the colonies.
4. Compare competing English manufacturers in the 1750s with two competing businesses today. Both want to cut costs in order to sell more goods. Describe the ways that English manufacturers cut their costs.
5. Demonstrate the usefulness of machinery in saving time.
    a. Cut wood with a handsaw and then with a power saw.
    b. Sew a seam by hand and then by machine.
    c. Make ice cream with a hand-cranked ice cream freezer and then an electric model.
6. Review the video for scenes showing spinning and weaving machinery.
    a. Note how many people the machines replace.
    b. Give examples of modern machinery that has replaced workers.
    c. Imagine which workers may be replaced by machinery in the future.
7. Role-play a spinner living under the cottage industry system, and a spinner under the factory

system. Compare the two different systems, listing advantages and disadvantages of each.

8. Write a diary entry illustrating what a day in the life of a factory worker was like during the early Industrial Revolution.

9. Explain why labor reformers called factories "dark satanic mills."

10. Compare social organization in England before and after the Industrial Revolution by constructing social pyramids. (See INSTRUCTIONAL GRAPHICS.)

11. Hypothesize about the difference in wages paid to men, women, and children, explaining the need for families to send their children to work.

12. Read excerpts from Charles Dickens' novels to illustrate the living conditions in the early Industrial Revolution.

13. Compare conditions in early industrial England with Karl Marx's Economic Theory of History. Elaborate on the changes Marx thought industrialization would cause.

14. Elaborate on the superiority of steam power to that of water and wind in the Industrial Revolution.

15. Compare the problems of large urban centers with the growth of industrial towns in eighteenth-century England. Survey the local community to find areas of poverty and pollution.

16. Examine the proposals of Utopian Socialists of the time.

17. Report on public health laws for the local community and justify their need. Compare this to town life before these laws were enacted.

18. Categorize the transportation methods of the local community into areas of water, rail, and road travel. Compare them to the early transportation methods in eighteenth-century England.

19. Research the changes in rail transportation from its early years to the modern era.

20. Examine manufacturing processes used in mass production. Evaluate the impact of Henry Ford's assembly line process on manufacturing.

21. Report on twentieth-century inventors and their inventions.

22. Create a story based on a personal vision of twenty-first century industrialized society. Compare this story with the facts presented in the video and with present-day society.

INSTRUCTIONAL GRAPHICS

One instructional graphic is included with this lesson guide. It may be enlarged and used to create transparencies or copies.

- INDUSTRIAL REVOLUTION SOCIAL PYRAMIDS

WEBSITES

Explore the Internet to discover sites related to this topic. Check the CFV website for related information (http://www.cfv.org).

CAPTION SCRIPT

Following are the captions as they appear on the video. Teachers are encouraged to read the script prior to viewing the video for pertinent vocabulary, to discover language patterns within the captions, or to determine content for introduction or review. Enlarged copies may be given to students as a language exercise.

An industrial revolution is a time in a country's history

when it undergoes a rapid change

from an agricultural to a factory-based economy.

The first industrial revolution began in England

around the year 1750

and proceeded, over many decades,

to transform not only that country's landscape,

but the entire fabric of her society as well.

Let us step back in time and discover

what caused these massive and unprecedented changes

to occur in that small country.

To picture England before the Industrial Revolution,

we must imagine a nation

that was the most powerful on earth

and yet possessed no real factories--

a country that had just one large city, London.

For the most part,

England was a quiet and lovely land of farms...

and rural villages,

where only the sounds of weather, of animals,

and the distant ringing of church bells

broke the stillness of the landscape.

Yet England was a land of great social inequality.

A handful of aristocrats owned most of the land

and possessed, by right of birth,

nearly all of the incredible wealth it yielded.

They built magnificent palaces for themselves

and filled them with treasure,

while an enormous lower class,

most of whom owned no land,

struggled to survive,

often paying rent to the wealthy landowners.

These poor people sometimes faced severe malnutrition

and even starvation.

They usually died young.

With this as a background,

let us find out what great changes were to occur

as a result of industrialization.

The first industrial revolution began in England

for several reasons.

First, she possessed rich deposits of iron and coal--

resources essential to industrialization.

Second, England

had many reliable sources of water power.

And third, numerous colonies around the world

supplied her with abundant raw materials,

like this cotton, and at the same time,

they provided an enormous captive market

for her manufactured goods, like this cloth.

These colonial markets helped to stimulate

the British textile and iron industries,

and in the beginning,

it was the wealth produced by these two industries

that drove the Industrial Revolution.

During the mid-18th century, the growing demand for goods,

such as the iron hand tools seen here,

resulted in greater competition among manufacturers.

And as costs of production rose,

manufacturers sought new ways

of meeting the increased demand for their products

without raising prices.

In many ways, the story of the Industrial Revolution

is a story of human ingenuity, of people finding new ways

to use the sources of energy available to them,

and to profitably link these sources of energy

with marvelous new machines

that could more efficiently perform tasks

that in the past had required long hours of hand labor.

Let us look at one example of how machinery can save labor

in the grinding of grain into flour.

The traditional way of grinding grain,

a method still in use in some parts of North America,

is to simply rub the grain between two stones.

Ancient European people

used similar methods of making flour

until, at some point,

many centuries before the Industrial Revolution,

it was discovered that the power of the wind

could be captured and used to turn grinding stones.

Likewise, it was discovered that a flowing stream

could also be used to turn a water wheel

that, in turn, could move the millstone.

These mills for producing flour

are some of the oldest factories,

for they replaced home-based, hand-powered flour making

with a more efficient and profitable

means of production.

Because of a growing demand for manufactured goods

in the mid-18th century, some of the same techniques

for using water power found in the grain mills

began to be adapted to many other purposes,

and new types of factories were created.

The most dramatic changes in manufacturing

that occurred at that time

were in the way that cloth was made.

Before industrialization,

cloth making was strictly a cottage industry,

performed by people working at home

under contract to cloth merchants.

The cloth merchant would bring the cottagers

raw fibers of wool, cotton, or flax.

These fibers were then spun into thread

on spinning wheels, as shown here.

Every part of traditional thread spinning,

from feeding the fibers onto the spindle

to pumping the treadles that turned the spinning wheel,

relied totally on human energy.

The same was true of weaving cloth

from the spun threads on hand looms.

Hand weaving was a slow, repetitive process,

relying entirely upon human energy.

Starting around 1760,

the invention of several new and complicated machines

truly revolutionized cloth making,

and all of these new machines were rapidly adapted

to use moving water as a source of power.

The first new machine, called the spinning jenny,

could do the work of 16 people

working at 16 spinning wheels.

A short time later,

new, more-advanced spinning machines were invented

that could perform the work of thousands of hand spinners,

and these machines

killed the cottage spinning industry forever.

And the home weavers

were soon to meet the same fate as the spinners,

as large, new water-powered machines,

called "power looms," rapidly replaced hand weaving.

Power looms wove the threads at dazzling speeds

that human hands could never hope to match.

As the use of new water-powered machines

for textile manufacturing

became widespread across England,

large factory buildings,

like Quarry Bank Mill, near Manchester,

began to appear on the banks of streams

to shelter both the machines

and the workers who operated them.

With the creation of factories,

the way that people lived began to change.

Since the machines

were too large and complicated to be placed in a cottage,

it became necessary for this new generation of workers

to travel to the new factories for employment.

This shift from home to factory-based work

was to dramatically alter English society,

as poor farm workers

and unemployed weavers and spinners

left the countryside seeking dependable employment

in newly forming industrial centers.

Factory work

was much different from the system of cottage industry.

Under the old system, cloth merchants

had a close relationship with their workers

and generally took an interest in their well-being.

But large factories and rigid production schedules

did not allow for much familiarity

between owners and workers,

and factory work was more tiring

than home manufacturing,

even though the factories

kept the same 12- to 14-hour work schedule 6 days a week

that the cottage workers had followed.

Factory work had greater production demands,

was very monotonous, and few breaks were allowed.

Plus working conditions in factories

were much worse than the cottage settings.

Many of the earliest factories,

referred to by labor reformers as the "dark satanic mills,"

were noisy and dangerous places in which to work--

full of dust and fumes that often resulted

in permanent physical damage to workers.

Children, robbed of their childhoods,

worked long hours in the mills,

and women and children

were paid only a fraction of what the men earned.

Many mill owners

believed that the lower classes had to be kept poor

in order to make them industrious.

But even though wages were low,

at least workers could rely on them

so that they rarely faced

the extreme poverty they had known in the past.

Although the working classes did not at first share

in the wealth created by the Industrial Revolution,

the middle and upper classes prospered,

and great fortunes were made as wealth shifted

from the hands of land-owning aristocrats

to factory-owning capitalists.

One famous social critic of the time,

who worked to bring about changes in the law

to benefit the poor working classes,

was Charles Dickens.

His books offer vivid portrayals of life

during the first industrial revolution.

And Karl Marx, a Dickens' contemporary

who lived in England for much of his life,

wrote his two famous books,

"Das Kapital" and "The Communist Manifesto,"

in response to the social injustices he witnessed

as a result of industrialization.

During the time of Marx and Dickens,

many factories had switched to coal instead of water

as a source of power.

The problem with using water or wind to run machines

was that they could be unreliable sources of energy.

A windmill couldn't operate on windless days,

and a water-powered factory came to a complete halt

during dry spells.

For this reason,

a new invention called the steam engine

came into wide use in factories,

and, because it used coal for fuel,

it was no longer necessary

to build factories next to rivers.

Although steam engines

had begun to be used to run machines

as early as the 1720s,

it wasn't until the late 1700s that steam power

started to be used in factories really efficiently.

A steam engine works like this--

water is heated by wood or coal in a boiler.

As steam is produced,

the pressure in the boiler increases.

By turning a handle,

the steam enters the engine through a valve.

The steam pressure then pushes the piston down,

which, in turn, moves a heavy flywheel.

Then the piston is returned to its starting position

as high-pressure steam

pushes on the other side of the piston.

When the engine is running at full speed,

the piston moves back and forth very rapidly.

Pulleys or gears attached to the flywheel

can then be used to run almost any kind of machine.

The need for more coal and iron increased dramatically

as orders for more manufactured goods

poured into business offices.

Coal was needed, not just to run steam engines,

but for iron making and heating.

More iron was needed

to make more machines and steam engines,

as well as iron goods like tools and cookware.

So it was

that the Industrial Revolution's appetite for coal

went hand in hand with its appetite for iron.

The interdependence of iron and coal use

can easily be seen here in this coal mine.

The coal is lifted out of the pit by a steam engine.

The steam engine uses coal for fuel

and is made from iron parts cast in the ironworks nearby.

Nearly all the machines of the Industrial Revolution

were made mainly of iron,

and coke made from coal was the basic fuel burned

to melt the iron ore.

Before improvements in transportation,

factories were built

in areas where iron and coal mines were close at hand.

These areas,

where mines, factories, and workers crowded together,

developed into industrial cities,

and they almost immediately

became difficult places in which to live.

Here the water and air became terribly polluted

as dark clouds of smoke poured from factory chimneys,

from ovens where coal was converted into coke,

and from the fireplaces in the simple homes

of thousands of miners and factory workers.

Everything was covered with a dark layer of soot.

Industrial waste and sewage fouled the rivers and streams,

and the land

that only recently had been green and fertile was torn up

as more and more mines and factories appeared

and new rows of workers' houses

sprouted up in the nearby fields.

These industrial towns were dreary, overcrowded,

and unhealthy places to raise a family,

but eventually changes started to be made

to benefit the workers.

A handful of enlightened industrialists

created a few "model" villages for workers,

and these were a great improvement

over how they had lived before.

Later in the 19th century,

many other social improvements followed.

Laws banning labor unions were repealed,

and child labor was outlawed.

Although there were plenty of economic bad times,

the working classes had reached a point

where they sometimes had extra money to spend.

In fact, they now made up a vast new market

for the manufactured goods they helped produce.

Wealth, it seemed, created more wealth.

Free public schools were instituted all across England

for the very first time,

resulting in the first working-class generation

that was able to read and write.

These new educational skills

provided some young people with a ticket away

from a dreary future in mines and factories

to better-paying, less monotonous jobs.

The rising prosperity that accompanied industrialization

also brought improvements in transportation.

First the roads, that in the past

were often little better than crude, muddy tracks,

were improved to handle more traffic,

and new bridges were constructed,

some made entirely of iron for the very first time.

As early as 1761,

an intricate system of canals and locks

began to be constructed

so that barges could carry fuel and raw materials

from mines to factories,

and finished goods from factories to city warehouses.

As early as 1825, steam engines were being used

to turn the wheels of locomotives

that moved along steel tracks

at the unheard of speed of 15 miles per hour.

Also, by that time,

steam-powered ships were beginning to travel the seas--

no longer dependent on the ever-changing winds.

And late in the 19th century,

as huge parts of North America and Europe

completed the transition to an industrial society,

steam-powered farm machines, from tractors to hay bailers,

revolutionized farming.

And by the start of the 20th century,

the United States had overtaken England

to become the world's leading industrialized nation.

From the 1880s

through the first decades of the 20th century,

many new and incredible inventions

radically changed the way people lived.

Horse- and steam-powered vehicles were abandoned

for more efficient, gasoline-powered vehicles

run by internal combustion engines.

Thomas Edison's phonograph brought music into the home,

and motion pictures to the theaters,

and his light bulb brightened up the nights.

The airplane allowed humans to fly through the air,

and by using an assembly line of workers, Henry Ford

was able to mass-produce automobiles so inexpensively

as to make them affordable to average working Americans.

This new world of the early 20th century

had arrived as a result of the first industrial revolution.

It was busy, crowded, noisy, and exciting.

In less than two centuries, a peaceful, rural way of life

had been replaced by a truly new style of living.

And today, many parts of the world

still await the coming of industrialization,

with all its benefits and problems.

As these new industrial revolutions take hold,

traditional agricultural ways of life

will be traded for the security of factory jobs--

as quite landscapes are transformed

by the smoke, the noise, and the hectic pace of life

that followed the first industrial revolution

in England 250 years ago.

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was provided by the U.S. Department of Education:

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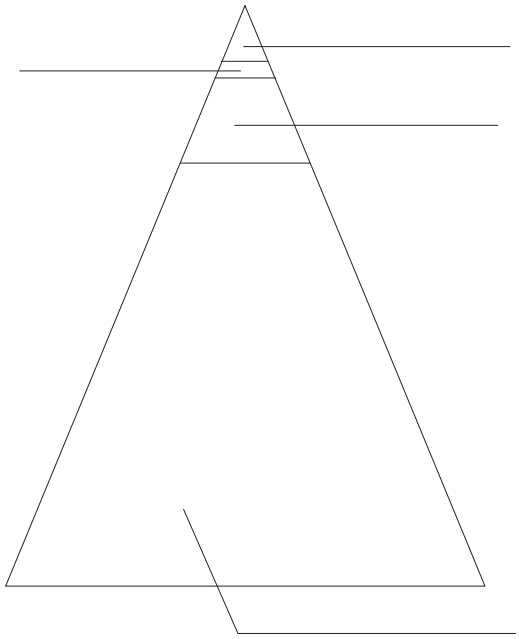
INDUSTRIAL REVOLUTION SOCIAL PYRAMIDS

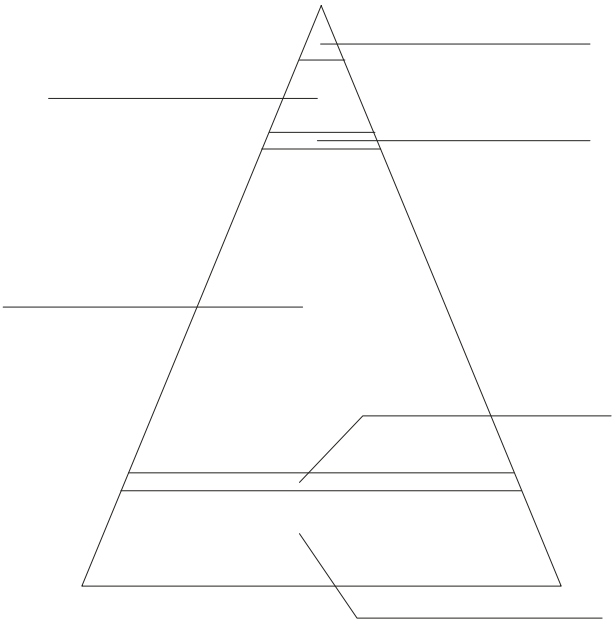
DIRECTIONS: Arrange the following groups in the appropriate social pyramid in order of importance.

Landowning aristocrats
Peasants and Laborers
Middle class
Working class
Independent farmers
Wealthy businessmen

BEFORE THE INDUSTRIAL REVOLUTION



AFTER THE INDUSTRIAL REVOLUTION



ANSWERS: (top to bottom--before) Landowning aristocrats, Middle class, Independent farmers, Peasants and Laborers; (top to bottom--after) Wealthy businessmen, Middle class, Landowning aristocrats, Working class, Independent farmers, Peasants and Laborers.