

History of Technology

Foundations of Technology

eLearning, Montgomery County Public Schools



Objectives: In this presentation, you will learn:

- Most technological developments have been evolutionary, the result of a series of refinements to a basic invention. (ITEA 7-G)
- The evolution of civilization has been directly affected by, and has in turn affected, the development and use of tools and materials. (ITEA 7-H)
- Throughout history, technology has been a powerful force in reshaping the social, cultural, political, and economic landscape. (ITEA 7-I)
- Early in the history of technology, the development of many tools and machines was based not on scientific knowledge but on technological know-how. (ITEA 7-J)
- The Iron Age was defined by the use of iron and steel as the primary materials for tools. (ITEA 7-K)
- The Middle Ages saw the development of many technological devices that produced long-lasting effects on technology and society. (ITEA 7-L)
- The Renaissance, a time of rebirth of the arts and humanities, was also an important development in the history of technology. (ITEA 7-M)
- The Industrial Revolution saw the development of continuous manufacturing, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time. (ITEA 7-N)
- The Information Age places emphasis on the processing and exchange of information. (ITEA 7-O)



Objectives

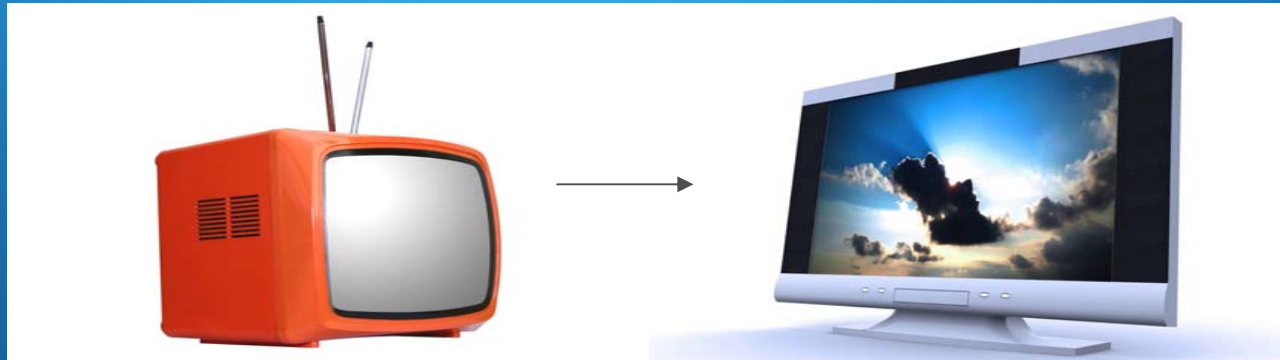
Refining An Idea

Most technological developments have been evolutionary, the result of a series of refinements to a basic invention. (ITEA 7-G)

In this lesson **refining an idea** is discussed. Inventors and teams of people take an idea, which is the mental image a person thinks something should be, and how they refine the idea and improve on the original invention.

What do we mean by “Refining An Idea?” In the simplest terms it means improving something or adding value to a product that already exists.

Many inventions and innovations have evolved by using slow and methodical processes of tests and refinements. From the black and white televisions of 50 years ago, through the refinement of color television, to the development of high definition, mobile, and web-based television, the process has involved a series of refinements to the basic invention.



Example: Refining the light bulb

During the development of the incandescent light bulb, Thomas Edison and a team of 20 highly skilled technical personnel performed more than 1000 tests before they narrowed their ideas to the one that worked.

Since that first light bulb burned for 13 hours in 1879, there have been many innovations and design changes that we call refinements to the original design.

Most technological development has been evolutionary, the result of a series of refinements to a basic invention.



Technology shapes our world

Our world, our history, society, political process, and our economy are all shaped by technology.

We depend on our cars for transportation, our cars will not run without fuel. Gas prices keep going up creating hardships on everyone. Gas prices impact how much we drive and how far we drive, as well as bigger issues like the cost of food and national security. Our way of life depends upon transportation systems that run on cheap and available oil supplies. As that dynamic changes, new technologies will be developed, and our society and our way of life will change shaped by the impacts of our technologies and our dependence upon them.



Technology of the Times

Historical periods have been defined and named in terms of the dominant products or systems of the time. For instance, the Stone Age began with the development of chipped-stone tools, which later evolved into hand axes, blade tools, spears, and the bow and arrow. Fire was also harnessed at this time.

Other historical periods have been characterized by technological developments — the wheel, the printing press, mass production, and the computer for example.

Without question, key developments in technology have pushed civilization forward and laid the foundation for the present high-technology era.



Over the past 200 years, technological and scientific growth has become closely linked with the idea of progress. As you compare the various eras and understand that the history of technology you are also studying the process of change.

The study of the history of technology helps determine possible scenarios for the future. For example, the development of the mechanical clock in the fourteenth century changed how people regarded their use of time.



History of Technology

Over time, humanity has invented objects and methods for accomplishing tasks which fulfill some purpose in a new or different manner, usually with the objective of realizing that purpose in a faster, more efficient, easier or cheaper way.

Technological changes are abrupt and obvious, and at other times, they are evolutionary and subtle. The effects of technological advancements throughout history are very powerful, irreversible, and global.

The **history of technology** is the history of the invention of tools and techniques for doing practical things. To understand where we are in today's world we must first understand how we got here so let's examine the following periods of time.

- The Stone Age
- The Bronze Age
- The Iron Age
- The Renaissance
- The Industrial Revolution
- The Information Age



The **Stone Age** started with the development of stone tools used for hunting, cutting, and pounding vegetables and meat and progressed to the harnessing of fire for heating, cooking, and protection.

Early in the history of technology, the development of many tools and machines was based not on scientific knowledge but on technological know-how.

The first major technologies, then, were tied to survival, hunting, and food preparation in this environment. Fire, stone tools and weapons, and clothing were technological developments of major importance during this period.

During the Stone Age, all humans were hunter-gatherers, a lifestyle which involved limited use of tools and few if any permanent settlements.



Stone Age

The Bronze Age began with the discovery of copper and copper-based metals. Agricultural techniques were developed to improve the cultivation of food and its supply.

The Bronze Age also involved the development of better ways to communicate through the development of paper, ink, and the alphabet, to navigate with boats made of timbers, and to understand human anatomy with the aid of an embalming process.



WORN TORN COPPERY
BRONZE - With white
scratch marks



Bronze Age

The Iron Age was defined by the use of iron and steel as the primary materials for tools. During this period, sustained technological development caused many people to migrate from farms to developing towns and cities.

Other influential developments during the Iron Age included weaving machines and spinning wheel, which advanced the making of cloth, and gunpowder and guns, which were an improvement over previous weapons for both hunting and protection.

The wide application of new agriculture technologies, such as the sickle, the plow, the windmill, and irrigation, enabled farmers to grow more food.



Iron Age

The Middle Ages saw the development of many technological devices that produced long-lasting effects on technology and society. This period saw the development of the waterwheel, the block printing process, paper money, the magnetic compass, and the printing press.

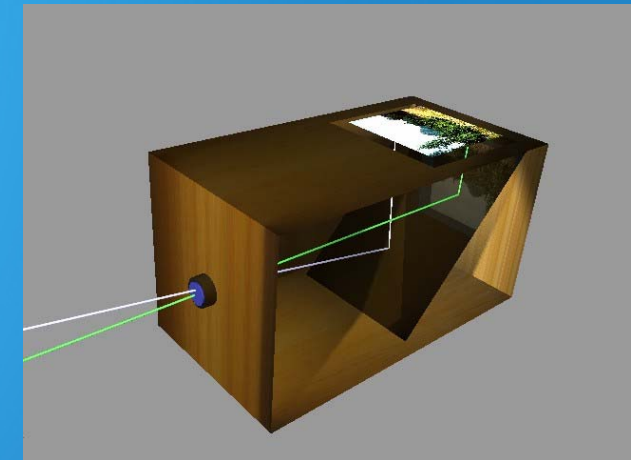
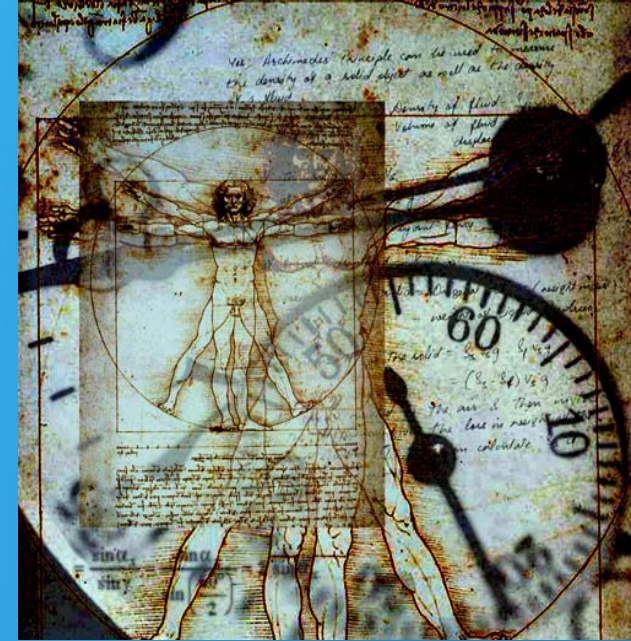
In many ways, all of these devices are still being used today, although they have been greatly modified from their earlier designs.



Middle Ages

The Renaissance, a time of rebirth of the arts and humanities, was also an important development in the history of technology. Leonardo Da Vinci, an Italian painter, architect, and engineer, created drawings and written descriptions of the human flying machine, parachutes, diving bell suit, articulated chains, a giant crossbow, and circular armored vehicles. Gunsmiths, while seeking a means to adjust their gun mechanisms, invented the first screwdriver.

The camera obscura, silk knitting machines, the telescope, the submarine, the hydraulic press, and the calculating machine were developed during this time period.



Renaissance

Industrial Revolution

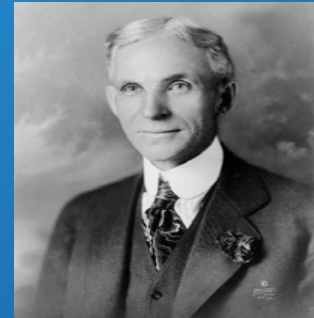
The Industrial Revolution saw the development of continuous manufacturing, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time.

Major developments of the Industrial Revolution included the continuous-process flourmill, power loom and pattern-weaving loom, steam engine, electric motor, gasoline and diesel engines, vulcanized rubber, airplane, telegraph, telephone, radio, and television.

The concepts of Eli Whitney's interchangeable parts and Henry Ford's movable conveyor added to the advances made in the production of goods.



Eli Whitney



Henry Ford

Information Age

The **Information Age** places emphasis on the processing and exchange of information. The development of binary language, microchips, and an electronic numerical integrator and calculator (ENIAC) led to an explosion of computers, calculators, and communication processes to move information from place to place.

Holography, cybernetics, xerographic copying, the hydrogen bomb, the lunar landing ship, communication satellites, prefabrication, biotechnology, and freeze-drying have all been major developments during this time period.



Technology and Time

You have just read about the major inventions and innovations from various times in history, you can draw conclusions of your own about how society and culture influence technological development and vice versa.

Reading about the history of technological developments in the broader context of human history has shown how the impact of technology products and systems on humankind has changed over time.



Summary

- Most technological development has been evolutionary, the result of a series of refinements to a basic invention
- Refinement of inventions and innovative products has impacted humankind over time
- The evolution of civilization has been directly affected by, and has in turn affected, the development and use of tools and materials
- Throughout history, technology has been a powerful force in reshaping the social, cultural, political, and economic landscape
- Early in the history of technology, the development of many tools and machines was based not on scientific knowledge but on technological know-how
- The history of technology is the history of the invention of tools and techniques for doing practical things
- Technological changes are abrupt and obvious, and at other times, they are evolutionary and subtle
- Historical periods have been defined and named in terms of the dominant products or systems of the time
- Time periods include the Stone Age, Bronze Age, Iron Age, The Renaissance Period, Industrial Revolution, and Information Age
- The Stone Age started with the development of stone tools
- The Bronze Age began with the discovery of copper and copper-based metals
- The Iron Age was defined by the use of iron and steel as the primary materials for tools
- The Renaissance, a time of rebirth of the arts and humanities, was also an important development in the history of technology
- The Industrial Revolution saw the development of continuous manufacturing, sophisticated transportation and communication systems, advanced construction practices, and improved education and leisure time
- The Information Age places emphasis on the processing and exchange of information

