

Times Are Changing Teacher Information

Scientific and Technological Achievements (Information for Day 11)

Two inventions, the **magnetic compass and the astrolabe**, were of great help to sailors. The compass tells the sailor the direction in which he is traveling. The magnetic compass had been invented in 1100; its magnetized needle always pointed north. The astrolabe helps the captain place the position of his ship exactly. The astrolabe was invented about 1400 and measured a ship's latitude or the distance north or south of the equator. With these inventions, captains could sail their ships further from land and bring them safely home again. The Chinese also used a type of compass with a magnetic needle that floated in water.

The **printing press** with moveable type was invented in 1450. The Chinese were using block printing as early as 600 A.D., but the Europeans did not know about it. Gutenberg perfected moveable type with the Gutenberg printing press. Europeans learned how to print books faster. They no longer had to be copied by hand as had been done by the monks with religious writings. Books about geography and travel became cheaper and plentiful. One book that was widely read was the book about Marco Polo's travels. People who were looking for new ways to obtain the riches of the Far East were eager to read his book. The invention of the printing press did more than any other thing to spread the new discoveries and the stories of new lands throughout Europe. After the invention of the printing press in 1450, when a man journeyed into new lands he could write about his trip and make maps to show the route he followed. These writings could then be printed for use by all travelers. This shows how the invention of the printing press encouraged travel, trade, and exploration.

Another invention that the Chinese developed but was duplicated by the Europeans was **gunpowder**. The Chinese were using gunpowder in firecrackers around 600 A.D. The Europeans used gunpowder in cannons in the 1300's.

Achievements that led to development of tools and weapons, inventions, technological achievements, etc. (Information for Day 12)

The invention of tools and weapons goes back to the beginning of time. Man used chipped stone, then polished stone, and later metal to make many tools and weapons. The plow was developed to break up the soil by pulling the stone or stick through the dirt. The wooden plows were either pulled by oxen or by the peasants themselves. The earth was rich and the climate warm so crops thrived. The original plow made of wood was not strong enough to use in Europe because of the heavy soil. With the discovery of iron, Europeans were able to use an iron-tipped plow that would dig deeply into the soil. The invention of the wheel also changed the way man did his

work. With the wheel, people were able to use the wheeled cart. This made the moving of large items much easier.

During Medieval times, knights lived within the manor walls, sometimes within the castle walls. They remained ready to defend their manor. Castles were stocked with what it would take for the people of the manor to live for about six months. A siege (battle) could last that long, and they did not want to starve to death. Attackers used a variety of methods to attack the castle. They used battering rams to try to smash the castle gate. They used giant catapults to hurl rocks, burning rags, or dead animals (to spread disease) over the wall. They used siege towers to get on top of the castle wall. Attackers would also use shields, crossbows, swords, and axes to fight face to face after getting inside the castle. Scaling ladders were used to climb the walls of the castle. The defenders inside the castle would pour rocks or boiling water onto the attackers. They would also use the bow and arrow for protection. The moat around the castle was filled with water to prevent attackers from digging a tunnel to get into the castle. It was not until the 1400's that cannons became a weapon to use for defense and attack.

Cultural and intellectual achievements (Information for Day 13)

The early books written on papyrus (a paper-like substance made from the pith of the papyrus plant) and animal skins (vellum was made from sheepskin) were rolled up on a wooden dowel. To read the book, the reader would take the end of the scroll and start unrolling it and roll it up on another dowel. As he rolled the manuscript from one stick to the other, he could read a small section. As the change took place from scroll to a manuscript that was bound on one edge, it was the first time the reader could flip through pages instead of rolling it up on a stick. It made record keeping much easier. Books were much more available and usable due to the printing press and the process of binding books. A very similar change is taking place today as we are beginning to see the use of computers as a way of storing books. We have the ability to search for information at the touch of a mouse. These changes have changed our world forever.

People of the Middle Ages were great lovers of poetry and legends. Since most people could not read, (only men of the church learned to read) a storyteller or troubadour would travel through the land telling stories. The troubadour usually entertained guests after dinner, and he would accompany himself on the lute or some other musical instrument. They would tell tales about King Arthur and his Knights of the Round Table or Robin Hood of Sherwood Forest and recite poems and other tales. Many castles had their own troubadour who lived and entertained guests nightly. Literature that was available during this time was limited due to the cost of materials. Most of the stories were passed down with the storytellers or troubadours. Aesop's Fables date back to the 6th Century (according to Joseph Jacobs). The fables were beast stories with a lesson and were shared by storytellers throughout history. Many different collections have been published throughout the years.

Nobles would also gather in the great hall after meals for other types of entertainment. They would sometimes gather to play games. Chess was a favorite game used in teaching battlefield strategy. Marbles and horseshoes were popular games. The adults would play children's games such as Blindman's Bluff. **Tic, Tac, Toe** was a game played during this time, as well as Ring Around the Rosie (A game depicting the many deaths from plagues).

Cathedrals were built out of stone, and sometimes the walls were ten feet or more thick. With the development of the gothic style of architecture, the stone that made up the walls was supported in new ways. This allowed the architects to add large windows. Artists adapted the idea of the ancient art of mosaic and began to create huge windows out of stained-glass. They created a picture or design and surrounded the pieces with plaster or some type of lead. The colorful stained-glass windows of the churches would show crusaders and religious saints. Because so few people could read, these windows also told stories that taught lesson.

Before the Renaissance, few Europeans could enjoy the new literature because books were made by copying manuscripts letter by letter. In Europe the development of printing was slow. Papyrus (originally used by Egyptians) and parchment were too expensive. During the later years of the Middle Ages, people learned to make paper from materials that were less expensive. During the Middle Ages, the Europeans had learned to bind pages of paper together to form a book rather than a scroll. Then Gutenberg invented the printing press. The Gutenberg Bible is one of the earliest printed books of which copies still exist.

The education of the times was mainly set up in special schools that taught religion. Young men who would become church leaders would learn Latin so that they could read and copy the Bible. They learned math to figure out the dates of religious holidays. The only children who attended school were the boys of wealthy parents, or boys who were not strong enough to be knights. The students would write on wax tablets, and everyone learned the same lesson. In the 1200's universities were founded, but not many books were available. The lessons had to be memorized or copied. Education for girls was too expensive. Children of the lower classes learned a trade or how to farm and take care of children and family.

How trade led to exploration (Information for Day 14).

Vikings

Imagine that it is the year 1000. You see a ship with brilliant red and white sails moving majestically on the Atlantic Ocean. Bright metal shields flash in the sunlight. A wooden dragon's head on the front of the ship shows that this is a Viking ship. Who are the Vikings? Where is this ship headed?

A thousand years ago, daring sailors called Vikings lived in northern Europe. Most of the people of this time stayed home and farmed. The Vikings loved adventure and wanted to roam the oceans in boldly painted ships. About the year 1000, a group of Vikings sailed westward across what they called the Sea of Darkness (we call it the Atlantic Ocean). Their leader was Eric the Red. Together Eric and his crew sailed to Iceland and Greenland and settled and built homes. Eric the Red's son, Leif Ericson, made several voyages westward on the Sea of Darkness. On one of these voyages, he reached North America. Leif called this new land Vinland. Some believe he named it this because of an old Viking word meaning "grass or grazing lands." Others think it may have referred to the many grapes that grew there. We do know that once they left Vinland, they never returned. Leif's discovery was remembered in northern Europe only as an adventure tale passed along by storytellers. People in other parts of Europe did not hear this story for a long time. Even those that did hear were not interested.

The Vikings are usually thought of as pirates, warriors, and explorers. The Vikings did make important contributions to civilization. Vikings invented sails that could tack, or change course by heading into the wind and other shipbuilding advances. The Vikings were the first to discover Native Americans. For the first time in recorded history, people from Europe met with people from across the Atlantic. It was the first step in the process of connecting people from other countries.

Life in Europe

During this time most of the people in Europe lived on manors (small estates). A typical manor included several fields, a small village, and a central manor house. The lord of the manor lived in the manor house. If the lord was rich, this house might be a castle with thick walls and tall towers. The people who farmed the land and provided other services for the lord lived in this village. These people, known as peasants or serfs, worked the fields and kept the manor in good repair. In exchange the lord offered them protection against attack by enemy nobles and thieves who traveled about the countryside. Because few people dared to leave the safety of the manor, each manor produced almost everything it needed. Occasionally a trader might appear with salt, iron tools, or a piece of colorful cloth. These visits were rare. Because of the unsettled conditions in Europe, trade was discouraged and few towns developed. Life centered around the manors. During this time, Europeans did not know much about the world. Most people could not read or write. Peasants lived in small crude huts that had thatched roofs and dirt floors. Even the castles were drafty, damp, and dark. Nobody had spices, such as pepper and cinnamon, to make food taste better when it was not fresh. As the years passed, things began to change. Events taught Europeans about the rest of the world and awakened their need for adventure.

Crusades (See the teacher information from the introductory lesson for more information about the Crusades. The following information describes how the Crusades brought about trade and change during the Middle Ages.)

One of the things that helped awaken European interest in other lands and people was a series of wars called the Crusades. The Crusades began in 1096 and continued off and on for nearly 200 years. The European Christians who took part in the Crusades were called Crusaders. The Crusaders did not win the Holy Land permanently. They did, however, learn much from their travels. In Constantinople and in the marketplaces of Asia, the Crusaders found many new and wonderful things from distant lands. They saw beautiful rugs from Persia, they tasted pepper and other spices from India, and they saw Chinese silk and ate from delicate Chinese dishes. They also took such items back with them to Europe. When they returned to their homelands, the Crusaders brought samples of the products for others to see. The desire for more quickly spread. Before long Europeans began to develop an active trade with the lands east of Europe. To pay for goods from Asia, Europeans had to produce more goods of their own. They manufactured more woolen cloth, trapped more fur-bearing animals, and cut more lumber. The isolated life of the self-sufficient manor ended. People left the manors and cities began to grow. Since those in the cities produced no food then the remaining farmers increased their production to feed them. Lords of the manor cleared more land. To get their peasants and serfs to work more, the lords had to grant them more privileges. This began the downfall of the feudal system of government.

Marco Polo

While many Europeans were learning about the East from the Crusaders, others traveled to see it themselves. Reports from these travels stirred more interest in the world beyond their borders. The most famous of these travelers was Marco Polo. In 1271 the 17-year-old Polo set out with his father and uncle to explore the Far East. He did not expect to be gone for 25 years. When he returned in 1295, he had a fantastic story to tell. Some of the luxuries that Marco Polo and other travelers described began flowing into Europe. These luxuries helped make European life more pleasant. Spices improved the taste of food (spices concealed the taste of spoiled food, which was common in those days before refrigeration). Nobles began wearing clothes made from Chinese silk. They also had rubies and pearls. Marco Polo also described the Chinese people as they burned “a kind of black stone they dug out of the ground and burned like wood.” We know this as coal. The Chinese people were using paper money that was much easier than the heavy coins that Marco Polo was used to using. These are only a few of the things that Marco Polo heard of and saw. Marco Polo told his story in a book about his travel. At first the book was copied by hand and read by only a few Europeans. However, the invention of the printing press in the 1400’s changed this. With more books available many more people could read about his journey and the wonders he had seen. After reading this book, other merchants began to question why they couldn’t have these things. Trade was expanded.