

Student Activity**The AM Radio****Inventions that Shook the World Series****Vocabulary:**

invention, radio waves, sound, Reginald Fessenden, spark gap transmission, wireless communication, wave frequency, static, Marconi, amplitude, alternator, mechanical energy, electrical energy, amplitude modulation

Pre-Viewing Discussion:

What inventions in communication do you think preceded the AM radio?

How do you think inventors use existing technology and innovation to create something new?

What obstacles have you encountered when trying to accomplish a goal? How did you overcome them?

Post-Viewing Discussion:

Why was wireless communication important? What practical applications did wireless communication have at this time?

What were some of Fessenden's first jobs?

Why did Fessenden have to create artificial radio waves? How did he attempt to do this? Was he successful?

What were some of the obstacles Fessenden encountered when trying to create artificial radio waves? How did he overcome them?

What were some of the problems with the validity of Marconi's claim that he'd sent a message across the Atlantic?

Further Activities:

Research the lives and accomplishments of Fessenden and Marconi. Compare and contrast their achievements and impact on the 20th century.

Research one of the other inventions mentioned in the program. Be sure to include information about the inventor, the struggles encountered when attempting to create the new invention, and the ultimate success.

Describe the personal characteristics inventors seem to share. Evaluate why these traits seem to be important for the successful inventor.

The Airplane

Inventions that Shook the World Series

Vocabulary:

Wright Brothers, Otto Lilienthal, glider, pitch, yaw, lateral movement, force, wing warping, courage, lift, drag, rudder, design, engineering

Pre-Viewing Discussion:

What do you know about the Wright Brothers? Do you know any other inventors that worked on flying machines at around the same time?

How might the motion of a bicycle relate to the motion of an airplane?

How does courage often play into a successful invention?

Post-Viewing Discussion:

How do pitch, yaw and lateral motion relate to one another?

How did geometry provide an idea for how a glider could adapt the concept of wing warping for human use?

What were some of the problems with the Wright Brothers' initial glider? How did the Wright Brothers solve these problems?

Further Activities:

Write a biography of the Wright Brothers. Be sure to include information on their lives and accomplishments, as well as the reasons you think they were successful in creating an airplane.

Explain how the invention of the airplane changed the 20th century. What do you think the 20th century would have been like without this invention? Write a short story about how the world would be different today if the Wright Brothers had not invented the airplane.

Describe the personal characteristics inventors seem to share. Evaluate why these traits seem to be important for the successful inventor.

The Disposable Razor
Inventions that Shook the World Series

Vocabulary:

King Gillette, William Painter, William Nickerson, razor, characteristics of metals, entrepreneur

Pre-Viewing Discussion:

How many disposable razors do you think are used every day?

How do you think Gillette came up with the idea for a disposable razor? Why was a disposable product attractive?

Post-Viewing Discussion:

Why do you think King Gillette was unsatisfied as a salesman? What does this tell you about finding and following your passion in your career?

How did Gillette's boss, William Painter, change the way Gillette thought about invention?

What were some of the problems with using a straight razor to shave?

How did William Nickerson try to help Gillette solve the problems he was having with the sheet steel? What eventually worked?

Further Activities:

Write a biography of King Gillette. Be sure to include information on his life and accomplishments, as well as the reasons you think he was successful in creating a business around his idea for a disposable razor.

Describe the personal characteristics inventors seem to share. Evaluate why these traits seem to be important for the successful inventor.

The Air Conditioner
Inventions that Shook the World Series

Vocabulary:

temperature, humidity, Willis Carrier, fog

Pre-Viewing Discussion:

What do you think life was like before air conditioning? How do you think a lack of temperature control affected businesses?

What would be a reason that a business might ask an engineer to create a machine that can control humidity?

Post-Viewing Discussion:

How do you think Carrier's belief that you can achieve anything you put your mind to impacted his ability to invent new technology?

Why was it important for the paper to go through the printing press the same way each time? Why was the humidity affecting this?

Why did Carrier want to re-create fog? How did this help him establish the 55% humidity required by his client?

What impact did the invention of air conditioning have on business environments? Home environments?

Further Activities:

Write a biography of Willis Carrier. Be sure to include information on his life and accomplishments, as well as the reasons you think he was successful in creating a business around his innovations.

Describe the personal characteristics inventors seem to share. Evaluate why these traits seem to be important for the successful inventor.

The Vacuum Cleaner
Inventions that Shook the World Series

Vocabulary:

asthma, vacuum cleaner

Pre-Viewing Discussion:

How did people clean carpets before the vacuum cleaner? What were some of the problems with this method of cleaning?

What do you think inspired someone to create a vacuum cleaner?

Post-Viewing Discussion:

What made Spangler's job as a night janitor so tough on him? How did that lead to his invention of the vacuum cleaner?

How did the ceiling fan inspire Spangler? What challenges did he face with his initial design? How did he overcome them?

Further Activities:

Research the history of the Hoover Company. Describe the company's beginnings and where they are today. What made them successful? How successful is Hoover in the market today? What are their biggest challenges?

Describe the personal characteristics inventors seem to share. Evaluate why these traits seem to be important for the successful inventor.