

The Internet

Inventions that Shook the World Series

Vocabulary:

Internet, computer science, DARPA, ARPA Net, Bob Kahn, Vint Cerf, computer language, computer protocol, TCP/IP

Pre-Viewing Discussion:

How do you use the internet?

How do you think people felt when the internet was first created? How do you imagine it changed their lives?

Post-Viewing Discussion:

Why were scientists attracted to working at DARPA? Why do you think Bob Kahn went to work there?

What were some of the problems with early computer networks? How did Bob Kahn want to solve those problems?

Who did Kahn enlist to help him find a way to make different computer networks communicate? How successful were they?

Further Activities:

Research the evolution of computer networking from the 1980s to today. Detail the many ways this technology has changed our culture and our day-to-day lives. Are there places in the world where this technology is very rare, even today?

DNA Profiling**Inventions that Shook the World Series****Vocabulary:**

DNA, DNA profiling, genetics, forensics, Alec Jeffreys

Pre-Viewing Discussion:

What is DNA? How is your DNA different from the other people in your class?

How is DNA used to help solve crimes today? How do you think that came about?

Post-Viewing Discussion:

What was Jeffreys researching when he recognized that DNA had repeat patterns? What did he eventually learn about these patterns?

How are repeat patterns used to match DNA to a person? How accurate are the results?

How did Jeffreys' community go about trying to find the criminal? How did they eventually catch him?

Further Activities:

DNA evidence is commonplace in today's investigations and court cases. Research the development of DNA profiling as a forensic tool. Was there resistance when the science was first used? What are some arguments for and against DNA evidence? Be sure to include privacy concerns in today's world in your analysis.

The Nicotine Patch**Inventions that Shook the World Series****Vocabulary:**

Nicotine, addiction, aversion therapy

Pre-Viewing Discussion:

Why is smoking bad for you? How does it affect your body?

Why is it so hard to quit smoking?

Post-Viewing Discussion:

What effect do the tar and carbon monoxide from smoking have on the body?

How does nicotine work to make the rat not want sugar water in Etscorn's experiments?

What happened when Etscorn spilled liquid nicotine on himself? How did that lead him to the idea for a nicotine patch? How do you imagine his world has changed since the nicotine patch went on the market?

Further Activities:

It is well known that smoking is addictive and bad for your health. Find three other drugs or substances that have addictive properties and compare and contrast them with nicotine and smoking. What are the health effects of these substances? Why is it important not to use them?

The MIR Space Station
Inventions that Shook the World Series

Vocabulary:

Space travel, space race, Soviet Union, Konstantin Feoktistov, Salyut space station, MIR space station, International space station, Modular

Pre-Viewing Discussion:

What was the space race?

What do you know about the International Space Station?

Post-Viewing Discussion:

How might man eventually get to Mars? What would we have to build to get there?

What were some of the challenges of building a space station larger than the Salyuts?

How were these challenges overcome? What genius idea did Feoktistov have to make docking spacecraft to the station safer?

Further Activities:

Research the development of the MIR and International Space Stations. Detail how we came out of a confrontational period during the Cold War and the space race into one of international cooperation in space, such as what we see now.

The Capsule Endoscopy
Inventions that Shook the World Series

Vocabulary:

Medical research, Dr. Tarun Mullick, endoscopy, gastroenterologist, colonoscopy, fiber optics, Ram Nair

Pre-Viewing Discussion:

What is a capsule endoscopy? What kind of information do you think doctors get from this test?

What are some common medical tests today? How do you think future innovation might make them easier on the patient and doctor?

Post-Viewing Discussion:

What triggered Tarun to try to create a capsule endoscopy? What did he have to do to be successful?

How long did it take for Tarun to get a patent for his capsule? Why do you think it took so long? What are the benefits of this device?

What is Dr. Mullick working on now? How might his research change future medical tests?

Further Activities:

Write down some of the ways Tarun pursued his interest in science and medicine as a teenager. Now take something you have an interest in, and plot out ways you can explore and pursue it while you are still in school.