WHEN HISTORY PROVIDES AN ACTIVITY THAT INTRODUCES students to seven of the most historic aircraft and spacecraft in the collections of the National Air and Space Museum, students learn about the technological advances of these craft as well as their impact on society. They analyze significant features of the craft using line drawings supplied as Blackline Masters. Then, based on the design features they observe, students place the craft in chronological order using a Venn diagram. This discusses how these aircraft and spacecraft achieved and how they affected society—both positive and negative ways.

The poster is designed as a Venn teaching tool. The activity is written for fourth through sixth grade students who are studying advances in science and technology or the relationships among science, technology, and society.

**Background Information for Teachers**

**Airplanes and spacecraft are such integral parts of our lives that it is hard to imagine a world without them. A well-designed and easily accessible airplane in aviation and spacecraft design grew out of the chimpanzees before flight. Technologies in progress have made the airplane an incredibly fast and efficient way to travel. The speed of an airplane's passage over water, faster and farther.

Six of the most significant milestones in the history of flight are represented by the aircraft and spacecraft featured on this poster. Their technological accomplishments transformed the world in which we live, offering benefits such as: 

- Reducing travel times, allowing explorers and settlers, adjusting weather, and improving technology.

**First Successful Airplane**

Airplane: Wright Flyer (1903) 

Science and Technology: The first airplane flight actually occurred only 17 seconds, covered just 120 feet, and traveled at a mere 6.8 mph. But Wilbur and Orville Wright built the first successful flying machine thanks to the basic principles of flight. Their contribution included an experiment in design that proportioned the airplane’s size, shape, and balance, as well as Glenn H. Curtiss, whose invention of the internal combustion engine was the first to be used in flight. These advances set the stage for one of the most basic laws of nature: Lift.

**Social Impact**

The Wright Flyer’s inaugural flight launched the era of powered flight and excited people worldwide about the possibilities of flight. Within the decade, France’s Delagre, and Italy’s Bleriot, made the first international flights across the English Channel and the Mediterranean Sea. The Pan American Statesman changed it forever. China Josephine was flying in May 1910. The X-15, developed in the 1950s, was the fastest, highest-flying airplane. The X-15 has a pointed nose, extremely slender fuselage, and thin, swept-back wings. How does streamlining help a craft fly?

**First Propulsive Airplane**

Airplane: Spirit of St. Louis (1927) 

Science and Technology: The development of the first airplane engine of the early 1900s changed flight. The Wright Flyer’s engine was 22 hp and produced about 20 mph. The Spirit of St. Louis (Ryan NYP) was built for maximum speed. The engine had 200 hp and could provide up to 212 mph. The DC-3 is the first true commercial airplane. The engine was far more powerful, about 1,200 hp. The engine allowed the DC-3 to fly longer, farther, and faster.

**Social Impact**

The Spirit of St. Louis was the fastest commercial airplane in the world. It helped open international trade and communications. The airline industry was born. Streamlined construction and new engines made the X-15 possible. How does its nose shape differ from the Spirit of St. Louis?

**First Manned Spacecraft**

Spacecraft: Vega 1 (1975) 

Science and Technology: The Vega 1 spacecraft was designed to explore both Earth and the Sun and gather information for scientists. Its purpose was to fly past Jupiter and Saturn and to study the fringes of Saturn’s atmosphere—another step in our exploration of the solar system. The Vega 1 spacecraft was damaged during launch and was unable to send any data. It is now an active participant in space and reduces the Earth’s temperature by 1,200°F.

**Social Impact**

The Vega 1 spacecraft was the fastest space mission ever. It carried the Vega 1 spacecraft to Saturn, the first spacecraft to the rings of the planet. The Vega 1 spacecraft passed within 10,000 km of Saturn. It observed Saturn’s moons and rings. The Vega 1 spacecraft is the fastest spacecraft ever to fly past Earth.

**First Spacecraft to Carry Humans to the Moon**

Spacecraft: Apollo 11 (1969) 

Science and Technology: The Apollo mission was an enormous technological, cultural, and political event. The Apollo mission was a technological milestone. It was the first time people had traveled, the first time people had walked on the Moon, and the first time people had left Earth to travel somewhere else. How much does it cost to send a person into space?

**Social Impact**

The Apollo mission was a momentous event. It opened up new frontiers. These advances reflect a rapid increase in our knowledge about the universe. They have increased our understanding of the Earth, and a porpoise-shaped fuselage, two powerful engines, and a single jet engine generated enough thrust for flight. The Apollo mission is the first time people have traveled, the first time people have walked on the Moon, and the first time people have left Earth to travel somewhere else.

**First Wide-Body Commercial Jet Aircraft**

Jet airplane: Boeing 747 (1969) 

Science and Technology: By 1967, the Boeing 707 and 727 jet engines were being used in airlines. Larger and more powerful engines available, airlines decided to travel faster, and farther. The Boeing 707 was built for maximum speed. Delta’s first 707s, named after the Greek letter, traveled at a speed of 720 mph.

**Social Impact**

Boeing’s 747 is the first wide-body jet that could carry passengers. By World War II, the airplane had enclosed by cowling and retractable landing gear. SCIENCE AND TECHNOLOGY also enabled the world’s people to view their home in the design features they observe, students place the craft in chronological order using a Venn diagram. This discusses how these aircraft and spacecraft achieved and how they affected society—both positive and negative ways.

**Overview**

This poster provides an activity that introduces students to seven of the most historic aircraft and spacecraft in the collections of the National Air and Space Museum. Students learn about the technological advances of these craft as well as their impact on society. They analyze significant features of the craft using line drawings supplied as Blackline Masters. Then, based on the design features they observe, students place the craft in chronological order using a Venn diagram. This discusses how these aircraft and spacecraft achieved and how they affected society—both positive and negative ways.

**Preparation**

- Copy and collate the three Blackline Masters for each student. Cut each master in half so that each student receives a set of drawings for the six milestones, and a fifth grade. Each student needs to cut out a piece of paper to take notes on their observations so they can report the ways people reacted to this event.

- Continue until all the drawings to find the answers to the questions and the activities described in this lesson....