The Space Race: Exploring the World’s Last New Frontier

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Paper

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In 1957, the Soviet Union launched the world’s first man-made satellite that kick-started a race in a time period known as the Space Age. During the Space Age the United States and the Soviet Union raced against each other, in a race called the Space Race, to see who could make the most advancements in space exploration. The Space Race led to many important inventions, the exploration of places such as the moon, and helped the citizens of the world gain a better understanding of the world above their own.

Prior to the Space Race the Soviet Union and the United States were allied against the Axis powers during World War II. After World War II, the former allies began to form an untrusting relationship. The American’s, who had been wary of the Soviet Union’s communist ways\(^1\) for several years before World War II, feared that the Soviet Union would try to rule the world. The feelings of resentment and distrust was mutual between the two nations for the Soviet Union had long begrudged the American’s for refusing to believe that Soviet Union legitimate.\(^2\) The untrusting relationship led to the Cold War where the Soviet Union and the US fought prepared themselves for the constant threat of a nuclear bombing from each other.

In 1955 scientists from 66 countries came together to form a scientific study group known as the International Geophysical Year\(^3\) (abbreviated as IGY). The countries that participated in the IGY met and discussed what new scientific advancements each country wanted to try to accomplish during the IGY. One of the experiments that the United States announced that they were going to undertake was the launch of several man made satellites into

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\(^2\) Ibid.

\(^3\) Gurney, Gene, and Clare Gurney. The Launching of Sputnik. The United States: Franklin Watts, 1975. Print.
space. The USSR (the Soviet Union) joined the IGY late and announced its plan to study several fields of science including the weather and the study of the world’s polar regions.\(^4\)

Over a year after the United States announced its plans through the IGY to launch man made satellites into Space the USSR released its plans to launch its own man made satellites into space.\(^5\) When announcing their plans of space exploration to the IGY, chairman of the Soviet International Geophysical Year committee, Ivan Pavlovich stated, “Since the question of the USSR participation in the IGY rocket-satellite observations was decided quite recently, the detailed program of these observations is not yet elaborated”\(^6\). After the Soviet Union announced its plans to launch man made satellites into space, the USSR did not release any other information to the Western countries making them inquire how much progress the Soviet Union had made towards launching the world’s first manmade satellite.\(^7\) The Americans began to fear the worst. The lack of information that the Soviet Union was providing was not helping to improve the American’s opinions of the Soviet Union.

On October 4th, 1957 the Soviet Union successfully launched the world’s first manmade satellite called Sputnik.\(^8\) Sputnik was an uninstrumented, spherically shaped satellite with four legs extending from its base (see Appendix A). Sputnik orbited the Earth every 98 minutes\(^9\) and sent out a high pitched sound signal that the scientists used to track the satellite. Many countries were unprepared to track Sputnik because of the little information the Soviet Union revealed about its launch. Sputnik came a as a huge surprise to the world, especially the United States.

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\(^4\) Ibid.

\(^5\) Ibid.


\(^7\) Ibid.

\(^8\) Ibid.

The Soviet Union had announced the launch of Sputnik so many times without going into much detail that Americans began to believe that the Soviet Union was bluffing.\textsuperscript{10} Within days of Sputnik’s launch Americans were using the successful launch of Sputnik as warning signs of possible Soviet nuclear attacks on the world from space.\textsuperscript{11} The American’s plan of launching the world’s first satellite had encountered the problem of the Soviet Union’s plan to launch their own satellite.

The launch of Sputnik was one of the most important events during the space age because it kick-started the Space Race. The United States was so frightened by the rumors of the hostile intentions and the thought that the Soviets were superior to them in space exploration that they decided to jump into action. The United States began to fast track their plans to launch a satellite into space. Without the launch of Sputnik, the United States may have never landed on the moon\textsuperscript{12} or have ever explored the world above us.

On November 3\textsuperscript{rd}, 1957, only one month after the original launch, the Soviet Union launched Sputnik 2, the world’s second manmade satellite. Sputnik 2 wasn’t spherical like Sputnik 1, instead it was cone shaped.\textsuperscript{13} The most important part of Sputnik 2 was the passenger that it contained. Riding into space aboard Sputnik 2 was a Soviet dog named Laika. Sputnik 2 contained enough oxygen for Laika to last for about 10 days\textsuperscript{14} as well as a camera to monitor her

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\textsuperscript{11} Ibid.
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behavior along with several scientific instruments to measure things such as solar radiation and cosmic waves.\textsuperscript{15}

Sputnik 2 was the world’s first attempt to successfully launch a living organism into space. By launching Laika into space the Soviet Union prepared themselves to take the next step launch a human being. Even though Laika did not make it back down to Earth alive, the Soviet scientists gained a lot of information about how living organisms are able to survive in space.

On December 6\textsuperscript{th}, 1957, the United States attempted to launch its first satellite into space. The administration had three satellites to choose from, one from each of the US Navy, Army, and Air Force.\textsuperscript{16} The administration decided to attempt to launch the Navy’s satellite called Vanguard. The American’s first attempt to reach space however ended in disaster as Vanguard tumbled off of the launch pad and exploded.\textsuperscript{17} Not only did the Americans have the pressure of the Soviet Union’s success on their backs, they also had encountered yet another problem. Luckily the German engineer Wernher von Braun, who was working for the US Army, had a backup plan.

On February 1\textsuperscript{st}, 1958, the United States finally launched their first manmade satellite called Explorer 1 (see Appendix B). Explorer 1 was significantly smaller than some of the Soviet satellites (weighing only 13.37 kg), but the American satellite was equipped with several scientific instruments that were used to measure the amount of radiation in the Earth’s orbit.\textsuperscript{18} Explorer 1 orbited the Earth every 114.8 minutes.\textsuperscript{19} While in space, Explorer 1 discovered a

\textsuperscript{16} Ibid.
\textsuperscript{17} Ibid.
\textsuperscript{19} Ibid.
series of radiation belts surrounding the Earth that were named the Van Allen belts after Dr. James Van Allen who theorized about the radiation belts prior to the launch of Explorer 1. The Van Allen belts are clouds of dense particles that surround Earth and help to protect our planet from dangers such as solar wind.

Explorer 1 was the American’s first successful attempt to launch a satellite into space. Unlike Explorer 1, Sputnik did not make any scientific advancements while in space. Space exploration became immensely popular as Americans began to exchange ideas and interest in space with one another. Many Americans were relieved to know that the United States were finally able to launch their own satellite into space and that they were now able to improve on that accomplishment in order to try and one-up the Soviet Union’s advancements.

The next advancement in space exploration came on March 17th, 1958, when the United States launched Vanguard 1. Like Explorer 1, Vanguard was extremely small in size compared to the Soviet satellites. Vanguard reached an altitude higher than any other satellite during its launch and was equipped with radios and temperature sensors. Vanguard was also the first to run off of solar energy that it harnessed from the sun. Most of the scientific achievements that Vanguard accomplished had to do with the Earth. Vanguard helped scientists to gain a better understanding of the shape, size, and temperature of Earth. Even though Vanguard lost power three years after its launch, the satellite still remains the oldest satellite in orbit to this day.

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20 Ibid.
23 Ibid.
After the launch of Vanguard 1, the United States decided to change how their space program functioned. President Dwight Eisenhower and his advisors decided that they wanted to separate the space program from the military in hopes of launching the first human into space. On July 29th, 1958, President Eisenhower turned the National Advisory Council for Aeronautics into the National Aeronautics and Space Administration (NASA) and put the new administration in charge of the country’s space program. The expert German engineers that worked for the US army such as Wernher Von Braun, were relocated in order to work for NASA. By having an administration whose sole purpose was to make more advancements in space exploration, the United States showed their determination to explore space.

Over the next 3 years the Soviet Union and the United States launch several satellites and rockets that explore the sun, moon, and the Earth. While the Soviet Union gained an early lead in the Space Race by launching Sputnik, the United States was quickly developing more advanced technologies and engineering techniques. Both of these nations had the same goal in mind; to successfully launch the first human being into space. On April 12th, 1961, the Soviet Union successfully completed the daring feat by launching Vostok 1, the first spacecraft to bear a human being. Vostok 1 contained a spherical cabin where the Soviet cosmonaut Yuri Gagarin sat (see Appendix C). Yuri Gagarin had three portholes that he could look out of during his journey through space. Gagarin orbited the Earth once before reentering the atmosphere and landing in Kazakhstan after being in space for about 1 hour and 50 minutes.

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26 Ibid.
27 Ibid.
29 Ibid.
Vostok 1 and Yuri Gagarin showed the world that no feat was too small for the Soviet Union. As one might guess the United States was not pleased that the Soviet Union had beaten them yet again. After four years of preparation starting with a dog named Laika, the Soviet Union had successfully launched the first human being into space and explored the limits of living beings in space. The Soviets had proved that humans could safely travel to space and back and they opened the doors for more scientific advancements in space exploration to come.

23 days after Yuri Gagarin’s successful trip into space, Alan B. Shepard became the first American astronaut to travel into space. On May 5th, 1961, Shepard climbed aboard the Freedom 7 and was launched into space. Freedom 7 did not have enough power for Shepard to remain in space as long as Gagarin did so Shepard was only in space for 15 minutes.30

Shepard’s flight improved the spirits of the Americans by proving to the Soviet Union that they were beginning to catch up.31 A sense of hope swept through the nation after just 15 minutes in space. The United States was starting to make its own advancements in space as opposed to attempting to recreate some of the Soviet Union’s.

In 1962, President John F. Kennedy challenged the United States to be the first nation to successfully land a man on the moon. From 1962 to 1969 the United States and the Soviet Union began to make preparations to land on the moon. Both nations sent out several satellites that explored the moon and its terrain. Space exploration had taken the world by storm and more and more people became inspired by the By 1969 astronauts from both nations had successfully completed several spacewalks and had finally developed ways for astronauts to spend longer and longer periods of time in space.32

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On July 16th, 1969, the United States launched Apollo 11, a spacecraft carrying three astronauts with a mission to land on the moon. The astronauts aboard the Apollo 11 were Neil Armstrong, Edwin “Buzz” Aldrin, and William A. Anders. Apollo 11 launched from Cape Canaveral, Florida, at the Kennedy Space Center. Apollo 11 reached the moon on July 20th, 1969 after orbiting the Earth and the moon. An estimated 600 million people watched Neil Armstrong and Buzz Aldrin make their historic moonwalk from their televisions at home. The astronauts performed several experiments on the moon and collected several samples of the moon’s surface. The astronauts also planted the American flag on the moon’s surface to symbolize the tremendous accomplishment that the nation achieved.

The moon landing finally put the American’s ahead of the Soviet Union in the Space Race. For centuries the moon had been an unattainable mystery to the world, but on July 20th, 1969, mankind had finally done the impossible and walked on the moon. The possibilities for humankind were endless as the citizens of the United States experienced a sense of pride in their nation and all that it accomplished.

During the Space Race we explored a whole new world. The United States and the Soviet Union explored not only the moon and the stars, but also our own planet. While the astronauts were exploring space, the scientists were exploring new technology and inventions that would help the world to learn more and more about space.

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The Americans had encountered several problems during the Space Race such as the Soviet Union’s successful and speedy launches and the failed launch of several satellites including Vanguard, but the Americans overcame those problems in order to obtain their goal of being the first nation to land a man on the moon.

Countless inventions were exchanged and created during the Space Race including cordless power tools, computer microchips, shoe insoles, and satellite television. New technology and ideas were exchanged between the Soviet Union and the United States as they raced against each other. The interest in science and space was exchanged between citizens of the world as space became more popular. A whole new world was discovered during the Space Race. The Space Race ushered in an age of science and exploration, as all of the exploration being made in space inspired people all over the world to have an interest in science and engineering.

Outer Space meant many things to many people. For some cultures space had a religious significance where the gods lived, while other believed space to be a dangerous place where hostile aliens dwelled. All of the different beliefs had one thing in common: Space was an mysterious new world filled with endless possibilities and endless unknowns.

The Space Race was an extremely important event history because of all of the information, techniques, and inventions that we gained from exploring the world above us. Without Sputnik the United States may have never launched its first satellite into space, without Explorer 1 we would know nothing about the Van Allen Belts, and without Apollo 11 and its crew we would not know half of the information that we know about our moon today. For

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centuries scientists and philosophers have guessed and theorized about space and what it contained, but it wasn’t until the Space Race that humankind began to find the answers to all of those questions that were formed so long ago.
Appendix A

9 Dec. 2015.
Sputnik was a circular shaped and about the size of a beach ball. Sputnik did not contain any instruments because its sole purpose was to see if a man-made satellite could make it to space.

Appendix B

The creators of Explorer 1 hold up part of the satellite in triumph of its success. Pictured from left to right is the former director of the laboratory that built Explorer 1 Dr. William H. Pickering, Dr. James A. van Allen who created the instruments that discovered the Van Allen Belts, and Dr. Wernher von Braun who created the rocket that launched the satellite into space.
Yuri Gagarin was a Soviet Union Air Force pilot who became an instant hero after his trip to space. Yuri Gagarin went into space when he was 27 years old. Yuri was not allowed to go to
space again until 1968 because the Soviet Union wanted to protect their national treasure. Unfortunately Yuri Gagarin died in training for his second trip into space on March 27th, 1968, and never made it to space again.

Works Cited

Primary Sources


This video helped me to see what the landing on the moon was like as well as understand how amazing the achievement of walking on the moon really was. I intend to used what I learned from the video to explain the impact that the landing on the moon had on the citizens of the world.


This image helped me to visual what Yuri Gagarin actually looked like. In this image you could see the sense of pride on Yuri Gagarin’s face and I think this picture will provide a more powerful way of showing my readers how important Yuri Gagarin was to the Space Race. I will use this image in my project as a visual of the cosmonaut for my readers.


This website helped me to see the astronaut’s side of the Space Race and how they reacted to travelling in space. This website also helped me gain a better understanding of the astronaut’s bravery. I will use what I learned from this website to explain how the astronauts felt about exploring space.

This YouTube video helped me to understand America’s opinions of the Space Race and the Soviet Union. It also showed me how determined the United States was to reach the moon before the Soviet Union and to keep outer space a peaceful environment. I will use this source to explain the American’s opinions and thoughts about the Soviet Union.


This image helped me to gain a better understanding of the size and shape of Explorer 1, as well as all of the pride that the creators of the satellite felt towards it. The picture provides a powerful example of the pride and the hard work that was put into Explorer 1. I will use this image in my project as a visual aid of Explorer 1 and the people who created it.


This image helped me to see Sputnik and obtain a better understanding of its shape and size of the satellite. I will used this picture as a visual in my project so that my readers can obtain the same understanding that I have.

**Secondary Sources**

This database helped me to understand how much of a surprise the successful launch of Sputnik was to the citizens of the United States. This database also helped me to understand the United States’s reaction to the launch of Sputnik. I will use the information that I obtained from this database to explain how the launch of affected the world and (more specifically) the United States.


This site contained lots of information about Sputnik 2. This site was extremely helpful to me because it was an unbiased site that only listed facts about the satellite. I will use the information that I learned from this site to explain how Sputnik 2 impacted the Space Race.


This book helped me to understand the impact that Sputnik had on the world. The book also helped me to understand how the Space Race began by explaining the International Geophysical Year. I will use the information that I obtained from this book to explain the International Geophysical Year and how the IGY contributed to the tension that was forming between the United States and the Soviet Union.

This website helped me to understand how the Cold War began and how the United States and the Soviet Union felt towards each other. I will use the information that I learned from this website to explain how the Cold War began and how the Cold War affected the way the Soviet Union and the United States felt about each other during the Space Race.

---. “The Space Race.” History.com. A+E Networks, 2010. Web. 27 Oct. 2015. This website helped me to understand the timeline of the Space Race. This website also helped me to understand the important events of the Space Race. I will use this information to explain some of the major events of the Space Race.

Loff, Sarah, ed. “Apollo 11 Mission Overview.” NASA. NASA, 7 Sept. 2015. Web. 22 Jan. 2016. This website gave me a better understanding of the Apollo 11 mission. I will use this information that I obtained from this website to explain the impact that Apollo 11 had on the Space Race.

---, ed. “Explorer 1 Overview.” NASA. Ed. Sarah Loff. NASA, 30 July 2015. Web. 5 Nov. 2015. This website helped me to understand all of the achievements that Explorer 1 accomplished. This website also listed some of the data and information that Explorer 1 taught the world. I will use the information that I learned from this website in my project to explain how Explorer 1 impacted the world and the Space Race.

This database helped me to understand what it was like to walk on the moon as well as how the astronauts got the moon. I will use this information to explain in detail the lunar landing.


This website helped me to understand the impact that Sputnik had on the world and the Space Race. I will use this information that I obtained from this website to explain how Sputnik impacted the Space Race and the world.


This new article taught me more about the satellite Vanguard 1. I intend to use the information that I obtained from this website to explain the importance of Vanguard 1.


This website taught me more about the moon landing in a way that was easier for me to understand. I will use the information that I learned from the website to explain how important the lunar landing was to the Space Race.


This website taught me more about the inventions that were made during the Space Race. I will use the information that I learned to list some important inventions that were invented during the Space Race.

This book gave me more information about the early stages of the Space Race as well as the lunar landing. I will use the information that I obtained from this book to explain how some of the early events of the Space Race affected the world.

Shelton, William R. *Man’s Conquest of Space*. New York: National Geographic Society, 1968. Print. This book provided me with a more detailed timeline of the Space Race as well as some important inventions that came from the Space Race. I will use this information to explain how my topic relates to the exchange category of my project through listing and explaining all of the inventions that came from the Space Race.


This website provided me with a timeline of the important events in the Space Race. I intend to use this information to write about my important events in chronological order.


This website taught me more about Vanguard 1 and the achievements that it accomplished. I will use the information that I obtained from this website to explain how important Vanguard 1 was to the Space Race in my project.

This website taught me more about Vostok 1 and the achievements that it made. I will use the information that I learned from this website to explain how important Vostok 1 was to the Space Race.