Class Starters & Enders

Making the Most of Instructional Time
Five Minute Lessons

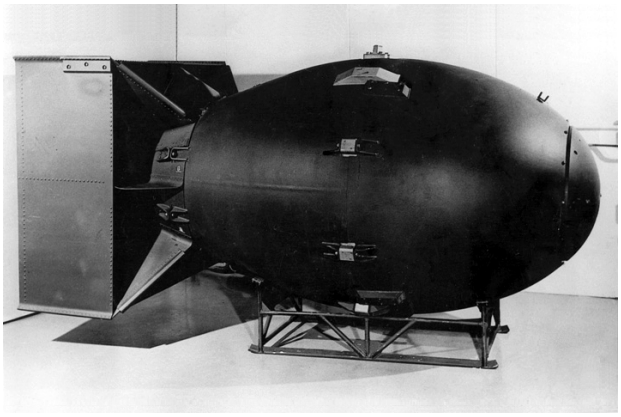
Class Starters and Enders help utilize the last minutes of class when a lesson ends but there is not enough time to start another, or for an interest approach at the beginning of class. Mini-lessons correlate to GPS in the programs areas below.

A Blast from the Past

Program Areas: Engineering and Technology, Metals Technology, Transportation

Instructions: Read the material and make notes of important points, answer questions, and be ready to discuss this topic.

Fat Man and Little Boy were two of the three bombs that were developed under the Manhattan Project, a secret U.S military project to create the first nuclear atomic weapons. Thought to be named for their size, some believe "Fat Man" was named for Winston Churchill, while "Thin Man" (the third bomb) was named for Franklin Roosevelt, and "Little Boy" was named after developers realized Thin Man could be made shorter. During the final chapter of World War II in August 1945, the United States conducted two bombings on the Japanese cities of Hiroshima and Nagasaki. Little Boy was dropped on the city of Hiroshima and was responsible for the deaths of 90,000-160,000 people and Fat Man was dropped on the city of Nagasaki and killed 60,000-80,000 people. Six days after Fat Man was dropped over Nagasaki, Japan surrendered to the Allied Forces.



Fat Man and Little Boy were both implosion type devices, or devices that contained such high explosives it caused the mass to compress, made of the isotope plutonium-239 which gave them sensitive and very reactive properties. They were created in 1939 when scientists warned the US government that Germany was already experimenting with such devices. The United States made the decision to drop the bombs on Japan in an effort to end the war sooner and save the lives of many American soldiers.

Little Boy was delivered by the B-29 *Enola Gay*. The bomb was detonated at an altitude of almost 2,000 ft and the blast was later guessed to have the impact of 13 kilotons of TNT. Little Boy destroyed an area of 4.7 square miles, which is almost equal to 2, 275 football fields. Fat Man was delivered by B-29 *Bockscar* and its blast was estimated to have the impact of 21 kilotons of TNT. Those who were not killed by direct impact suffered severe flash burns and radiation poisoning, resulting in the high death tolls in the following months.

The development of Thin Man was never completed because the concentration of plutonium was too risky. Fat Man and Little Boy are the only two nuclear weapons that have been used in warfare to date.

Review Questions

1. What was the Manhattan Project?
2. Besides direct impact from the bombings, why were the death tolls so high in Nagasaki and Hiroshima?
3. What isotope was used to make Little Boy, Fat Man and Thin Man?
4. What type of planes were used to deliver the bombs?
5. What did the names of the bombs stand for?
6. Why was Thin Man never used in combat during WWII?

Science Connection

Students can research the properties of plutonium, the element used in developing Fat Man, Little Boy and Thin Man.

Students can create a timeline of important events during World War II.

Math Connection

The half life of the isotope plutonium-239 is 24,100 years. Students could determine how much of a certain sample size would remain today since the bombing in 1945.

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