

NATIONAL MUSEUM OF THE PACIFIC WAR

Activity Title: Science and Technology

Areas of the museum to visit for this lesson plan: The Admiral Nimitz Museum and the George H.W. Bush Gallery

Teacher Note: If you are bringing a large group you will want to split them up into groups of 10- 25 and have them start at different locations. These smaller sizes allow all to access the various areas at one time.

Activity Objectives: The student will understand the impact of science and technology and explain how scientific discoveries and technical innovations developed during World War II have influenced individuals and society today. The student will give examples of those discoveries and innovations, including those resulting from specific military needs and the changes produced by them. The student will give an example of government assisted research.

TEKS:

4th Grade:

113.15(b)(13)(B), 113.15(b)(20)(B)

5th Grade:

113.16(b)(5)(A), 113.16(b)(23)(B),(C)

6th Grade:

113.18(b)(20)(A)

U.S. History Since 1877:

113.41(c)(7)(B),(D),(E), 113.41(c)(27)(A),(B)

World History Studies:

113.42(c)(28)(C),(E)

World Geography Studies:

113.43(c)(19)(A),(B)

Activity Description:

1. Prior to the museum visit (Time Frame: 40 min.):

a. In the field of transportation, we use three major innovations from World War II: the jet engine, the helicopter and radar. Discuss the importance of each of these items to us today.

b. In the field of medicine, we use two major innovations from World War II: penicillin and blood plasma. Discuss the importance of these to us today.

2. During the museum visit (Time Frame: 1 hr.):

The George H. W. Bush Gallery

Midway (# 210 on the map)

a. Watch the video presentation and answer the following:

U.S. Navy codebreakers, known as cryptographers, used one of the first computers, called a card punch machine, to break the Japanese Navy's secret code. Nimitz used this information to develop his plan for the Battle of Midway. What was the main Japanese Navy code called?

The story of how Nimitz's staff determined that the Japanese code for Midway was "AF" demonstrates various technologies being used. On the list below, circle the types of technology used in this effort.

Radio intercept of Japanese transmissions

Computers for codebreaking

False radio messages to fool the enemy

Japanese – English dictionary

Arsenal of Democracy (# 280 on the map)

b. On the panel The Need for Invention, what was the name of the process that led to the development of the pneumatic tire?

c. On the panel The Need for Invention, what is RADAR an acronym for?

d. On the panel Bat; The Original Smart Bomb, the BAT was a radar guided bomb, did it have a motor?

e. On the touchscreen interactive, go to “Masters of Invention” and select “Synthetic Rubber”. How many tons of synthetic rubber were being produced annually by 1945?

Panel: Amphibious Forces in the Pacific, located just after Propaganda and Censorship (# 360 on the map)

f. The need to land military forces on a hostile shore without the use of traditional port facilities is a defining characteristic of amphibious operations. This need created a demand for specialized ships. Each type of amphibious craft had a special purpose. Find the LCVP, the famous Higgins boat. What do the letters stand for? What was it designed to carry?

Undersea War (# 370 on the map)

- g. Which was not a wartime improvement of U.S. submarines?
- Air search radar
 - Periscope radar
 - Electric torpedoes
 - Hull rivets
 - Mine detecting sonar

Strategic Bombing (# 390 on the map)

h. On the panel Going Operational, in the Superfortress facts, how many pressurized crew areas were there?

A Terrible New Weapon (# 440 on the map)

i. On the panel Uncovering the Secrets of the Bomb, which was easier to split, U-235 or U-238?

j. On the same panel, by May of 1942 scientists had settled on three potential methods of extracting fissionable material. What were the three methods and where was each method being utilized?

k. On the same panel, what were the four main locations for specialized manufacturing for the atomic bombs?

l. On the panel The Physicists, why was the atomic bomb project called the "Manhattan Project"?

m. Where was the first atomic bomb successfully tested?

n. In the area with the bomb, pick one of the artifacts in the case and describe it and include the effects of the atomic bomb on that artifact.

3. After the museum visit: (Time Frame: varies.): The student will use the following as a vehicle for further discussion, a written report or an oral presentation:

a. **4th Grade:** After seeing how scientific discoveries and technical innovations from World War II affected society after the war, look at some current discoveries and innovations. Predict how these might affect life in Texas.

b. **5th Grade:** Explain how discoveries and innovations from World War II in the fields of medicine, communications and transportation have benefited individuals and society in the U.S.

c. **8th Grade:** Describe how scientific ideas influenced technological developments during World War II.

d. **High School U.S. History:** Explain how military, communications and/or transportation related scientific discoveries and technical innovations in World War II resulted from specific needs.

e. **High School World History:** Give examples of major scientific discoveries and technological innovations that occurred during World War II and describe the changes produced by these discoveries and innovations and how they affect our life today.

f. **High School U.S. Government:** Identify examples of government assisted research in World War II and analyze the impact on society of that research.

Vocabulary:

technology innovation influence development society

radar sonar proximity plasma physicist employed

site critical computer impact research transportation

communications exhibit code invention pneumatic

acronym synthetic

Resources: To locate the areas in the museum relevant to this lesson plan you will need to download the two maps from the TEKS Based Lesson Plans page of this website.

Materials: pencil, paper

Technology Utilization: Word processing and/or Powerpoint if a report or presentation is assigned as a project

Accommodations: Students may require a printed copy of questions to answer during the museum visit.