



Extra Activities

For E.S.O. students

EN LA LUNA TEATRO



# THE TIME MACHINE

SECONDARY VERSION

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## EXTRA ACTIVITIES

We leave you this document of extra activities in case you want to deepen your knowledge about the play and the characters and places that are part of it.

It consists of 2 parts. The first contains information about places and characters and the second a series of extra activities.

We hope you find them useful.

## INFORMATION ABOUT THE CHARACTERS AND THE PLACES WHERE THE PLAY TAKES PLACE

### ROBERT OPPENHEIMER

Julius Robert Oppenheimer was born in New York on 22nd April 1904.

He was an American theoretical physicist of Jewish origin and professor of physics at the University of California at Berkeley. He headed the Manhattan Project and is often referred to as the “father of the atomic bomb”.

Oppenheimer would later say that as he watched the detonation of the bomb, the words of the Bhagavad-gītā came to mind: “Now I have become death, the destroyer of worlds”.

After the war he held an important post and used his position to advocate international control of nuclear power. His views angered many politicians who removed him from office at an event in 1954.

Nine years after the hearing, Presidents John F. Kennedy and Lyndon B. Johnson awarded him the Enrico Fermi Prize as a gesture of rehabilitation.

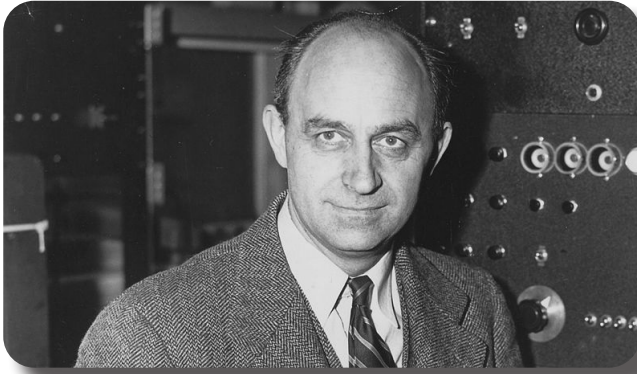
Oppenheimer made remarkable achievements in the field of physics.

He died of throat cancer in 1967.





## ENRICO FERMI



Enrico Fermi was born in Rome on 29th September 1901. He was a naturalised Italian physicist known for the development of the first nuclear reactor and his contributions to the development of quantum theory, nuclear and particle physics, and statistical mechanics.

In 1938 Fermi received the Nobel Prize in Physics for his work on induced radioactivity and is considered one of the most outstanding scientists of the 20th Century. He has been described as the “architect of the nuclear age” and the “architect of the atomic bomb”. He was one of the scientists involved in the Manhattan Project.

He is recognised as a physicist of great ability. The element fermium, which was synthetically produced in 1952, was named in his honour. On 29th November 1954 Fermi died of cancer in Chicago, Illinois. He was 53 years old.

## LESLIE GROVES

Leslie Richard Groves Jr. was born in Albany, New York, on 17th August 1896.

He was a member of the US Army and a construction engineer who supervised the construction of the Pentagon and was in charge of the Manhattan Project for the development of the atomic bomb during World War II.

He personally assigned the code name ‘Manhattan’. Groves selected and supported Oppenheimer’s appointment to the project.

Among the four cities being considered, Groves insisted on dropping the bomb on Kyoto, Japan’s spiritual capital, but his superior ruled it out because of its cultural importance, and tipped the balance towards Hiroshima.

Leslie Groves always maintained that both bombs had been a necessary evil and that no one was affected by radiation after the bombs were detonated, against all the evidence in sight.

He died of a heart problem at the age of 73 on 13th July 1970 in Washington.







## ELDA EMMA ANDERSON

Elda Emma Anderson was born on 5th October 1899 in Green Lake, Wisconsin.

She was an American physicist and health researcher. During World War II, she worked on the Manhattan Project at Princeton University and at Los Alamos National Laboratory, where she prepared the laboratory's first sample of pure uranium-235. There she often worked at night, wearing jeans and a plaid shirt, unusual attire for a woman at the time.

After the war, she became interested in health physics. She worked in the Health Physics Division of Oak Ridge National Laboratory and created the professional certifying body known as the American Board of Health Physics.

In 1956, Anderson, who never married or had children, contracted leukaemia. He died almost five years later in Oak Ridge, Tennessee, of breast cancer and leukaemia, possibly as a result of her work with radioactive materials, on 17th April 1961.



## NAPOLEÓN BONAPARTE

Napoleon Bonaparte (1769-1821), also known as Napoleon I, was a French military leader and emperor who conquered much of Europe in the early 19th Century. Born on the island of Corsica, Napoleon rapidly rose through the ranks of the military during the French Revolution (1789-1799). After seizing political power in France in a 1799 Coup D'état, he crowned himself emperor in 1804.



Shrewd, ambitious and a skilled military strategist, Napoleon successfully waged war against various coalitions of European nations and expanded his empire. However, after a disastrous French invasion of Russia in 1812, Napoleon abdicated the throne two years later and was exiled to the island of Elba. In 1815, he briefly returned to power in his Hundred Days campaign. After a crushing defeat at the Battle of Waterloo, he abdicated once again and was exiled to the remote island of Saint Helena, where he died at 51.



## JACQUES-LOUIS DAVID



Jacques-Louis David was a French painter born on 30th August 1748. He was a French painter in the neoclassical style, considered the foremost of his time. In the 1780s, his style marked a shift in taste away from Rococo frivolity towards classical austerity and severity and the exaltation of sentiment, in harmony with the moral climate of the last years of the Ancient Regime.

David later became an active supporter of the French Revolution. Imprisoned after Robespierre's fall from power, he aligned himself with

another political regime after his release: that of Napoleon, First Consul of France. During this period, he developed his Empire style, characterised by the use of warm Venetian colours. After Napoleon's fall from imperial power and the Bourbon revival, David went into exile in Brussels, then in the United Kingdom of the Netherlands, where he remained until his death. David had many pupils, making him a major influence on early 19th Century French art, especially the academic painting of the Salon.

## CONTEXTUALISING THE PLAY: WORLD WAR II

### World War II begins

1st September 1939

Through a non-aggression pact, Germany secured the neutrality of the Soviet Union, which was ruled by the dictator Joseph Stalin. Germany then invaded Poland on 1st September 1939, starting World War II in Europe.

### Japan's attack on Pearl Harbor

7th December 1941

This was a surprise military offensive by the Imperial Japanese Navy against the United States naval base at Pearl Harbor (Hawaii) on the morning of Sunday, 7th December 1941.



## The Allied Landings in Normandy

6th June 1944

Codenamed Operation Overlord, was the Allied military operation during World War II that culminated in the liberation of the territories of Western Europe occupied by Nazi Germany.

## The Battle of Normandy and the Liberation of Paris

25th August 1944

Ended the Nazi occupation that had begun in 1940. The liberation of the French capital followed major advances by Allied troops through the Normandy (6th June) and Provence (15th August) landings.

## The Death of Benito Mussolini and the End of World War II

30th April 1945 – 2nd September 1945

Benito Mussolini and his mistress Clara Petacci are captured and executed by a commando unit of communist partisans in Giulino di Mezzegra, in the region of Como, a small town in northern Italy near the Swiss border.

And the end of the war comes when the Soviet Union declares war on Japan and invades Manchuria. The United States drops an atomic bomb on Nagasaki on 9th August 1945. Japan, having agreed in principle to unconditional surrender on 14th August 1945, formally surrenders and World War II ends.

## Who were the Allies of World War II?

Allies are the States that confronted the Axis powers during the Second World War.

At the outbreak of the war in 1939, the Allies were Poland, France and Great Britain. Soon after, Canada, Australia, New Zealand and the Union of South Africa joined the coalition.

In 1940, after the German attack on France, the allies were joined by Belgium, Luxembourg, the Netherlands, Denmark, Norway and Greece.

In 1941 Yugoslavia, the Soviet Union, the United States and China joined the allies.

In 1942, several Latin American states joined the Allies, including Mexico, Brazil and Colombia.

From then on, the three main Allied countries were Britain, the United States and the Soviet Union.



## The Axis members

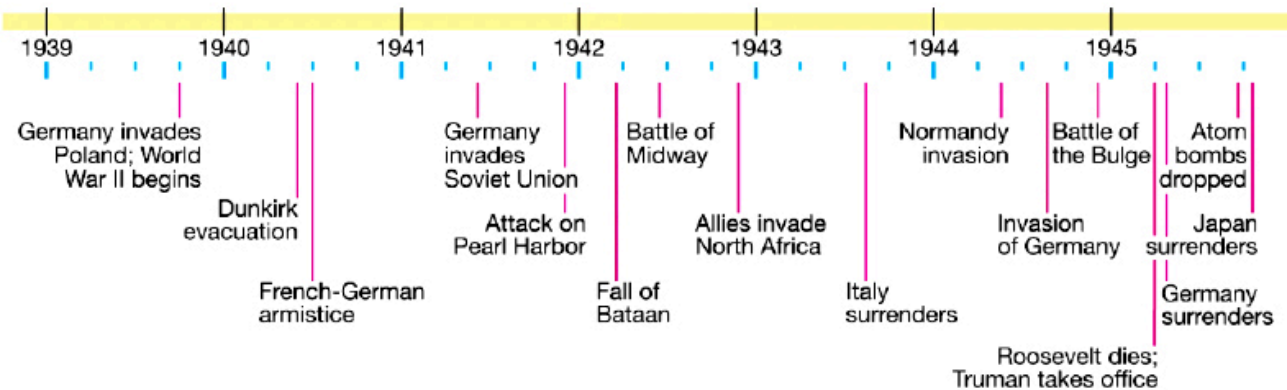
The three main members of the Axis alliance were Germany, Italy and Japan. These three countries recognised German and Italian dominance on the European continent, as well as Japanese dominance in East Asia. Five other European states joined the Axis alliance during World War II.

## World War II losses

It is estimated that between 50 and 60 million people died in World War II, rising to over 100 million according to the most pessimistic estimates and 40 to 45 million according to the most optimistic.

These figures make it the bloodiest war in human history.

### Chief Events of World War II, 1939–45





## THE PLACES IN WHICH THE PLAY TAKES PLACE

### What is Stonehenge?

Stonehenge is a megalithic monument, built between the Late Neolithic and Early Bronze Ages, located near Amesbury, Wiltshire, England.

Archaeologists consider the probable dates of construction of the various phases and was used between 3100 BC and 2000 BC.

The purpose for which this great monument was built is not known, but it is assumed that it was used as an astronomical observatory to predict the seasons.

300 burials of human remains have been found. It is believed that it was not a cemetery for the generality of the dead but for certain selected individuals. The stone was a symbol of the eternal, so Stonehenge may have been used in religious ceremonies to worship the dead and life.



### Bronze Age

The Bronze Age was a time in early human history when people first began to use tools made of bronze. Bronze is a hard, yellowish alloy, or mixture of metals. People make it by melting copper and tin together. The Bronze Age began about 5,000 years ago and later in other places.

The Bronze Age began in Greece and China before 3000 BC. Bronze Age cultures also developed in Mesopotamia (modern Iraq), Egypt, and the Indus River valley (modern Pakistan). The Bronze Age had spread to Great Britain by about 1900 BC. Peoples outside Europe, North Africa, Asia, and the Middle East did not have a Bronze Age.

At first only rich people could afford bronze. For a long time farmers and craftspeople used cheaper stone tools to do their work. But eventually more people did metalworking as a full-time job. Metalworkers, other craftspeople, and farmers came together in cities to trade their goods. This trade helped civilizations to grow. Two new inventions—the wheel and the ox-drawn plough—also helped Bronze Age civilizations to grow.

In about 1200 BC people learned how to shape iron into tools. This began the Iron Age and brought the Bronze Age to an end.





## EXTRA ACTIVITIES BEFORE THE PERFORMANCE

### What do you know about World War II?

Read the information about World War II and choose the correct answer:

• **When does World War II start?**

- 1st September 1939
- 1st September 1936
- 1st June 1939

• **Who attacked Pearl Harbour?**

- Germany
- Italy
- Japan

• **What event led to the start of World War II?**

- Germany invaded the United States
- The United States invaded Japan
- Germany invaded Poland

• **The Normandy Landings has a codename which is:**

- Operation Phoenix
- Operation Overlord
- Operation Hitler

• **What is Pearl Harbour?**

- A naval base
- An island
- A warship

• **When was the atomic bomb dropped on Nagasaki?**

- 9th August 1945
- 14th August 1945
- 1st September 1945

• **What do you know about World War II?**

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• **Who are some of the main Allied countries in World War II?**

- The United States
- France
- Great Britain and Italy
- Soviet Union
- Germany and Poland
- Soviet Union
- France and Great Britain

• **The Axis countries are:**

- France
- Italy and Germany
- Germany
- Spain and Japan
- Japan

• **How many deaths are estimated to have occurred during World War II?**

- There is no clear figure, but estimates range from 50 to 60 million deaths.
- 10 million deaths
- 2 million deaths

• **World War II is considered:**

- The most destructive and bloody war in human history.
- The second war of the 20th century
- The war between the United States and Germany



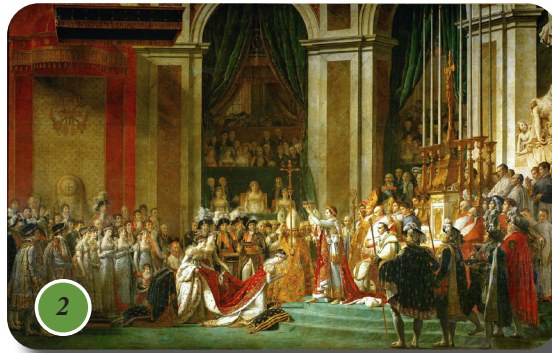
## Jacques-Louis David

He is one of the figures who are part of our history and a famous painter.

Could you point out which paintings are by this painter?

Write the title of the paintings by Jacques-Louis David,.

Search for the information you need on the internet.



- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_

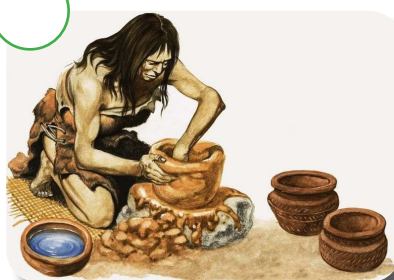
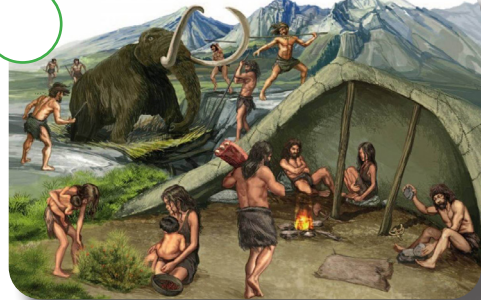
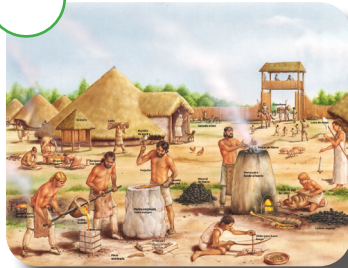




## The Bronze Age

Part of our work takes place in the Bronze Age.

Which of the following images do you think corresponds to this period?





## A bit of cinema

The cinema, a fantastic activity to approach the Manhattan Project

There are many films that can be watched to bring us closer to the historical event that gives rise to the play.

Here are some examples that you can watch in class:



### ***The Beginning or the End (1947)***

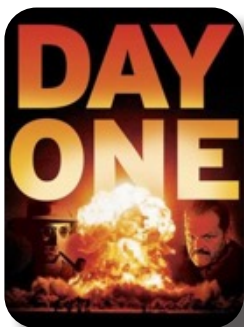
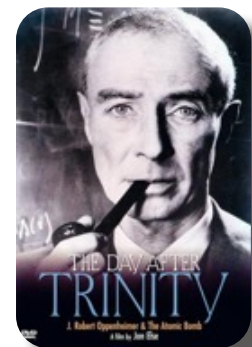
The Beginning or the End is a 1947 American documentary drama film about the development of the atomic bomb in World War II, directed by Norman Taurog, starring Brian Donlevy, Robert Walker, and Tom Drake, and released by Metro-Goldwyn-Mayer. The film dramatizes the creation of the atomic bomb in the Manhattan Project and the bombing of Hiroshima.

### ***Critical Mass: America's Race to Build the Atomic Bomb***

It documented the development of the atomic bomb during the Manhattan Project. It contained video biographies of Richard Feynman, Enrico Fermi, Robert Oppenheimer, and Niels Bohr. It had illustrated essays that also documented Edward Teller, Lise Meitner, Leo Szilard, Hans Bethe, and Albert Einstein.

### ***The Day After Trinity (1980)***

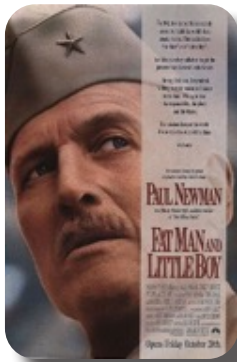
The Day After Trinity (a.k.a. The Day After Trinity: J. Robert Oppenheimer and the Atomic Bomb) is a 1980 documentary film directed and produced by Jon H. Else in association with KTEH public television in San Jose, California.



### ***Day One (1989 film)***

Day One is a made-for-TV documentary drama film about The Manhattan Project, the research and development of the atomic bomb during World War II. It is based on the book by Peter Wyden. The film was written by David W. Rintels and directed by Joseph Sargent.





### ***Fat Man and Little Boy (1989)***

The Beginning or the End is a 1947 American documentary drama film about the development of the atomic bomb in World War II, directed by Norman Taurog, starring Brian Donlevy, Robert Walker, and Tom Drake, and released by Metro-Goldwyn-Mayer. The film dramatizes the creation of the atomic bomb in the Manhattan Project and the bombing of Hiroshima.

### ***The Manhattan Project (1986)***

The Manhattan Project is a 1986 American thriller film. Named after the World War II-era program that constructed the first atomic bombs, the plot revolves around a gifted high school student who decides to construct an atomic bomb for a national science fair. It was directed by Marshall Brickman.



### ***Race for the Bomb (1987)***

Race for the Bomb (French: La Course à la bombe) is a 1987 television 3-part mini-series about the Manhattan Project, starting from the initial stages of scientific discovery that led to the creation of the atomic bomb, discovery of the Ulam-Teller thermonuclear weapons design and ending with the beginning of the arms race. The series was directed by Allan Eastman and Jean-François Delassus.

### ***Oppenheimer (2023)***

Oppenheimer is a 2023 epic biographical thriller film written and directed by Christopher Nolan. Based on the 2005 biography American Prometheus by Kai Bird and Martin J. Sherwin, the film chronicles the life of J. Robert Oppenheimer, a theoretical physicist who was pivotal in developing the first nuclear weapons as part of the Manhattan Project, and thereby ushering in the Atomic Age.



### ***To End All War: Oppenheimer & the Atomic Bomb***

Not to be confused with the Christopher Nolan film Oppenheimer, also released in July 2023. To End All War: Oppenheimer & the Atomic Bomb is a 2023 documentary film directed by Christopher Cassel.



## EXTRA ACTIVITIES FOR AFTER THE PLAY

### We become a theatre company

This is a group activity. We select the scene we like the most from the play.

The director of our play will assign the characters.

We read the script. The director will give us indications so that we become real professionals.

We can go deeper by memorising the scene to perform it in front of the rest of our classmates.

We can also get a suitable theatrical costume and accompany the scene with one of the songs that are part of the play.

### We become a theatre company

After watching the play choose the correct answer:

**Which character wears a hat in the play?**

- Enrico Fermi
- Elda Anderson
- Robert Oppenheimer

**Which Bronze Age character carries uranium?**

- The Chief
- The Stone Man
- Elda Anderson

**Jacques-Louis David is a:**

- Servant
- Painter
- Secretary

**Napoleon has problems with:**

- 1st September The Germans
- The French
- The Russians
- With no one

**The message found by Enrico Fermi**

**and Leslie Groves reads:**

- Save the world
- 1945
- Destroy the uranium



***The name of the robot of the future is:***

- Leia
- Laia
- Louise
- Laia 575

***Robert and Elda are in:***

- A war
- In the laboratory
- Neither of the two options is correct

***Elda destroys the uranium:***

- With a hammer
- By putting it in the time machine
- With the help of the computer

***Which two characters leave together at the end of the play?***

- Elda and Leslie
- Leslie and Enrico
- Robert and Enrico



# En la luna teatro

## TRABAJAMOS PARA OFRECER UN TEATRO EDUCATIVO DE CALIDAD

### Inglés

- Dr. Kranky and the Special Stone (Childhood education)
- The Time Machine (Primary school version)
- The Time Machine (Secondary school version)

### Teatro Clásico

- La Dama Boba (Educación secundaria)

### Teatro y Género

- Rufina, Estrella y el Baúl de cuentos (Educación infantil)
- Mi tiempo no tiene memoria (Educación secundaria)

### Teatro Musical

- El Gato con Botas (Educación primaria)