

A vibrant illustration of a young child with brown hair, wearing a brown jacket and dark pants, standing on a large grey rock. The child has their arms outstretched, feeling the wind. The landscape is a rolling green hillside with yellow and white flowers, a large tree on the left, and a stone building in the distance under a blue sky with white clouds. The entire scene is overlaid with a pattern of white, curved lines representing wind.

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Foundation

**INDOMITABLE
WHO TELL**

JERÓNIMO DE AYANZ

**SUPPLEMENTARY
TEACHING
MATERIALS**

—
COLLABORATE



Fundación "la Caixa"

TEACHING MATERIALS

Content and ideas for developing activities around this project.

With the aim of finding alternatives to the dissemination of Jerónimo de Ayanz, we present this documentation to support the teacher when creating cross-curricular material related to the story.

AIM

To provoke interaction.

- Promoting knowledge through fun.
- Create a team environment.

• CONTENT

1. Information capsules.
2. Activities



1 INFORMATION PILLS

Complementary

We provide some additional information based on the story of the tale for use in question and answer games or riddles.

Some content to inspire games in the classroom.



1 INFORMATION PILLS

Question and Answer Quiz



- i** **The Spanish Golden Age** - This is the name given to a historical period in the 16th and 17th centuries when art, literature, and thought flourished in Spain. During the time of Jerónimo, writers like Miguel de Cervantes (author of Don Quixote) and playwrights like Lope de Vega lived. It was an era of great painters, musicians, and inventors. That's why it's called the "Golden Age": because it shone brightly in culture!
- i** **His obsession:** to be useful - Jerónimo wanted his inventions to help society. All his inventions served a purpose: (1) The scientific balance: it could weigh minuscule things, like a fly's wing. It was used to weigh gold and other precious metals precisely, thus adjusting their price. And to weigh the ingredients of medicines. (2) The diving suit was used to collect pearls underwater in the Caribbean and to gather marine plants, aiding biological research. (3) Jerónimo invented the air purifier after a friend named Florian died from lack of air during a visit to an industrial furnace. They were together. He didn't die because he was very strong.



1 INFORMATION PILLS



i **The Spanish Hercules** - was so strong, so strong that Baltasar Gracián (a very famous priest and writer of the time) wrote that he could break a deck of cards in half with his bare hands.

i **Her sister Leonor, a lover of art** - her sister was one of the leading art patrons of the time. She helped painters succeed and bought many works, which is why we depict her painting a canvas.

i **The School of Pages in the Middle Ages** - Jerome was fortunate enough to be educated as a page at the court of King Philip II.

This school was very famous, run by the kings of the time, and they taught a wide variety of subjects. They believed that to succeed in life, one needed to learn all sorts of disciplines: horseback riding, fencing, mathematics, astronomy, alchemy, music, painting, poetry, theater, languages... and even good manners! Then, as now, striving to study was a great opportunity to reach any goal you set for yourself. However, in those days, very few children had the opportunity to study.



1 INFORMATION PILLS



i **Inheritance in the Middle Ages** – in the Middle Ages the eldest son kept all the family lands, so as not to have to divide the lands and to continue keeping large tracts of land in the possession of a single person.

i **Orphan.** Jerónimo's mother died when he was 4 years old, so the person who sees him off with his father in the carriage is not his mother, it is his caregiver and she is dressed in the clothing of a caregiver of that time.

i **Philip II and his son.** King Philip II was a friend of Jerónimo. He supported him in his studies and throughout his life. He was a king who greatly enjoyed science, research, and culture. Jerónimo once saved the king's life by acting as a spy. He learned of a plot to assassinate him and managed to have the murderer arrested. In gratitude, Philip II knighted him into the Order of Calatrava. Philip II's son was named Philip III. He was not as interesting a king as his father. He acted without much enthusiasm, simply to fulfill obligations. In any case, he had no choice but to recognize Jerónimo's more than 40 inventions with the title of "Privilege of Invention," since Jerónimo demonstrated that they could all be manufactured. Perhaps, if he had provided more support for Jerónimo's steam engine, it might have become a success.



1 INFORMATION PILLS



- i** **Underwater.** It was King Philip III who witnessed Jerónimo's diving suit prove that it allowed him to breathe underwater. He was in the Pisuerga River, and they waited for over an hour for the world's first diver to emerge. He surfaced because the king had grown tired of waiting. He could have stayed longer. As the story goes, he greeted several barbels in the river, a common river fish in the area.
- i** **Gizmo.** It's a word that emerged during Jerónimo's time. It first appeared in 1599 in Mateo Alemán's picaresque novel, *Guzmán de Alfarache*. It refers to odds and ends, things that have no particular use. That's why the word is mentioned in the story before Jerónimo decides to become an inventor. As an inventor, his ideas have a purpose and cease to be meaningless gizmos.
- i** **Ingenuity.** In the golden age, the word ingenuity meant invention.



1 INFORMATION PILLS



About the inventors of the steam engine.

- Jerónimo's goal with the steam engine was to replace the labor of men and animals working in the mines with another form of energy (the alternative was mills, but these required a river to generate power). He based his design on fire and steam to obtain that energy. It is said that the idea came to him while watching a pot lid being lifted over a fire.
- Jerónimo demonstrated the usefulness of the steam engine with a drainage system and managed to extract the water accumulated in the underground galleries of the silver mines in Guadalcanal (Seville) and be able to reopen the facilities.
- One hundred years after Jerome, Thomas Savery also developed a steam engine to drain mines in England. James Watt (often credited as the inventor of the steam engine) improved Savery's machine and installed it on a train to power it. Horses were no longer needed to move goods. This was a revolution.
- Savery's engine had several shortcomings that Watt corrected. According to Professor Nicolás García Tapia (an expert steam engine engineer), Jerome's engine already incorporated solutions to those errors found in Savery's design.

2 ACTIVITIES

Proposals thrown into the air

Draw the scene you think Jerónimo's sister is painting. / What is the use of a scientific precision balance? Answer 1: To weigh a fly's leg. Answer 2: To weigh gold and other valuable metals to accurately determine their price. Answer 3: Both of the above. / What fish appears on the diver's page? / What would have happened if Jerónimo de Ayanz had succeeded with the steam engine 100 years before the Industrial Revolution? Option 1... Option 2... Option 3... / How did Jerónimo feel when he had to leave home for not being the firstborn? / What ideas do you have for solving the world's problems?



2 SPECIFIC ACTIVITIES



Siphon Experiment – To imitate how Jerome pumped water out of the mines, we conduct a simple experiment: using two containers (one filled with water and the other empty) and a transparent tube, we create a siphon. The teacher (or with the help of the students) demonstrates how, when the tube is filled with water and one end is lowered, the water flows “up and then down” from one container to the other, thanks to the pressure. We explain that such a siphon could help drain mines (in fact, Jerome used siphons in his pumps).



Craft: A paper windmill – The children build a small windmill by making a paper weathervane or pinwheel (the classic craft of cutting a cross out of a square of paper and attaching it to a stick with a thumbtack). Then, they blow on it or go outside to the patio to let the wind make it spin. We explain that this is how the large windmills that Don Quixote mistook for giants turned, and that Jerónimo improved upon these windmills in his time.



2 SPECIFIC ACTIVITIES



We played Page School – We turned the classroom into a mini page school for a while. We rotated through three learning stations, simulating what Jerome learned:

- Imaginary fencing: using pool noodles, children practice basic fencing movements in pairs.
- Dance. To music, we learn some basic steps of the pavane, a dance from the Golden Age. It was an elegant, slow palace dance. The teacher demonstrates how to take a few steps forward and backward to the rhythm of soft Renaissance music. The children dance in pairs or in a circle.
- Mathematics with abacus: they are taught a simple abacus or beads to solve a sum, showing how they did calculations before calculators.
- The groups go through each station.



2 SPECIFIC ACTIVITIES



Design a coin or medal - In Jerome's time, kings sometimes awarded commemorative medals or coins to heroes and knights. Each child will design a hero/heroine medal on round cardstock for an assigned classmate, including a motto that reflects that classmate's positive qualities and a symbol.



Inventors for a Day - In small teams, children become inventors like Jerónimo. They must think of an invention that would have been useful in the Golden Age or, in groups of three, draw an invention that improves society's life.



Role-play: Jerome before the king - Some children are assigned roles to act out a short scene:



2 SPECIFIC ACTIVITIES



The "Then and Now" game - Children are shown paired images of objects from Jerome's time versus modern objects, and they must match each pair. For example: an oil lamp (then) with an electric light bulb (now); a horse with a car; armor with a bulletproof vest; a scroll with a book or tablet. This can be done as a memory game (face-down cards) or by hanging the images from strings. Each time they find a match, they discuss how that technology has changed.



Visit to the home of Jerónimo de Ayanz - Organize a tour to Jerónimo's favorite places:
Guendulain Palace
Sierra del Perdón





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