

Activity: "Science in a Canned Can"

Subjects/Year: Physics and Chemistry A and Biology and Geology/11th year/PCE

Duration: 5 lessons (120 +120 +60 minutes)

Theme: The science behind Portuguese canned fish

Methodology: Storytelling + digital tools and AI

Work: Group (3–4 students)

product: Group digital science narrative



Final



Gerais Objectives

- Relate concepts of **Chemistry (acid-base reactions and oxidation-reduction reactions)** and **Biology (osmoregulation, microorganisms, enzymes)** with a real context.
- To know the reality of the Portuguese Canning Industry and the importance of Science in the various stages of the process.
- Develop **research, information selection and scientific communication** skills.
- Apply to **scientific Storytelling methodology**.

SCIENTIFIC FRAMEWORK

Key concepts to explore:

Chemistry:

-  **The role of pH in fish conservation**
How the acids used prevent bacterial proliferation (relate to protein denaturation)
-  **The battle against oxygen**
The role of olive oil/oil/tomato sauce in lipid oxidation (omega-3; unsaturated fatty acids)
-  **The importance of the Can**
What is the most suitable metal?

Biology:

Osmoregulation

The effect of high salt concentrations on bacterial membranes.

Enzymes

The influence of temperature and pH inactivates the autolytic enzymes of the fish

The role of microorganisms in the canning industry

LESSON 1 (2h) – Research

Classroom Objectives

- Understanding the canning production process
 - Relate science to industrial stages by identifying knowledge acquired in class
 - Collect relevant information
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CLASSROOM 2 (2h) – Scientific Storytelling

Objectives

- Select relevant information
 - Organize ideas into:
 - Scientific concepts
 - Real application in canning
 - Turning science into storytelling
 - Communicate with creativity and rigor
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Structure

 **0–20 min** |  **Planear o storytelling**

Suggested narrative structure:

1. **Character**
2. **Problem**
3. **Scientific challenge**
4. **Solutions (science!)**
5. **Finish (keep safe)**

20–100 min | Work production

Possible formats:

- Video
- Comics
- Creative presentation
- Podcast
- Short theater

👉 They must include:

- Chemistry and Biology Concepts
- Scientific language
- Use of digital tools and AI
- Research sources and identification of the tools used

100 - 120 min | Save the work done

- Uploads the work to the OneDrive PCE Folder
- Tag it with the name of your story and the name of one of the members of the group
- If it's a link, save it to a word page and upload it to OneDrive

LESSON 3 (1h) – Share your *storytelling*

- Each group has 5 minutes to present their story.
- Give feedback to another group (1 strength + 1 suggestion for improvement).



Evaluation (what will be valued)

1. Scientific understanding (clarity and correctness of scientific concepts)
 2. Creativity and *storytelling* (coherence, originality)
 3. Use of AI and digital tools
 4. Group work (balanced participation)
 5. Presentation and communication
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Final tips

- Think like a scientist and a storyteller. • Use AI as an aid, not a substitute for your reasoning.

Science is also explained with emotion and imagination!

Adapted using AI (Gemini; ChatGPT)