Erasmus+ Cultural connections : Enhancing EU heritage, Social Inclusion and Digital Literacy through our Pupils' hearts
Scientific and Creative Thinking Workshop
7-12 December 2025, Ukmerges, Lituania

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SCIENTIFIC EXPERIMENT 2.12

The Balloon and Skewer Experiment: Understanding Courage Through Science

Learning objectives

Scientific Objectives

Students will:

1. Observe the physical properties of latex (elasticity and tension).
2. Understand how friction and surface tension affect materials.
3. Identify how soap reduces friction and allows materials to pass through elastic surfaces without rupture.
4. Practice prediction, observation, and explanation.

Interdisciplinary Objectives

Students will:

1. Explore the moral virtue of **courage** through a concrete metaphor.
2. Reflect on fear as a natural emotion that can be managed rather than eliminated.
3. Develop emotional literacy and ethical reasoning.
4. Improve oral language skills through explanation and discussion.
5. Strengthen fine motor control and attention.

BEFORE THE EXPERIMENT

Integration with a courage based story *“I’m Not Scared, You’re Scared”*, by Seth Meyers

Pre-Experiment Discussion: Preparing for Courage

Guided Class Discussion

1. Before the experiment
    - How do you feel when you have to try something new?
    - Is it normal to feel scared sometimes?
    - In the story, how did the character feel at the beginning?
2. Connecting to the story
    - Did the character say they were scared, or did they hide it?
    - Why do you think people sometimes say “I’m not scared” when they really are?

    - What helped the character keep going in the story?
3. Encouragement moment
    - What can we say to ourselves when we feel scared but want to try?
    - Who can help us feel brave in class?
    - What does courage look like right now, before we start the experiment?

“Courage does not mean we are not scared. Courage means we try even when we feel scared.”

RUNNING THE EXPERIMENT

Type of Activity

Scientific demonstration and guided experiment with interdisciplinary applications (Science, Social-Emotional Learning, Ethics, Language, and Art)

Target Age Group

Primary education (with teacher-guided execution)

Research Question

How does applying soap to a skewer allow it to pass through a balloon without popping, and how can this process represent courage?

Hypothesis

If a skewer is covered with soap and inserted carefully into specific points of a balloon, then the balloon will not pop because friction is reduced and the latex can stretch without breaking.

Materials

- Latex balloon
- Wooden skewer
- Liquid soap
- Paper towels
- Tray or protective surface

During the Experiment: Guided Reflection

As students prepare to participate or observe:

- How does your body feel right now?
- Are you more scared, less scared, or the same as before?
- What helps you feel calm enough to try?

Link explicitly to the metaphor:

- The balloon is like fear.
- The soap is like courage and calm thinking.
- The skewer is like us, moving carefully.

Experimental Procedure

1. **Preparation**
   Inflate the balloon and tie it securely. Explain that the balloon represents *fear*.
2. **Prediction**
   Ask students what they think will happen if the skewer touches the balloon.
3. **Application of Soap**
   Cover the skewer with soap. Explain that the soap represents *courage*.
4. **Insertion**
   Slowly push the skewer through the balloon at the top or bottom (where the latex is thickest).
5. **Observation**
   Observe whether the balloon pops or remains intact.
6. **Discussion**
   Relate the scientific observation to the emotional concept of courage.

Observations

Students observe:

- The balloon stretches instead of breaking
- The skewer passes through smoothly
- Soap reduces resistance between materials
- Fear does not disappear, but it can be managed

Results

The balloon remains intact when the skewer is inserted carefully with soap, demonstrating how reduced friction allows materials to adapt rather than break.

Scientific Explanation

Latex is elastic and can stretch when stress is applied evenly. Soap reduces friction and prevents sudden tearing. When force is controlled and applied thoughtfully, the material remains intact.

Conclusion

The experiment demonstrates that courage does not mean the absence of fear, but the ability to move through fear calmly and thoughtfully. Scientifically, this is shown by how controlled force and reduced friction prevent rupture.

AFTER THE EXPERIMENT

In this experiment, each object has a clear meaning:

The balloon represents the person.
Just like a person, the balloon is sensitive and can be hurt if something sharp touches it.

The skewer represents fear.
Fear can feel sharp, sudden, and painful. When fear comes too fast or too strongly, it can overwhelm a person.

The soap represents courage.
Courage does not remove fear. Instead, it helps us face fear calmly and carefully.

When the skewer (fear) touches the balloon (the person) **without soap**, the balloon pops.
This shows what can happen when fear is faced without support, preparation, or courage.

When the skewer is covered with soap (courage), it can pass through the balloon **without destroying it**. This shows that: Fear still exists. Fear still touches the person. But courage helps the person stay whole. **Courage is not the absence of fear. Courage is what helps us face fear without breaking.** Just like soap helps the skewer move gently through the balloon, courage helps a person move through fear safely.

Reflection Questions

Understanding Courage

1. Does fear go away in the experiment?
2. What changes when courage is added?
3. How does courage help a person stay strong?

Reflection link: Fear does not disappear. Courage helps us move through fear safely.

Personal Reflection Students answer orally, in writing, or by drawing:

1. Before the experiment, I felt:
   ☐ scared ☐ excited ☐ nervous ☐ calm
2. During the experiment, I felt:
   ☐ scared ☐ excited ☐ nervous ☐ calm
3. After the experiment, I felt:
   ☐ proud ☐ surprised ☐ brave ☐ happy

Story + Experiment Connection

Sentence starters suitable for young learners:

➔ In the story, courage helped the character to _____.

➔ In the experiment, courage helped us to _____.
➔ Courage means _____.
➔ I can be courageous when _____.

Final Reflection Question (Key Takeaway)

Is courage about not being scared, or about trying even when you are scared?

Students to justify their answer using:

- the story
- the experiment
- their own feelings

Interdisciplinary Connections

Science

- Elasticity
- Friction
- Material properties

Moral and Civic Education

- Courage as a learned virtue
- Managing fear responsibly
- Making thoughtful choices

Social-Emotional Learning

- Naming emotions
- Building resilience
- Self-confidence

Language and Communication

- Describing observations
- Explaining cause and effect
- Reflective discussion

Art and Drama (Extension)

- Draw the experiment as a metaphor
- Role-play situations requiring courage
- Create posters illustrating “Courage helps us move through fear”

Assessment Methods

- Oral explanations

- Observation sheets
- Reflection questions
- Student drawings or short written responses

Name:_____Date: _____

_____Experiment

Write the name of your experiment in the blank space above. Then, complete the rest of this page with information about your experiment.

Question: What are you testing?

Hypothesis: What do you think will happen?

Observations: What happened during the experiment? Draw a picture or record data below.

Conclusion: What conclusions can you draw based on the results of your experiment?

Observation sheet source: WeAreTeachers,2024