

**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, Lithuania



Co-funded by  
the European Union

## **SCIENTIFIC EXPERIMENT 3.12**

### **Comparing Bread Storage Methods**

#### **Lesson Plan: “How to Keep Bread Fresh Longer?”**

##### **1. Lesson Information**

Grade Level: Primary / Lower Secondary (adaptable)

Subject: Science (with interdisciplinary integration)

Duration: 60–75 minutes (plus 7–10 days of observation)

Materials:

- 4 identical slices of bread
- 4 types of storage (plastic bag, paper bag, container, cloth wrap)
- Marker
- Observation sheet
- Digital camera or phone (optional for documentation)

##### **2. Lesson Title**

**“How to Keep Bread Fresh Longer?”**  
**(Experiment: Bread Storage and Mold Growth)**

##### **3. Learning Objectives**

###### **Science Objectives**

**Students will be able to:**

1. Design a simple experiment to test a hypothesis.
2. Identify variables: independent, dependent, and controlled.
3. Observe and record the growth of mold over time.
4. Explain how moisture and air exposure affect mold growth.

###### **Interdisciplinary Objectives**

Students will be able to:

1. Biology: Understand that mold is a fungus and needs moisture to grow.
2. Ecology: Explain how food waste affects the environment and why reducing waste

matters.

3. Mathematics: Measure and compare the rate of mold growth using simple data.
4. Civic Education: Develop responsible consumption habits and make ethical choices.
5. Art: Create a visual representation of the experiment results (poster or infographic).

#### 4. Competencies (Skills)

##### Scientific Competencies

- Inquiry and Investigation: Formulating questions and testing hypotheses.
- Observation: Using senses and tools to collect data.
- Reasoning: Drawing conclusions based on evidence.

##### Key Competencies (Cross-curricular)

1. Critical Thinking: Analyzing causes of food spoilage.
2. Responsibility: Making informed choices about food consumption.
3. Communication: Presenting results clearly.
4. Creativity: Designing visual outputs (poster, drawing).

#### 5. Key Vocabulary

- ★ Mold / Fungus
- ★ Spoilage
- ★ Moisture
- ★ Air exposure
- ★ Storage
- ★ Variables
- ★ Hypothesis
- ★ Observation
- ★ Data
- ★ Waste reduction

#### 6. Lesson Procedure

##### A. Warm-up and raising awareness (10 minutes)

Start by playing a short video on food waste and global hunger.

[https://youtu.be/TVP3j7\\_W7og](https://youtu.be/TVP3j7_W7og)

##### Classroom Prompt Questions

Use these to tie the statistics into your lesson activity:

1. What do these numbers tell us about how much food is wasted compared to how much people need to eat?
2. How does wasting bread at home connect to these global statistics?
3. What could we do in our own homes or school to reduce waste?
4. Why might reducing food waste help both the environment **and** people who are hungry?

5. "Have you ever thrown away bread because it was moldy?"
6. "Why do you think bread becomes moldy?"
7. Introduce the lesson question:
  - "How can we store bread to keep it fresh longer?"

### **B. Introduce the Experiment (5 minutes)**

- 4 identical slices of bread
- Each slice is stored differently
- Observe which slice molds first

### **C. Hypothesis and Variables (10 minutes)**

- Hypothesis: Which storage method will keep bread fresh the longest?
- Variables:
  - Independent: storage method
  - Dependent: time until mold appears
  - Controlled: same bread, same temperature, same observation time

### **D. Experiment Setup (10 minutes)**

#### **Students work in groups to:**

1. Label each storage method.
2. Place one bread slice in each storage type.
3. Write the starting date and conditions on the observation sheet.

### **E. Observation Phase (7–10 days)**

#### **Students observe daily and record:**

1. Mold presence (Yes/No)
2. Mold color
3. Bread smell and texture

*This can be done as homework or in class, depending on schedule.*

### **F. Data Analysis and Discussion (20 minutes)**

After the observation period:

1. Students compare results in a table.
2. Discuss:
  - Which storage method was best?
  - Why did mold grow faster in some conditions?
  - What does mold need to grow?

## **7. Assessment (Evaluation)**

### **Formative Assessment**

- Observation sheets completed correctly

- Participation in discussion
- Correct identification of variables and hypothesis

### Summative Assessment

Students create one of the following:

1. A short report (5–8 sentences) explaining the results.
2. A poster showing the experiment and results.
3. A chart or graph comparing mold growth time for each storage method.

## 8. Interdisciplinary Connections

### Biology

- Mold is a living organism (fungus).
- It grows when there is moisture, food, and warm temperature.

### Ecology

- Food waste increases environmental impact.
- Reducing waste saves resources and energy.

### Mathematics

- Students measure days until mold appears.
- They calculate and compare results.

### Civic Education

- Responsible consumption (buy only what you need).
- Ethical behavior: not wasting food.

### Art

- Create posters or infographics about the experiment.
- Use drawing or collage to represent mold growth stages.

## 9. Safety Notes

- Students must not open containers with mold without gloves.
- Avoid inhaling mold spores.
- Dispose of moldy bread in sealed bags.

## 10. Extension Activities (Optional)

### 1. Compare Bread Types

White bread vs whole grain vs gluten-free.

### 2. Make a “Bread Saving Plan”

Students create a weekly plan to reduce bread waste at home.

### 3. Community Project

Share results with families and create a school campaign to reduce food waste.

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?

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*Observation sheet source: WeAreTeachers, 2024*