




# Learning scenario about **environmental awareness**

Title: **A cloud in the jar**



## General information

Topic(s)	Goals	Activity description
<input checked="" type="checkbox"/> Climate change <input type="checkbox"/> Biodiversity and conservation <input type="checkbox"/> Waste management and recycling <input type="checkbox"/> Water resources and quality <input type="checkbox"/> Sustainable agriculture and food security <input type="checkbox"/> Environmental health and justice <input type="checkbox"/> Energy use and transportation  	<p style="text-align: center;"><i>Objectives</i></p> <ul style="list-style-type: none"> <li>Explain to students how clouds form and the difference between weather and climate</li> </ul> <p style="text-align: center;"><i>Learning outcomes</i></p> <p style="text-align: center;">By the end of this learning scenario, students will be able to:</p> <ul style="list-style-type: none"> <li>Comprehend clouds formation</li> <li>Demonstrate the condensation process</li> <li>Classify and distinguish between weather and climate</li> <li>Identify the human actions that impact climate</li> <li>Engage students in exploring and questioning science and the environment to promote curiosity</li> </ul>	<p style="text-align: center;"><i>Student's profile (age):</i> Highschool students 14-18 years old</p> <p style="text-align: center;"><i>Number of participants:</i> <b>Unlimited</b></p> <p style="text-align: center;"><i>Duration:</i> ≈ 60 minutes</p> <p style="text-align: center;"><i>Related subject of the school curriculum/Skill/Content:</i></p> <p style="text-align: center;"><i>Material needed:</i>  <b>A jar or a container with an open lid (we used a vase)</b>  <b>Hot water</b>  <b>A matchstick</b>  A plate or a cold surface to cover the container</p> <p style="text-align: center;"><i>#Hashtags</i> #climatechange #weather #climate #clouds</p>

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them



Co-funded by  
the European Union



CC BY-NC 4.0

Attribution-NonCommercial 4.0 International

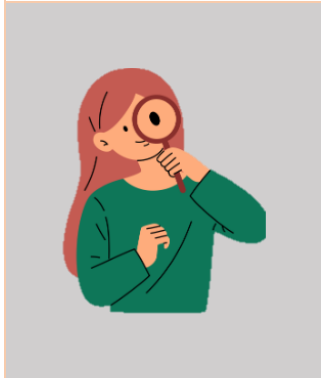


# Learning scenario about **environmental awareness**

Title: **A cloud in the jar**



## Introduction



This activity aims to help students understand how clouds form and why the climate changes. Preliminary questions:

1. "What is a cloud?"
2. Where does rain come from?
3. What is water vapor?
4. Do you know any differences between weather and climate?"

## Kolb's cycle steps

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them



Co-funded by  
the European Union



CC BY-NC 4.0

Attribution-NonCommercial 4.0 International



# Learning scenario about **environmental awareness**

Title: **A cloud in the jar**



1



### FEELING

Engage students in hands-on activities and real-life examples related to the environmental topics.

CO  
NC  
RET  
E  
EXP  
ERI  
ENC  
E

Fill the container with hot water and stir. Then, light the match, blow it out, and quickly drop it into the water. Swiftly cover the jar with the cold plate - we used a metal cake mold that we left in the freezer. (You can also use a plate with ice). Watch a cloud of water vapor form in the jar! You can lift the plate from the top to see it better. What is happening? The water vapor mixes with the smoke particles from the match. When it reaches the cold surface at the top of the jar, it cools down and condenses, forming a cloud!

**Observing the cloud formation:** Students can carefully observe each step of the experiment, paying special attention to the water vapor after adding the match to the hot water, and then witnessing how it transforms into a cloud when it comes into contact with the cold surface.

**Direct interactions:** Students could also be encouraged to feel the warmth of the water before adding the match, smell the odour of the match smoke, and sense the temperature difference as they bring their hand over the jar during the cloud formation.

**Visual documentation:** Students could be invited to draw or take photos at different stages of the experiment. This would visually document what they observe and help them remember the cloud formation steps later.

**Interactive dialogue:** During the experiment, encourage them to ask questions, discuss what they see, and exchange ideas about why and how clouds form in the jar.



**Encouraging Exploration:** After the cloud formation, suggest to them to explore further by lifting and lowering the plate to observe how the cloud reacts. This will help them better understand how changes in temperature influence the formation and dissipation of the cloud



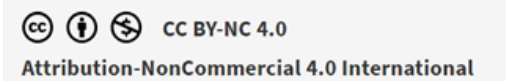
# Learning scenario about **environmental awareness**

## Title: **A cloud in the jar**



<p>2</p>	 <p><b>WATCHING</b> Encourage students to reflect on their experiences, observations, and emotions during the activities.</p>	<p><b>REFLECTIVE OBSERVATION</b></p>	<p><b>Stimulating Questions:</b> Pose open-ended questions to encourage reflection. For example, 'What did you observe during the experiment? What differences did you notice before and after adding the match?'</p> <p><b>Comparisons and Contrasts:</b> Encourage students to compare the water vapor in the jar with clouds in the sky. Ask them to note similarities and differences between the two.</p> <p><b>Hypotheses and Explanations:</b> Prompt them to formulate hypotheses about how heat, match smoke, and the cold surface interact to form the cloud. Encourage them to explain their ideas.</p> <p><b>Real-World Connections:</b> Guide the discussion to help them establish connections between what they observed in the experiment and their knowledge of the water cycle, meteorology, and climate change.</p> <p><b>Encouragement to Express Feelings:</b> Ask them how they feel about what they observed. Were they surprised, intrigued, or curious? Has their perception changed after this experience?</p> <p><b>Drawing Conclusions:</b> Students should be encouraged to draw conclusions from their observations and discussions, synthesizing what they have learned about cloud formation</p>
<p>3</p>	 <p><b>THINKING</b> Guide students to analyze and conceptualize the information gathered, connecting it to broader concepts and theories</p>	<p><b>ABSTRACT CONCEPTUALIZATION</b></p>	<p><b>Connecting the Experience to Scientific Concepts:</b> Discuss with the students the underlying scientific concepts of the experiment, such as condensation, the water cycle, the importance of particles in cloud formation, etc.</p> <p><b>Contextualizing Climate and Meteorology:</b> Explore how cloud formation is linked to meteorology and climate. Talk to them about different types of clouds, their role in the water cycle, and their impact on climate.</p> <p><b>Understanding Human Impact:</b> Help them understand how human activities can affect cloud formation and climate. Discuss the implications of climate change on cloud formation and precipitation.</p> <p><b>Encouragement of Critical Thinking:</b> Pose questions to stimulate their critical thinking. For example, "How could our actions influence cloud formation in nature?" or "In what ways does this experiment help us understand climatic processes?"</p> <p><b>Exploration of Potential Solutions:</b> Encourage students to think about concrete actions that could be taken to mitigate negative impacts on the climate, based on what they have learned about cloud formation</p>


Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them






# Learning scenario about **environmental awareness**

## Title: **A cloud in the jar**

4	 <p><b>DOING</b> Provide opportunities for students to apply their knowledge and actively experiment with sustainable practices in their daily lives.</p>	<b>ACTIVE EXPERIMENTATION</b>	<p><b>Local Contextualization:</b> The facilitator can relate this experiment to meteorological phenomena specific to Corsica. For instance, discussing cloud formation above the mountains or the influence of the proximity to the sea on the local climate.</p> <p><b>Exploration of the Local Environment:</b> Utilize local landscapes to encourage students to observe clouds in the sky, compare what they see with what they observed in the jar experiment, and note similarities and differences.</p> <p><b>Use of Local Resources:</b> If possible, the facilitator can incorporate local elements such as samples of vegetation or information about local biodiversity to strengthen the connections between science, the environment, and the region.</p> <p><b>Discussion on Local Issues:</b> In addition to discussing the global impacts of climate change, the facilitator can also address issues specific to the region, such as environmental challenges or nature preservation efforts in the area.</p> <p><b>Encouragement of Local Action:</b> In connection with what they learn about cloud formation and climate, the facilitator can encourage students to reflect on actions they could take locally to support environmental conservation</p>
---	--	-------------------------------	--

## Evaluation

	<p>To assess the students' experience and understanding after the cloud in a jar experiment, a survey sheet is implemented. Here are some points to include in this sheet:</p> <p><b>Understanding of the Process:</b> Pose questions to assess the students' understanding of cloud formation. For example, "Describe how a cloud forms from water vapor in the jar."</p> <p><b>Connection with Climate and Climate Change:</b> Ask them to draw connections between the experiment and broader concepts about climate. For example, "How is cloud formation related to climate?"</p> <p><b>Observations and Conclusions:</b> Encourage them to report what they observed during the experiment and draw conclusions. For example, "What did you notice when the match was added to the hot water?"</p> <p><b>Future Actions:</b> Ask questions about actions they could take to contribute to environmental protection based on what they have learned. For example, "Do you think it's important to take care of the environment after doing this experiment? Why?"</p>
--	--



# Learning scenario about **environmental awareness**

Title: **A cloud in the jar**



Feedback on the Activity: Seek their feedback on the activity. For example, "What did you like most about this experience? Is there anything you would have liked to do differently?"

## Additional resources - Tips and tricks



Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them



Co-funded by  
the European Union



CC BY-NC 4.0

Attribution-NonCommercial 4.0 International



# Learning scenario about **environmental awareness**

Title: **A cloud in the jar**



P A R T N E R S							
	Aintek Symvouloi Epicheiriseon Efarmoges Ypsilis Technologias Ekpaidefsi Anonymi Etaireia (GR)	Syndicat Mixte Du Parc Naturel Eégional De Corse - Parcu Di Corsica (FR)	Etudes Et Chantiers Corsica (FR)	Antalya Provincial Directorate for National Education (TR)	CESIE - Centro studi e iniziative europeo (IT)	Trebag Szellemi Tulajdon - Es Projektmenedz Ser Korlatolt Felelossegu Tarsasag (HU)	Istituto D'Istruzione Superiore Einaudi Pareto (IT)

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them



Co-funded by  
the European Union



CC BY-NC 4.0

Attribution-NonCommercial 4.0 International