





## SCIENCE - LESSON PLAN

<b>Grade:</b>	11-13 years old (6th-8th grade)
<b>Subject:</b>	SCIENCES
<b>Lesson n°:</b>	1
<b>Topic:</b>	<b>Pollution</b>
<b>Lessons focus and goals:</b>	This lesson centers on cultivating environmental awareness, particularly focusing on pollution, and promoting creative expression and sustainable practices among students. The comprehensive goals include fostering a deep understanding of pollution, emphasizing its diverse impacts on ecosystems, and instilling a sense of responsibility for sustainable living.
<b>Learning objectives:</b>	<p><b>Understanding Pollution</b> Students will gain a comprehensive understanding of different pollution types (air, waste, water, soil, noise, visual, light pollution) and their environmental consequences. The lesson aims to help them recognize the human activities contributing to pollution.</p> <p><b>Climate Change Impact Awareness</b> By delving into the connection between pollution and climate change, students will develop an awareness of how these issues intertwine. Special attention is given to identifying the repercussions on ecosystems, including vulnerable areas like coral reefs.</p> <p><b>Artistic Expression through Upcycled Art</b> Through hands-on engagement in artistic expression, students will create meaningful artworks that visually represent pollution and its effects. The use of upcycled materials underscores the importance of repurposing to reduce environmental impact.</p> <p><b>Promoting Sustainable Practices</b> Students will actively participate in an art project promoting sustainable practices. The lesson aims to instill an understanding of the significance of minimizing waste and making eco-conscious choices in daily life.</p>

<b>Materials</b>	<ul style="list-style-type: none"> <li>- Empty plastic bottles (various sizes)</li> <li>- Recyclable materials (old newspapers, magazines, cardboard)</li> <li>- Craft glue</li> <li>- Acrylic paints and brushes</li> <li>- Markers</li> <li>- Scissors</li> </ul> <p>- Informational resources on pollution and environmental conservation. The use of recyclable materials, such as empty plastic bottles, newspapers, magazines, and cardboard, aligns with the lesson's emphasis on sustainable practices.</p>
<b>Structure and activities</b>	<p><b>Introduction</b> (10 minutes)</p> <ul style="list-style-type: none"> <li>- Discuss the concept of pollution and its impact on ecosystems, relating it to the example of coral reefs.</li> <li>- Show images and videos illustrating polluted environments and explain the threats pollution poses to various ecosystems.</li> </ul> <p><b>Upcycling Introduction</b> (10 minutes)</p> <ul style="list-style-type: none"> <li>- Define upcycling and discuss its benefits in reducing environmental impact.</li> <li>- Emphasize the connection between upcycling and pollution prevention, highlighting the role of individuals in minimizing waste.</li> </ul> <p><b>Art Activity</b> (60 minutes)</p> <p>🔧 <b>Pollution Art Creation</b></p> <ul style="list-style-type: none"> <li>- Provide pupils with recyclable materials and instruct them to create artworks depicting pollution and its effects, using the materials provided.</li> <li>- Encourage creativity in representing different types of pollution.</li> </ul> <p>🔧 <b>Painting and Personalization</b></p> <ul style="list-style-type: none"> <li>- Once the basic structure is formed, allow pupils to paint and personalize their artworks using acrylic paints and markers.</li> <li>- Discuss the significance of color and design choices in representing the impact of pollution.</li> </ul> <p><b>Presentation</b> (30 minutes)</p> <p>🔧 <b>Gallery Setup</b></p> <ul style="list-style-type: none"> <li>- Set up a gallery space within the classroom or school to display the students' pollution artworks.</li> <li>- Consider arranging the artworks in a collaborative display resembling a polluted environment.</li> </ul>

	<p> <b>Artist Statements:</b></p> <ul style="list-style-type: none"> <li>- Ask students to prepare artist statements explaining the inspiration behind their artworks and how they relate to pollution awareness and environmental conservation.</li> </ul> <p> <b>Gallery Walk and Peer Discussion</b></p> <ul style="list-style-type: none"> <li>- Organize a gallery walk for students to observe and discuss each other's artworks.</li> <li>- Encourage them to ask questions and share their thoughts on the diversity and uniqueness of the pollution artworks.</li> </ul> <p><b>Reflection and Closing (10 minutes)</b></p> <p> <b>Group Reflection</b></p> <ul style="list-style-type: none"> <li>- Gather students for a group reflection on the art activity.</li> <li>- Discuss what they learned about pollution, its impact, and the role of upcycling in pollution prevention.</li> </ul> <p> <b>Commitment Statements:</b></p> <ul style="list-style-type: none"> <li>- Ask each student to make a commitment statement about one action they can take to contribute to pollution prevention and promote upcycling in their daily lives.</li> </ul>
<b>Inclusion</b>	<p><b>Explanation of Lesson Aim and Structure:</b></p> <p>This lesson aims to foster environmental awareness and creativity among students, with a specific focus on pollution and sustainable practices. Through engaging activities, students will deepen their understanding of pollution's impact on ecosystems and explore creative expression through upcycled art. The lesson structure is designed to accommodate diverse learning styles and abilities, providing opportunities for active participation and reflection.</p> <p><b>Clear Instructions, Tailored to Diverse Needs:</b></p> <p>Instructions will be delivered clearly and adapted to meet the needs of all students, ensuring comprehension and participation. Visual aids, such as images and videos, will support understanding, particularly for visual learners. Instructions will be repeated as necessary, and individualized support will be provided to students who require additional assistance or clarification.</p> <p><b>Formation of Inclusive Groups:</b></p> <p>To promote collaboration and peer learning, inclusive groups will be formed with consideration for diverse abilities and backgrounds. Mixed-ability groups will encourage cooperation and shared learning experiences, allowing students to support one another. Teachers will</p>

	<p>ensure that group dynamics are inclusive, fostering an environment where every student feels valued and empowered to contribute.</p> <p><b>Monitoring Engagement and Supportive Interventions:</b> Teachers will monitor student engagement throughout the lesson, ensuring that all students have the opportunity to participate actively. Supportive interventions will be employed if any student appears disengaged or encounters challenges. These interventions may include providing additional guidance, modifying tasks, or encouraging peer collaboration. Teachers will also address any instances of discomfort or exclusion promptly and sensitively, maintaining a supportive and inclusive learning environment.</p>
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### Supporting Documentation/Resources:

#### 1. Programs:

- a. PBS LearningMedia: PBS LearningMedia offers educational videos, lesson plans, and interactive activities on pollution and its impacts on the environment. Teachers can use these resources to supplement their lessons.  
<https://www.pbslearningmedia.org/>
- b. National Geographic Kids: National Geographic Kids provides articles, videos, and interactive resources on pollution, its sources, and its effects on ecosystems, suitable for middle school students.  
<https://kids.nationalgeographic.com/>

#### 2. Videos:

- a. National Geographic Education: National Geographic offers videos on pollution and related topics, featuring captivating visuals and informative narration appropriate for middle school students.  
<https://education.nationalgeographic.org/resource/pollution/>  
<https://education.nationalgeographic.org/resource/marine-pollution/>  
<https://education.nationalgeographic.org/resource/great-pacific-garbage-patch/>
- b. BBC Earth: BBC Earth produces videos on various environmental topics, including pollution, with stunning footage and expert commentary suitable for middle schoolers.  
<https://www.youtube.com/user/BBCEarth>
- c. The Story of Stuff: The Story of Stuff Project has videos explaining different aspects of pollution, consumerism, and sustainability in an engaging and educational manner, suitable for middle school students.  
[Homepage - Story of Stuff](#)

### 3. Podcasts:

- a. Tumble Science Podcast for Kids: Tumble is a science podcast that covers different topics, including pollution, through storytelling and interviews with experts, making it accessible and engaging for middle school students.  
<https://www.sciencepodcastforkids.com/>
- b. Brains On!: Brains On! is a science podcast that explores various environmental topics, including pollution, in a fun and informative way suitable for middle schoolers.  
<https://www.brainson.org/>
- c. But Why: A Podcast for Curious Kids: But Why is a podcast where kids ask questions, and experts provide answers. They have episodes on pollution suitable for middle school students.  
[But Why: A Podcast For Curious Kids : NPR](#)

### Assessments:

#### #1 - Scientific Understanding and Artistic Expression

	Initiating	Developing	Excelling
<b>Description of performance</b>	Pupils demonstrate a basic understanding of pollution but may lack detail in their artworks. The connection between scientific concepts and artistic expression is minimal.	Pupils exhibit an improved understanding of pollution, incorporating more details into their artworks. The connection between scientific concepts and artistic expression becomes more apparent.	Pupils showcase an advanced understanding of pollution, with artworks that intricately depict the complexity of polluted environments. The connection between scientific understanding and artistic expression is seamless.

<b>Sample student response</b>	"I made an artwork showing pollution. Pollution is bad. I used some old materials to make it."	"My artwork represents pollution with different types. I added some plastic pieces to show pollution. Pollution is making the environment sick. I tried to capture that in my artwork."	"In my artwork, I portrayed various pollution sources and their impact on the environment. I used upcycled materials strategically to represent the resilience of ecosystems. The polluted elements symbolize the effects of pollution. It's a metaphorical representation that connects scientific concepts with the urgent need for conservation."
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## #2 - Sustainable Practices and Environmental Advocacy

	Initiating	Developing	Excelling
<b>Description of performance</b>	Pupils demonstrate a basic awareness of upcycling and its benefits, but their artworks may not effectively convey a commitment to sustainable practices.	Pupils exhibit an improved understanding of upcycling as a sustainable practice, and their artworks reflect more intentional use of recycled materials.	Pupils demonstrate an advanced commitment to sustainable practices, utilizing upcycled materials thoughtfully. Their artworks serve as powerful statements advocating for pollution prevention and emphasizing the role of individuals in making environmentally conscious choices.
<b>Sample student response</b>	"I used old stuff for my artwork. I think	"I carefully selected materials that would	"Every piece of my artwork is a conscious

	it's good for the environment. The environment needs to be protected."	have been wasted otherwise. My artwork represents the importance of reducing waste to protect the environment. It's not just a project; it's a statement about our responsibility to the environment."	choice – a recycled bottle cap, repurposed fabric, and discarded metal. It symbolizes our responsibility to protect the environment through sustainable practices. This artwork is not just about pollution; it's a call to action for everyone to be stewards of the environment."
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## Quantitative Assessment Rubric:

Criteria	Initiating	Developing	Excelling
<b>Description of Performance</b>			
Scientific Understanding and Artistic Expression			
- Understanding of pollution	1-3 points	4-6 points	7-10 points
- Details in artworks	1-3 points	4-6 points	7-10 points
- Connection between concepts and expression	1-3 points	4-6 points	7-10 points
Sustainable Practices and Environmental Advocacy			
- Awareness of upcycling benefits	1-3 points	4-6 points	7-10 points
- Use of recycled materials in artworks	1-3 points	4-6 points	7-10 points
- Advocacy for pollution prevention	1-3 points	4-6 points	7-10 points

## Total Points Calculation:

- Total points for each criterion can be calculated by summing up the points awarded in each category.

## Sample Student Response:

- Qualitative descriptors alongside quantitative assessments provide additional context and insight into the student's performance.
- For example, a response in the "Developing" category may be accompanied by qualitative feedback like "Shows improvement in understanding pollution and incorporating more details into artworks. However, the connection between scientific concepts and artistic expression could be further developed to convey a stronger message."

## Assessment Table: Inclusion and Diversity - Climate Change

Criteria	Check
Information offered in multiple formats	



- Variety of learning materials provided	
- Text, visual, auditory resources	
<b>Inclusive methodologies like peer-to-peer learning</b>	
- Opportunities for collaborative activities	
- Group discussions, peer teaching	
<b>Use of ICT tools</b>	
- Integration of technology in learning activities	
- Use of online platforms, interactive tools	
<b>Overall Inclusion and Diversity</b>	
- Integration of diverse perspectives	
- Opportunities for student engagement	
- Promotion of equitable participation	

### Explanation of Criteria:

- **Information offered in multiple formats:**
  - Assess whether the lesson plan provides learning materials in various formats such as text, visuals, and auditory resources to cater to diverse learning styles.
- **Inclusive methodologies like peer-to-peer learning:**
  - Evaluate if the lesson plan incorporates inclusive methodologies like peer-to-peer learning, group discussions, and collaborative activities to encourage interaction and engagement among students.
- **Use of ICT tools:**
  - Determine if the lesson plan utilizes ICT tools such as online platforms and interactive resources to enhance learning experiences and accessibility.
- **Overall Inclusion and Diversity:**
  - Summarize the overall assessment of inclusion and diversity in the lesson plan, considering the integration of diverse perspectives, opportunities for student engagement, and promotion of equitable participation.