SCIENCE - LESSON PLAN

Grade:	11-13 years old (6th-8th grade)
Subject:	SCIENCE
Lesson n°:	**2**
Topic:	**Climate change**
Lessons focus and goals:	This lesson aims to immerse students in the critical concepts of climate change, its causes, and its effects on biodiversity. Students will learn about the scientific principles behind climate change, the importance of biodiversity, and how climate change disrupts ecosystems and species. They will examine human activities' contributions to climate change and the resulting impact on biodiversity. The lesson will foster critical thinking and problem-solving skills, encouraging students to propose and evaluate solutions for mitigating climate change and protecting biodiversity. Additionally, students will explore the interconnectedness of natural systems and human societies, emphasizing sustainability and the preservation of biodiversity for future generations. By the end of the lesson, students will understand the link between climate change and biodiversity and feel empowered to take action against this global challenge.
Learning objectives:	**Understanding Climate Change** Students will acquire a comprehensive understanding of the various causes and effects of climate change at a global level. This includes recognizing the impact of human activities on the Earth's climate system. **Ecosystem Impact Awareness** Students will develop an awareness of how climate change disrupts and transforms ecosystems, with a specific focus on the importance of biodiversity. They will recognize the consequences of climate change on vulnerable species. **Climate Advocacy through Infographics** Through hands-on engagement, students will learn the art of visual communication by creating infographics that effectively convey the complexities of climate change. The emphasis will be on articulating causes, effects, and potential solutions in a visually compelling manner. **Sustainable Action Plan** Students will actively participate in a collaborative brainstorming

	session to identify and develop sustainable action plans. The goal is to empower students to propose and plan concrete initiatives that can be implemented in their school or local community to mitigate the impacts of climate change.

Materials	- Whiteboards or large sheets of paper - Markers, colored pens, and other drawing materials - Informational resources on climate change and biodiversity - Laptops or tablets for online research - Flipchart paper and sticky notes - Presentation tools (e.g., PowerPoint, Google Slides).
Structure and activities	**Introduction** (15 minutes) - Discuss the concept of climate change, its causes, and its global impact on weather patterns, sea levels, and ecosystems. - Show images and videos illustrating the effects of climate change on different parts of the world. **Infographic Creation** (60 minutes) ☞ Research and Planning - Provide laptops or tablets for students to research and gather information on the causes, effects, and potential solutions to climate change. - Instruct them to plan their infographics, including key messages and visual elements. ☞ Infographic Design - Allow students to use whiteboards or large sheets of paper to create visually engaging infographics. - Emphasize the importance of clear and impactful visual communication to convey complex information. **Sustainable Action planning** (30 minutes) ☞ Brainstorming session - Facilitate a brainstorming session for students to identify potential sustainable actions that can be implemented in the school or local community to mitigate climate change. - Use flipchart paper and sticky notes to capture ideas. ☞ Action Plan development: - In small groups, have students develop a detailed action plan for one sustainable initiative.

	- Discuss the feasibility, impact, and steps needed to implement the proposed action **Group reflection** (15 minutes) - Gather students for a group reflection on the climate change activity. - Discuss what they learned about the causes and effects of climate change and the importance of taking action.
Inclusion	**Explanation of Lesson Aim and Structure:** This lesson aims to ensure that all students, regardless of their background or abilities, can actively participate and engage with the critical concepts of climate change. The structure of the lesson provides various opportunities for inclusive learning experiences, from group activities to visual communication tasks, fostering a supportive environment where every student can contribute meaningfully. **Simple Instructions, Repeated as Necessary:** Throughout the lesson, instructions will be given in clear and concise language, ensuring that all students understand the tasks at hand. Instructions will be repeated as necessary, and visual aids, such as written instructions or demonstrations, will be provided to support students who may require additional assistance. **Formation of Mixed-Ability Groups:** To promote inclusivity and collaboration, mixed-ability groups will be formed during the activities. By mixing students with different skill levels and abilities, peer-learning opportunities are maximized, allowing students to support and learn from each other. Teachers will ensure that each group is balanced to facilitate cooperation and mutual support. **Equitable Participation Monitoring and Intervention Tips:** Teachers will monitor participation throughout the lesson to ensure that all students have the opportunity to contribute and engage actively. Intervention strategies will be employed if any student is observed to be disengaged or struggling. These strategies may include providing additional support, adjusting tasks to better suit individual needs, or encouraging peer support within groups. Additionally, teachers will be attentive to signs of discomfort or exclusion and will address any instances of bullying or marginalization promptly and sensitively.

Supporting Documentation/Resources:

1. **Programs:**

a. PBS Kids: Plum Landing: Plum Landing is an environmental science program that offers interactive games, videos, and hands-on activities to teach kids about ecosystems, habitats, and climate change.
b. National Geographic Kids: National Geographic Kids offers educational programs and resources on climate change, including articles, videos, and interactive quizzes.
c. NASA Climate Kids: NASA Climate Kids provides educational resources, including videos and activities, to help kids learn about climate change and its impacts on Earth.

2. **Videos:**

a. TED-Ed: TED-Ed offers a series of animated educational videos on climate change topics suitable for middle school students.
b. The Story of Stuff: The Story of Stuff series includes videos that explain environmental issues, including climate change, in a simple and engaging way.
c. Bill Nye the Science Guy: Bill Nye has several episodes focused on climate change and related topics that are both educational and entertaining for middle school students.

3. **Podcasts:**
   a. But Why: A Podcast for Curious Kids: But Why is a podcast where kids ask questions, and experts provide answers. They have episodes on climate change suitable for middle schoolers.
   b. Tumble Science Podcast for Kids: Tumble is a science podcast that explores different topics, including climate change, through storytelling and interviews with scientists.
   c. Brains On!: Brains On! is a science podcast that covers various topics, including climate change, in a fun and accessible way for kids.
4. **Infographics:**
   a. https://www.canva.com/infographics/templates/climate/
   b. https://www.freepik.com/vectors/climate-change-infographic
   c. https://www.edrawsoft.com/article/climate-change-infographic.html

Assessments:

#1 - Scientific Understanding and Advocacy

	Initiating	Developing	Excelling
Description of performance	Pupils demonstrate a basic understanding of climate change but may lack detail in their infographics. The connection between scientific concepts and advocacy is	Pupils exhibit an improved understanding of climate change, incorporating more details into their infographics. The connection between	Pupils at the excelling level demonstrate a comprehensive understanding of climate change. Their detailed infographics effectively communicate

	minimal.	scientific concepts and advocacy becomes more apparent.	complex scientific concepts and integrate strong advocacy messages, highlighting the urgent need for action.
Sample student response	"I made an infographic about climate change. Climate change is bad. We need to do something."	"My infographic explains the causes and effects of climate change. It shows how human activities contribute. I think we should all work together to solve this problem."	"In my infographic, I visually represented the intricate web of climate change causes and effects. I included potential solutions and emphasized the urgency for collective action. This infographic serves as a powerful tool for advocacy, bridging scientific understanding with the call for immediate action."

#2 - Solution-oriented Thinking and Collective Action

	Initiating	**Developing**	**Excelling**
Description of performance	Pupils demonstrate a basic awareness of the need for action but may struggle to propose concrete sustainable initiatives. The connection between understanding and action is minimal.	Pupils exhibit an improved understanding of the need for action, proposing concrete sustainable initiatives. The connection between understanding and action becomes more apparent.	Pupils demonstrate an advanced commitment to solution-oriented thinking, proposing detailed and impactful sustainable initiatives. Their action plans reflect a deep understanding of the interconnectedness of environmental issues and the importance of collective action.

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Sample student response	"We talked about doing something to help climate change. Maybe we can plant more trees?"	"Our group came up with the idea of starting a school composting program to reduce waste. We think it's a small step, but it can make a difference."	"Our action plan outlines a comprehensive approach, including a school-wide education campaign on sustainable practices, setting up recycling stations, and collaborating with local organizations. It's not just about what we can do individually; it's about inspiring and mobilizing the entire community to tackle climate change together."

Quantitative Assessment Rubric:

Criteria	Initiating	Developing	Excelling
Description of Performance			
Scientific Understanding and Advocacy			
-Understanding of climate change	1-3 points	4-6 points	7-10 points
-Detail in infographics	1-3 points	4-6 points	7-10 points
-Connection between concepts and advocacy	1-3 points	4-6 points	7-10 points
Solution-oriented Thinking and Collective Action			
-Awareness of the need for action	1-3 points	4-6 points	7-10 points
-Proposal of sustainable initiatives	1-3 points	4-6 points	7-10 points
-Connection between understanding and action	1-3 points	4-6 points	7-10 points

Total Points Calculation:

- The 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 will provide additional context and insight into the student's performance.
- For instance, a response in the "Developing" category may be accompanied by qualitative feedback like "Shows improvement in understanding climate change and

proposes a concrete sustainable initiative, but could further strengthen the connection between understanding and action."

Assessment Table: Inclusion and Diversity - Climate Change

Criteria	Check
Information offered in multiple formats	
- Variety of learning materials provided	
- Text, visual, auditory resources	
Inclusive methodologies like peer-to-peer learning	
- Opportunities for collaborative activities	
- Group discussions, peer teaching	
Use of ICT tools	
- Integration of technology in learning activities	
- Use of online platforms, interactive tools	
Overall Inclusion and Diversity	
- 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.