WI-MI: OPEN WIDE MINDS WILL FIND ECO VIRTUAL STEAM SOLUTIONS TOWARDS CLIMATE CHANGE

2022-KA220-SCH-A5DAC388

Learn on How to Teach Climate Change

Webinar







"The Earth is what we all have in common."

— Wendell Berry, farmer, poet, and environmentalist.



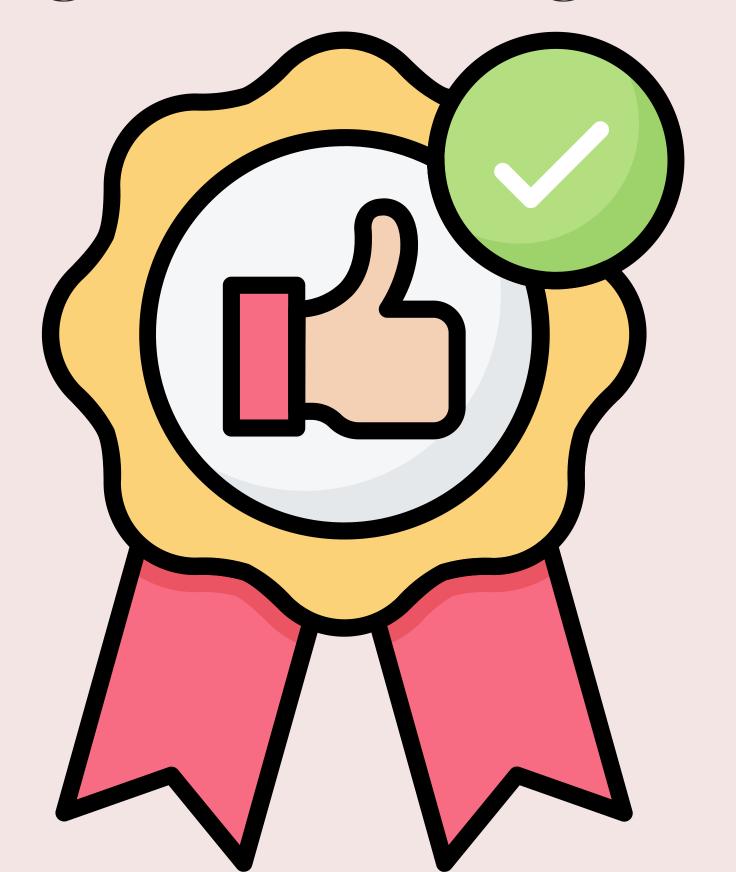


OBJECTIVES:

- Integrating Climate Change: Best Practices
- The Importance of Local Context: Tailoring Climate Education to Community Needs
- Developing Critical Thinking Skills Through Climate Debates and Discussions
- Utilizing Multimedia Resources: Documentaries, Podcasts, and Infographics
- Assessing Student Understanding: Effective Evaluation Strategies for Climate Education



Integrating Climate Change: Best Practices









Integrating climate change into various sectors and practices ensures that societies are better equipped to mitigate and adapt to its effects.

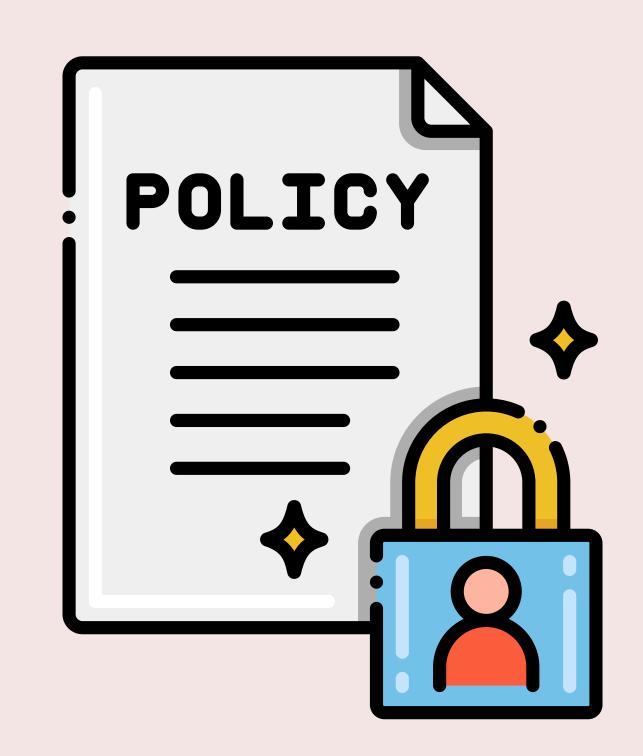
Let's discover some of the best practices that are commonly implemented worldwide





Mainstreaming Climate Change into Policies

- Climate considerations should be embedded in all levels of decision-making, from urban planning to national economic strategies.
- Governments can integrate climate goals into development plans, ensuring that climate resilience becomes a core focus.
- Example: Cities adopting "Climate Action Plans" with specific goals for reducing emissions and adapting infrastructure.







Promoting Renewable Energy Adoption

- Shifting to renewable energy sources like solar, wind, and hydroelectric power significantly reduces carbon footprints.
- Countries and organizations can provide incentives such as subsidies, tax rebates, and grants to accelerate renewable energy adoption.
- Example: Denmark's successful integration of wind energy into its power grid, with a goal to become carbon neutral by 2050.





STEAMS SOLUTION OF THE PART OF

Enhancing Sustainable Practices in Industries

- Industries can implement sustainable practices, such as improving energy efficiency, adopting circular economy models, and reducing waste.
- Utilizing technologies like carbon capture and storage (CCS) can help reduce emissions.
- Example: Companies like Tesla focus on innovation to accelerate the world's transition to sustainable energy.



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INTEGRATING CLIMATE CHANGE: BEST PRACTICES



Building Climate-Resilient Infrastructure

- Infrastructure development must consider climate risks such as rising sea levels, floods, and extreme weather.
- Examples include elevated roads in flood-prone areas, green roofs to mitigate urban heat islands, and seawalls in coastal cities.
- Example: The Netherlands' innovative water management system protects against sea-level rise.







This UNEP publication demonstrates how buildings and community spaces can be constructed to increase their resilience to climate change, especially in developing countries where structures are largely self-built. The practical guide offers construction solutions to adapt to a range of different risks in various climates. DISCLAIMER: This Video is done and produced by the UNEP.



INTEGRATING CLIMATE CHANGE: BEST

PRACTICES

Supporting Community-Led Climate Solutions

 Involving communities in climate change initiatives ensures locally tailored solutions that are practical and inclusive.

 Example: Community-driven mangrove restoration projects in Southeast Asia, which help reduce coastal erosion and enhance biodiversity.







Advancing Climate Education and Awareness

- Educating people about climate change and sustainability empowers them to make informed decisions.
- Schools, businesses, and media campaigns can raise awareness about the impacts of climate change and steps to mitigate it.
- Example: Programs like UNESCO's Climate Change Education for Sustainable Development.





Monitoring & Evaluation

- Establish systems to regularly monitor the effectiveness of climate policies and projects, adapting them as needed.
- Example: The use of digital dashboards and AI to track carbon emissions and climate resilience efforts.





Incorporate Climate Change into the Curriculum

- Subject Integration: Embed climate topics across subjects like science, geography, and social studies.
- Interdisciplinary Approach: Combine STEM education with social and ethical discussions about sustainability.

EXAMPLE

- Science: Study the greenhouse effect, renewable energy, or carbon cycles.
- Social Studies: Explore global policies like the Paris Agreement or examine climate justice.



Encourage Hands-On Learning

- Eco-Friendly Projects
- Gardening and Composting
- Energy Audits: Conduct audits of the school's energy and resource consumption, encouraging students to propose improvements.

Use Technology and Simulations

- Virtual Reality (VR): Use VR to simulate climate scenarios, such as the impact of rising sea levels or deforestation.
- Interactive Apps: Employ apps and online platforms to calculate carbon footprints or simulate climate change models.
- **Digital Storytelling:** Encourage students to create videos or infographics about climate solutions.





Promote Action Through Local Community Projects

- Collaborate with local environmental organizations to engage students in real-world climate initiatives, such as cleanup drives or tree-planting campaigns.
- Build community partnerships to host guest lectures or workshops with environmentalists and climate scientists.

Teach Problem-Solving Through Sustainability Challenges

- Challenge students to develop innovative solutions to realworld climate problems, such as reducing waste or improving energy efficiency in their homes and schools.
- Encourage participation in competitions like the Eco-Schools Program or National STEM Challenges.



INTEGRATING CLIMATE BEST PRACTICES INTO THE

CLASSROOM

Foster Climate Literacy Through Storytelling and Media

- Books and Films: Introduce students to books, documentaries, and films that explore climate change and its impacts, such as The Lorax by Dr. Seuss or An Inconvenient Truth.
- Creative Writing: Encourage students to write essays, short stories, or poems imagining a future shaped by climate action or inaction.







Incorporate School-Wide Sustainability Practices

Establish classroom policies that reflect climate best practices, such as:

- Recycling bins for paper and plastics.
- Energy-saving habits like turning off lights and computers.
- Encouraging reusable water bottles and lunch containers.
- Create a "Green Team" of students to advocate for sustainable practices throughout the school.





Connect to Global Movements

- Align lessons with global environmental movements like Earth Day, Fridays for Future, or World Environment Day to highlight the importance of collective action.
- Encourage participation in virtual forums or pen-pal programs with students in other countries working on climate initiatives.







THE IMPORTANCE OF LOCAL CONTEXT: TAILORING CLIMATE EDUCATION TO COMMUNITY NEEDS



Understanding and Adapting Climate Education to Address





WHY LOCAL CONTEXT MATTERS



- Relevance: Students connect more deeply with climate issues when they see how it impacts their own community.
- Engagement: Localized examples foster active participation and curiosity.
- Impact: Addressing local problems encourages tangible actions that benefit the immediate environment.





ADAPTING CLIMATE EDUCATION TO LOCAL CONTEXT



Identify Local Climate Challenges:

- Examples: Flooding, drought, deforestation, or urban pollution.
- Collaborate with local experts and organizations to gather data.

Integrate Community Practices:

- Highlight traditional practices that align with sustainability (e.g., rainwater harvesting).
- Study indigenous knowledge and its role in environmental conservation.

Focus on Relevant Solutions:

• Examples: Promoting water conservation in arid areas or planting native species to restore biodiversity.



COMMUNITY-CENTERED LEARNING STRATEGIES



Fieldwork and Local Projects:

• Example: Students conduct a water quality test of a nearby river.

Community Partnerships:

 Collaborate with NGOs or local government for workshops and practical lessons.

Storytelling and Local Narratives:

• Share stories of community members who are climate activists or innovators.



EXAMPLES OF TAILORED CLIMATE EDUCATION



1. Urban Settings:

- Focus on waste management, air pollution, and urban greening.
- Example: Recycling campaigns in cities.

2. Rural Settings:

- Address sustainable agriculture, water conservation, and deforestation.
- Example: Teaching crop rotation methods in drought-prone areas.

3. Coastal Areas:

- Focus on marine ecosystems, rising sea levels, and coastal protection.
- Example: Mangrove restoration projects in Southeast Asia.



BENEFITS OF LOCALIZED CLIMATE EDUCATION



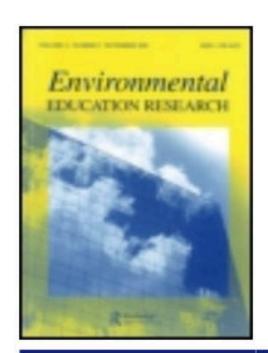
Empowers communities to take ownership of their environmental challenges.



Encourages
cultural
appreciation
and the
preservation of
sustainable
traditions.



Builds
practical
skills that
lead to
immediate
and long-term
impacts.







Environmental Education Research



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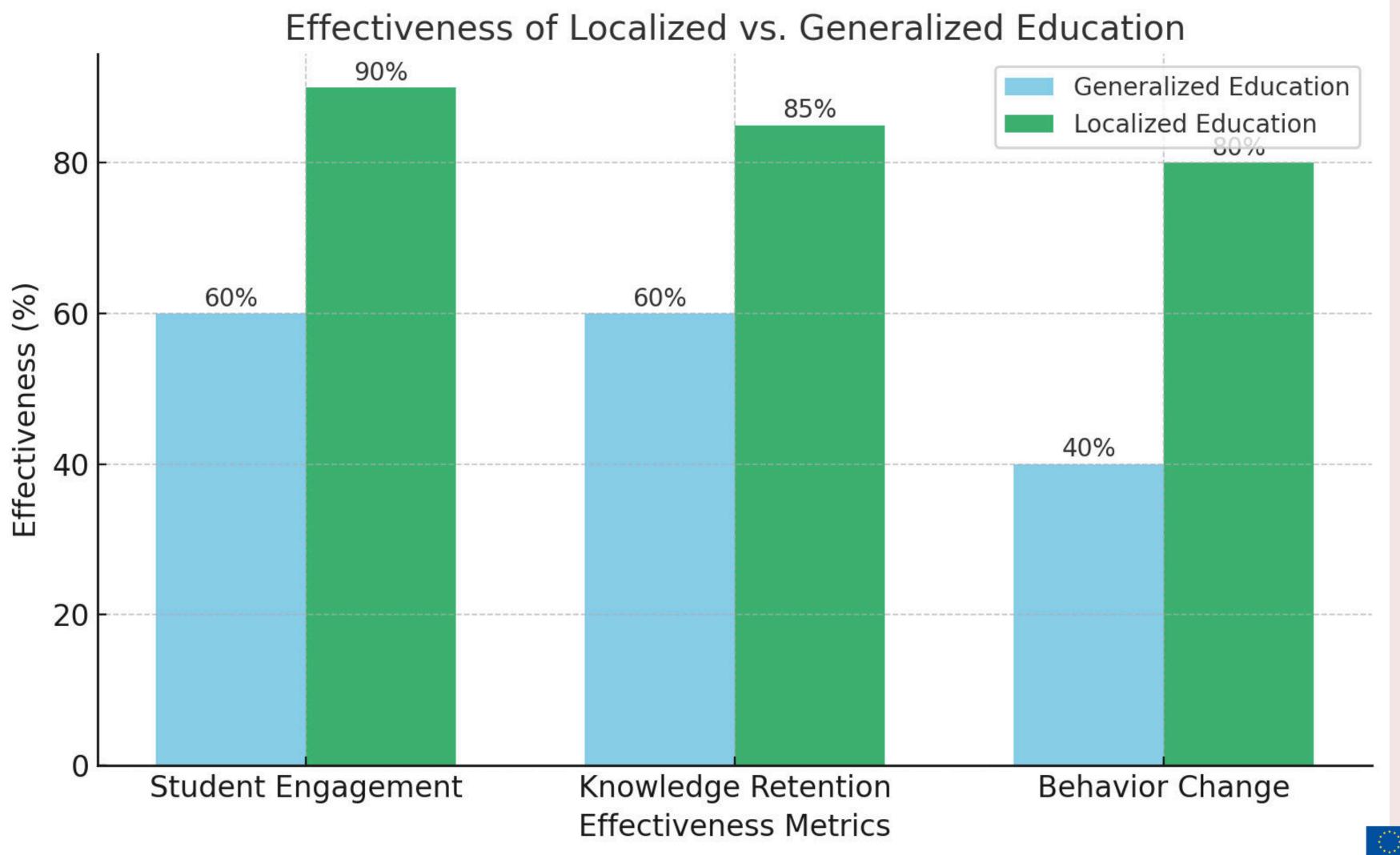
Identifying effective climate change education strategies: a systematic review of the research

Martha C. Monroe, Richard R. Plate, Annie Oxarart, Alison Bowers & Willandia A. Chaves

To cite this article: Martha C. Monroe, Richard R. Plate, Annie Oxarart, Alison Bowers & Willandia A. Chaves (2017): Identifying effective climate change education strategies: a systematic review of the research, Environmental Education Research, DOI: 10.1080/13504622.2017.1360842

To link to this article: https://doi.org/10.1080/13504622.2017.1360842







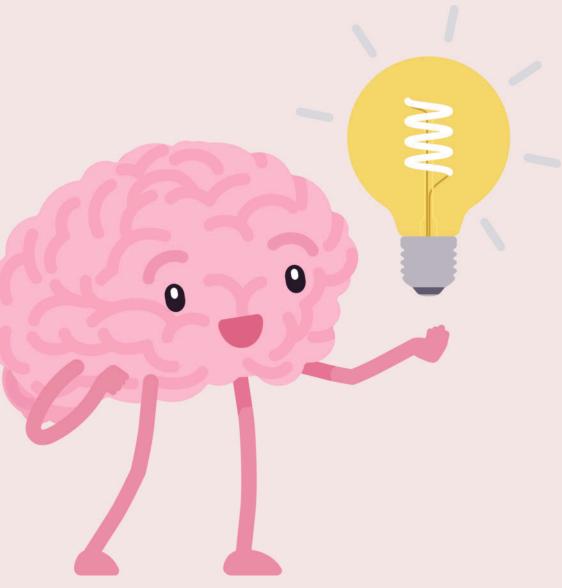


DEVELOPING CRITICAL THINKING SKILLS THROUGH CLIMATE DEBATES AND DISCUSSIONS



the European Union

What is critical thinking?

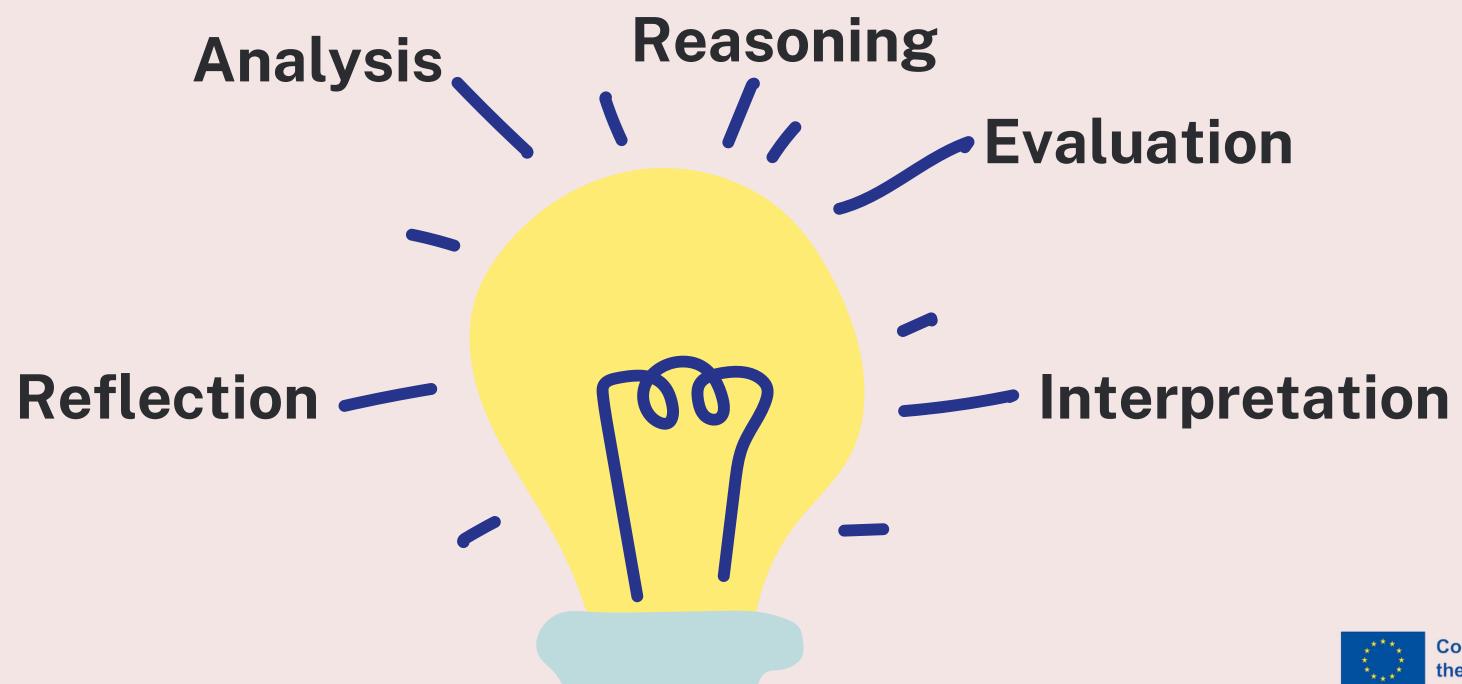


- Critical thinking is the ability to analyze, evaluate, and synthesize information objectively and systematically to form a well-reasoned judgment or decision.
- It involves questioning assumptions, identifying biases, and considering multiple perspectives before arriving at a conclusion.

DEVELOPING CRITICAL THINKING SKILLS THROUGH CLIMATE DEBATES AND DISCUSSIONS



Key Characteristics of Critical Thinking:





WHY IS CRITICAL THINKING ESSENTIAL IN CLIMATE EDUCATION?



the European Union

Climate Issues Are Multifaceted

Climate change involves interconnected factors like science, economics, politics, and ethics. Critical thinking helps students navigate these complexities.

Promotes Informed Decision-Making

Students learn to assess climate policies, renewable energy technologies, and lifestyle changes to make evidence-based decisions.

Counteracts **Misinformation** The climate crisis is plagued by misinformation and denial. Critical thinking enables students to differentiate facts from myths and identify credible sources.



• Encourages Problem-Solving:

Climate change requires innovative solutions. Critical thinkers can develop creative strategies to mitigate and adapt to its impacts.

Fosters Global Citizenship:

By understanding diverse perspectives and ethical implications, students become responsible citizens who can advocate for sustainable practices.

Prepares for Leadership:

Leaders in climate action require the ability to analyze data, communicate effectively, and make tough decisions under uncertainty.



ITS TIME TO DEBATE!

"Should Developed Countries Bear More Responsibility for Combating Climate Change?"







EXAMPLES OF DISCUSSION TOPICS FOR TEACHERS TO USE IN CLASS WHEN ADDRESSING CLIMATE CHANGE



Should governments impose stricter regulations on industries to reduce carbon emissions?

Purpose: Encourages students to evaluate the role of policy in combating climate change and the balance between economic growth and environmental responsibility.

Focus Questions:

What are the pros and cons of stricter regulations?

How might these policies impact businesses and consumers?







Are renewable energy sources like solar and wind the only solution to the global energy crisis?

• **Purpose:** Sparks a debate about energy diversity and the practicality of transitioning to 100% renewable energy.



How can individual actions make a significant impact on reducing climate change?

• **Purpose:** Helps students connect personal behaviors with broader environmental outcomes.



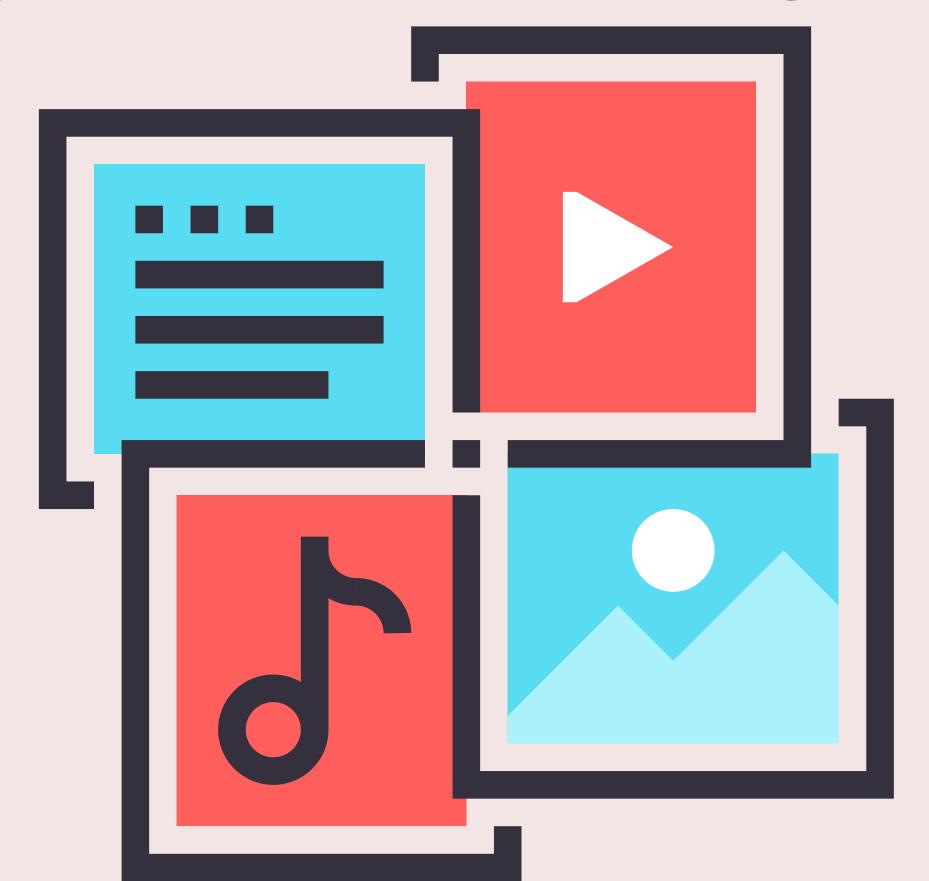
How can climate change education empower young people to take action?



• **Purpose:** Explores the role of education in addressing the climate crisis and motivates students to think critically about their potential impact.

Utilizing Multimedia Resources: Documentaries, Podcasts, and

Infographics for Climate Change Education







Multimedia resources are essential for teaching climate change effectively, as they offer visual, auditory, and datadriven ways to explore complex topics.

How do we utilize multimedia in an educational setting?





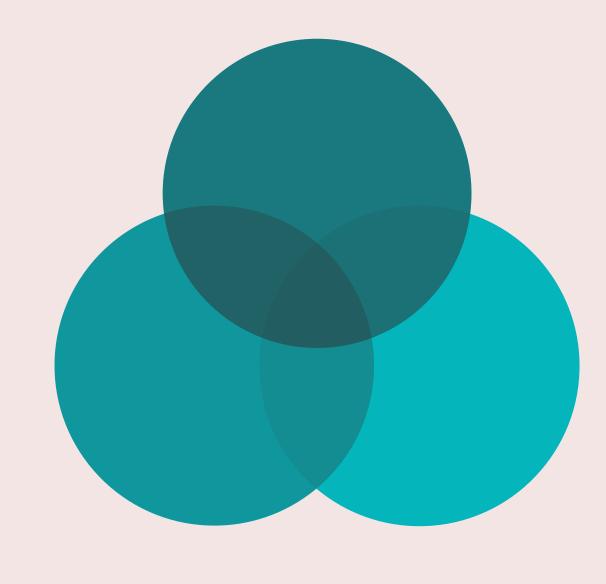
Documentaries

Podcasts

Infographics











DOCUMENTARIES



Purpose in education:

Documentaries provide real-world insights, showcasing the causes and effects of climate change with compelling visuals and expert narratives.

They help students connect theoretical concepts to practical, real-world scenarios.







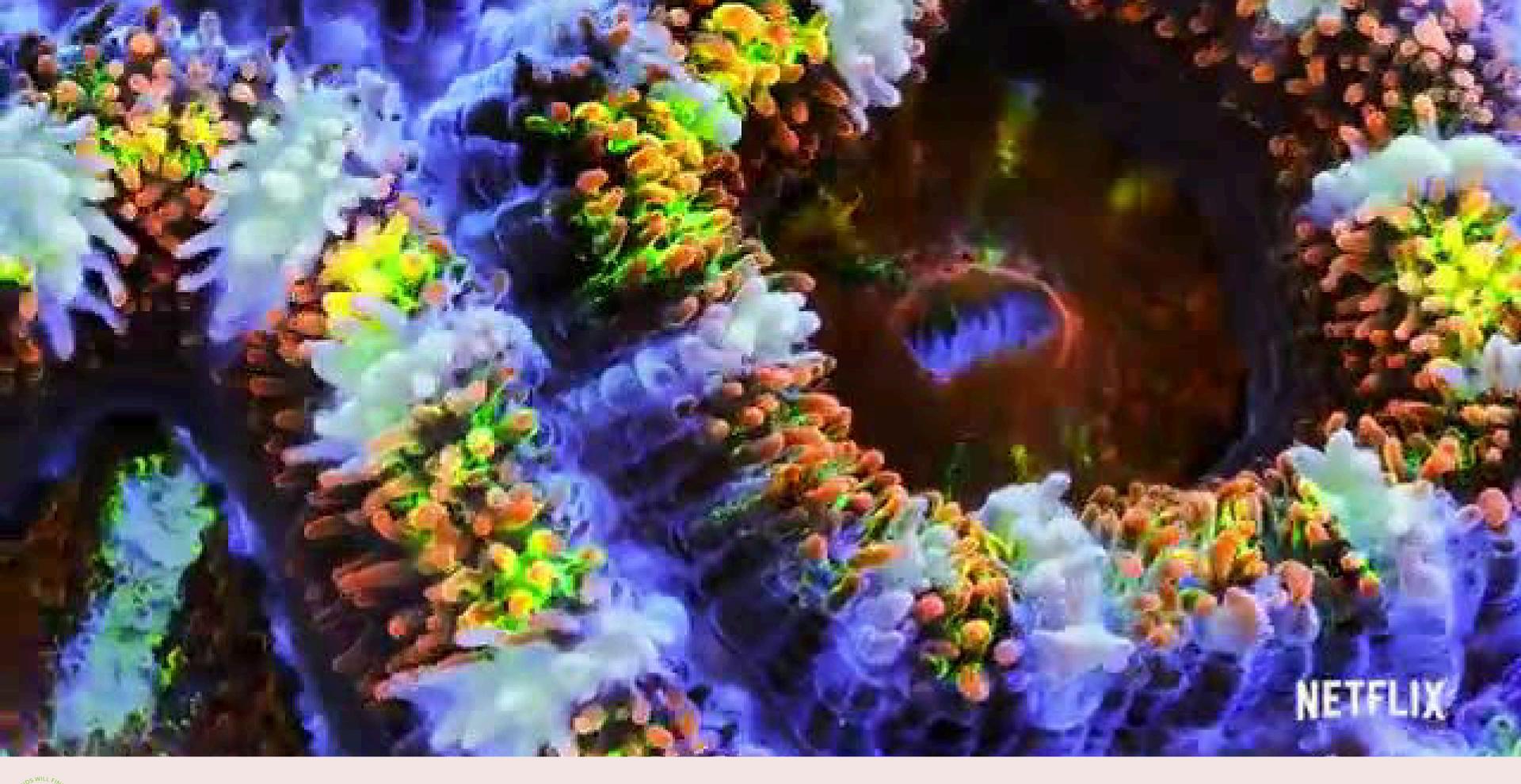
- Narrator: Leonardo DiCaprio
- Content: Explores the global impacts of climate change, such as melting ice caps, rising sea levels, and extreme weather, while also presenting solutions like renewable energy and sustainable practices.
- How to Use: Educate students on global perspectives and solutions to climate challenges.







- Focus: Underwater photography to document coral bleaching caused by climate change.
- Educational Value:
 Explains the science
 behind ocean warming
 and its ecological
 impacts.
- Relevance: Useful for understanding marine ecosystems and biodiversity loss.





Resource: https://www.youtube.com/watch?v=xlOdfTNK70k Video owned by NETFLIX MENA, done by NETFLIX MENA







- Focus: Explores
 innovative climate
 solutions that could
 reverse climate change
 impacts by 2040.
- Educational Value:
 Highlights optimism by showcasing renewable energy, sustainable agriculture, and regenerative practices.

HOW INFOGRAPHICS HELP TEACH STUDENTS ABOUT CLIMATE CHANGE





Infographics are powerful tools for teaching climate change because they combine visual appeal with concise information, making complex topics easier to understand and retain.



HOW INFOGRAPHICS HELP TEACH STUDENTS ABOUT CLIMATE CHANGE



Simplifying Complex Concepts

Many students
are visual
learners who

Enhancing Visual

are visual
learners who
grasp
information
better through
images,
charts, and

graphs.

Engaging and RetainingAttention

Climate science involves
technical terms, data,
and processes like
carbon cycles,
greenhouse gas effects,
and feedback loops.
Infographics break these
down into digestible
visual segments.

Climate change can feel overwhelming, but infographics distill large amounts of information into concise formats. This helps keep students focused and interested.



HOW INFOGRAPHICS HELP TEACH STUDENTS ABOUT CLIMATE CHANGE



Supporting Data Literacy

Infographics often include data visualizations like bar charts, line graphs, and pie charts.

Encouraging Critical Thinking

Infographics can present information in a way that challenges students to think critically.

Promoting Accessibility

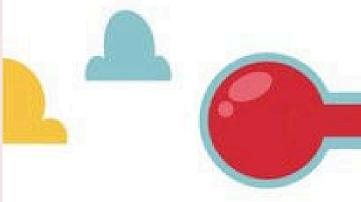
Creating a Call to Action

Infographics use universal symbols and minimal text,

making them accessible to diverse learning levels and language abilities.

Infographics often include actionable tips and solutions, motivating students to take small steps toward sustainability.





GLOBAL WARMING

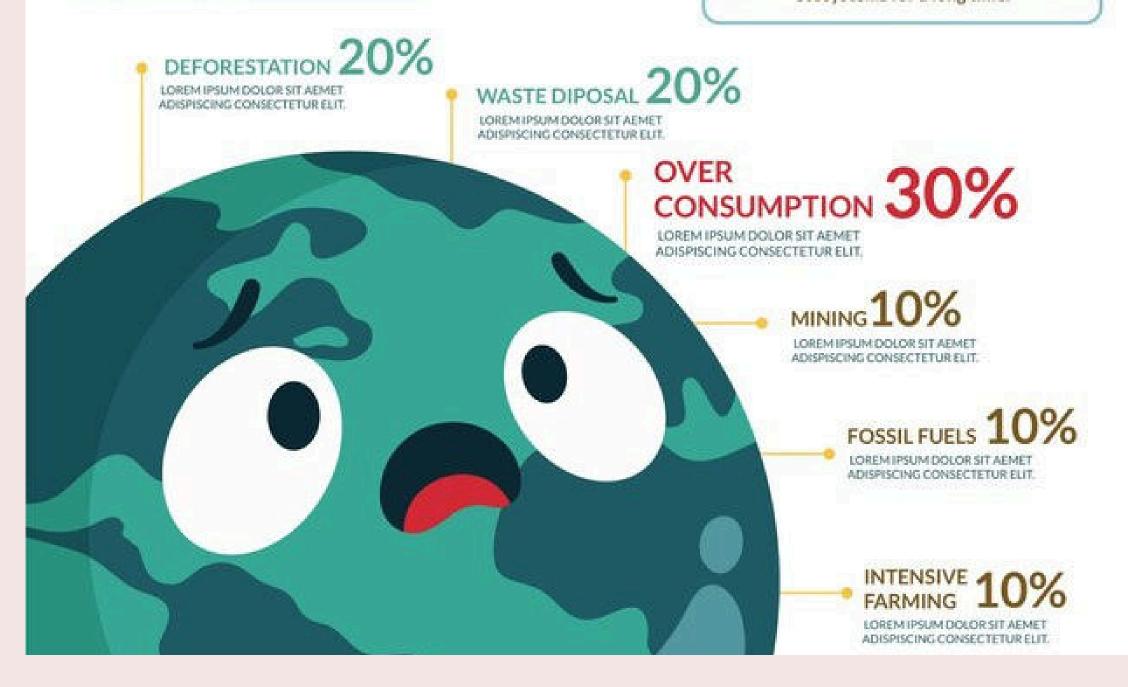




CAUSES

What is?

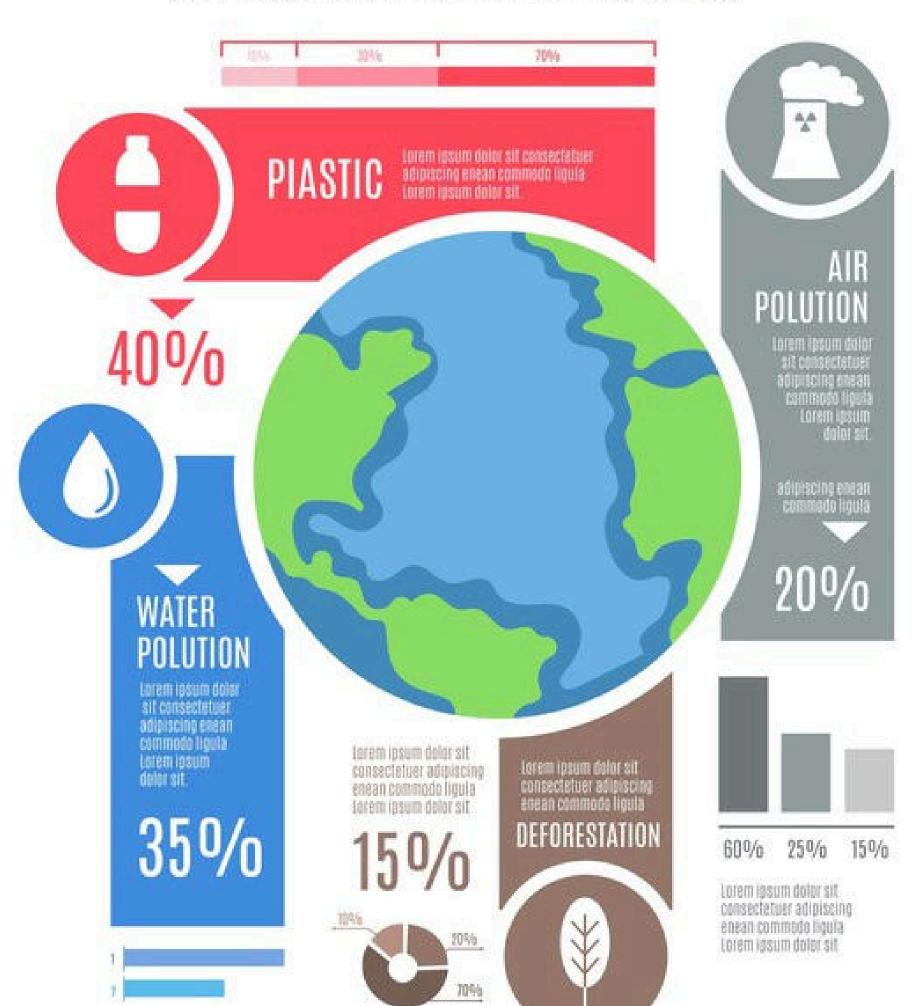
Global warming is a phenomenon of climate change characterized by a general increase in average temperatures of the Earth, wich modifies the weather balances and ecosystems for a long time.







ENVIROMENTAL GLOBAL PROBLEMS







ASSESSING STUDENT UNDERSTANDING: EFFECTIVE EVALUATION STRATEGIES FOR

CLIMATE EDUCATION

Evaluation is a key part of climate education to ensure students grasp the content and develop critical thinking, problemsolving skills, and actionable knowledge.







Measures Learning Outcomes

Determines if students have achieved the desired learning objectives.

Did students
understand the causes
of climate change and
its impacts? Can they
identify solutions?



To identify Strengths and Weaknesses

Pinpoints areas where students excel and where they need additional support.

A student may grasp the science behind global warming but struggle to propose actionable solutions.





Improves Teaching Effectiveness



Encourages Active Learning



Provides feedback to educators on what works and what doesn't. If many students struggle with a specific topic, teachers can adjust their methods or provide supplementary materials.

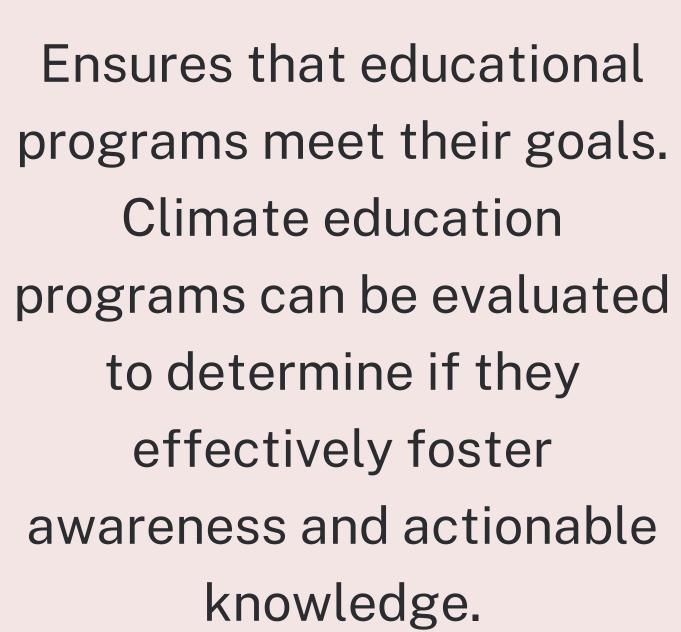
Engages students by making them reflect on their knowledge and participation.

Through self-assessments or peer reviews, students take responsibility for their learning.





Promotes Accountability





Supports Continuous Improvement



Provides a basis for refining educational strategies and curricula. Feedback from assessments can lead to the inclusion of new, more relevant climate change topics or interactive methods.





Facilitates

Personalized Learning

Tailors education to meet individual student needs.

A student struggling with data analysis in climate studies might receive additional resources or tutoring.





Encourages Critical Thinking Evaluations often challenge students to analyze, synthesize, and apply their

Asking students to propose solutions to local climate issues fosters problem-solving skills.

knowledge.



Tracks Progress

Allows students, teachers, and institutions to monitor growth over time. Comparing pre- and post-assessments can show how much a student has learned about renewable energy.



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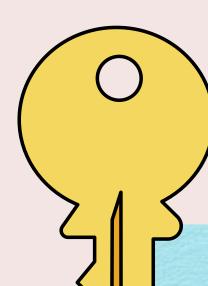




Prepares Students for Real-World Challenges

Evaluation ensures that students are ready to apply their knowledge to realworld situations. Assessing whether students can communicate climate science effectively to peers or community members.





KEY CONSIDERATIONS FOR CLIMATE EDUCATION ASSESSMENT



- Focus on Actionable Knowledge: Prioritize assessing whether students can apply their learning to real-world contexts.
- Encourage Critical Thinking: Assess their ability to analyze, interpret data, and propose viable solutions.
- Promote Collaboration: Incorporate team-based assessments to simulate real-world problem-solving scenarios.
- Use a Variety of Methods: Combine traditional and innovative strategies for a well-rounded evaluation.



Project-Based Assessments

Students work on real-world climate-related projects such as designing a community sustainability plan or conducting a local environmental impact study. How It Helps: Demonstrates applied knowledge and encourages creativity, teamwork, and critical thinking.





Case Studies and Problem-Solving Tasks

Present students with real or hypothetical scenarios involving climate challenges, such as urban flooding or biodiversity loss.

How It Helps: Evaluates their ability to analyze data, propose solutions, and justify their reasoning.

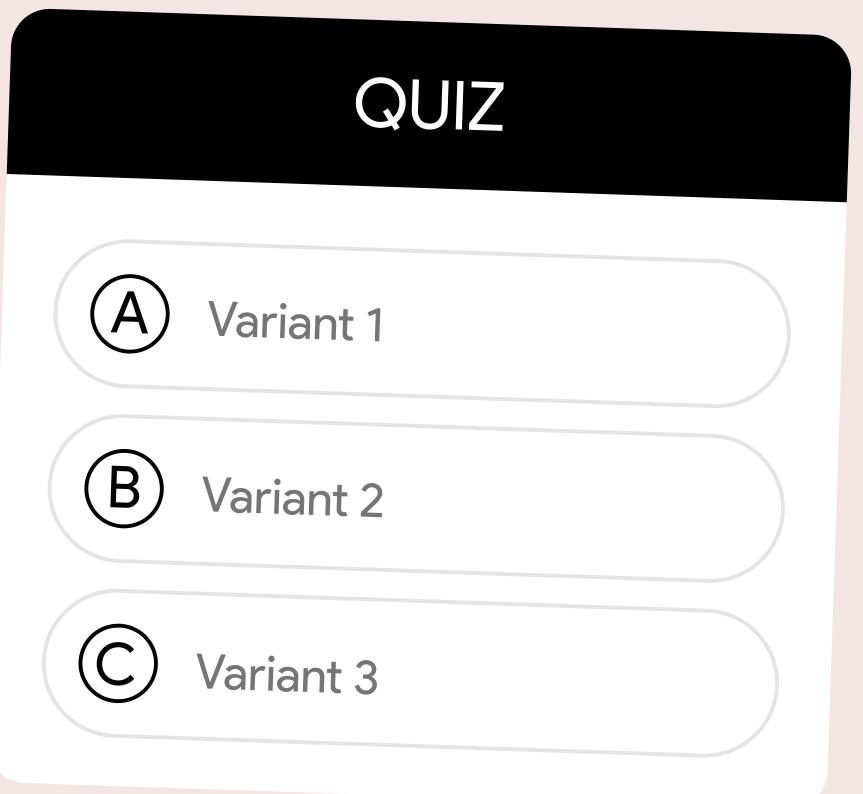






Formative Assessments (Ongoing Evaluation)

- Quizzes and Polls: Use digital tools like Kahoot or Google
 Forms to quiz students on key concepts (e.g., greenhouse gases or carbon footprint calculations).
- Reflection Journals: Ask students to write about what they've learned and how they plan to apply it.





Role-Playing and Simulations

Students take on roles like policy makers, scientists, or activists in a climate-related scenario.

How It Helps: Tests their

perspectives and decision-making processes.

understanding of various

Example: Conduct a mock
United Nations Climate
Change Conference (COP
simulation).



Peer Assessments

Students evaluate
each other's work
based on set criteria,
fostering collaboration
and deeper
understanding.

Encourages critical thinking and self-reflection.

How It Helps:

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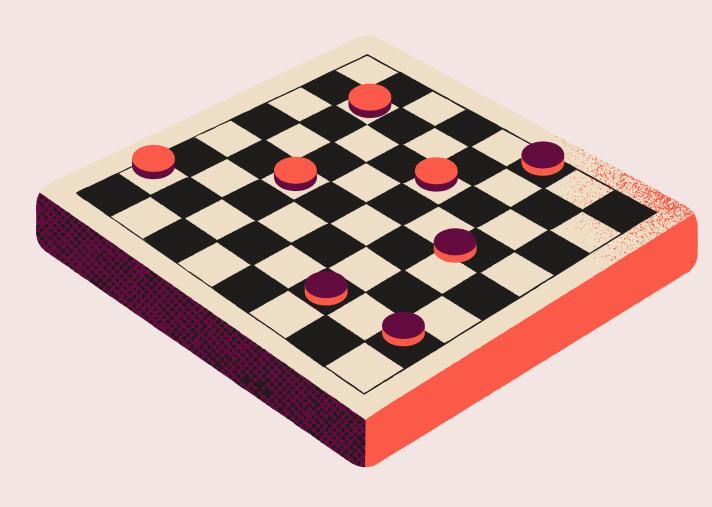
Concept Mapping

Students create diagrams linking key climate change concepts, such as carbon cycles, greenhouse effects, and renewable energy.

Visualizes connections between topics, aiding retention and comprehension.

Interactive Gamification

Use educational games or simulations to assess learning in an engaging way.





Written Assessments

- Essays and Reports: Analyze specific climate issues, such as the effects of global warming on biodiversity or economic policies for climate mitigation.
- Open-Ended Questions:

 Encourage students to

 articulate their understanding and viewpoints in depth.

Community-Based Assessments

Students engage with their communities by conducting surveys, hosting workshops, or creating awareness campaigns. Evaluates practical application of knowledge and fosters civic responsibility. Example: Organize a tree-planting drive and assess its environmental impact.





Digital Portfolios

Students compile their work over time, including projects, presentations, and reflections. How It Helps:

Tracks progress and demonstrates cumulative learning.

Post-Lesson Feedback

Self-Assessment:
Students reflect on their learning, identifying strengths and areas for improvement.

Exit Tickets: Short responses at the end of lessons to gauge immediate understanding.



RULES OF EVALUATION

- Be Fair and Objective: Avoid biases and ensure all students are assessed based on the same criteria.
- Avoid Being Too Harsh: Constructive feedback is key; focus on guiding improvement rather than overly criticizing mistakes.
- Ensure Clarity: Clearly communicate expectations, grading criteria, and goals to students beforehand.
- Use Multiple Methods: Combine quizzes, projects, presentations, and discussions to capture different strengths and learning styles.



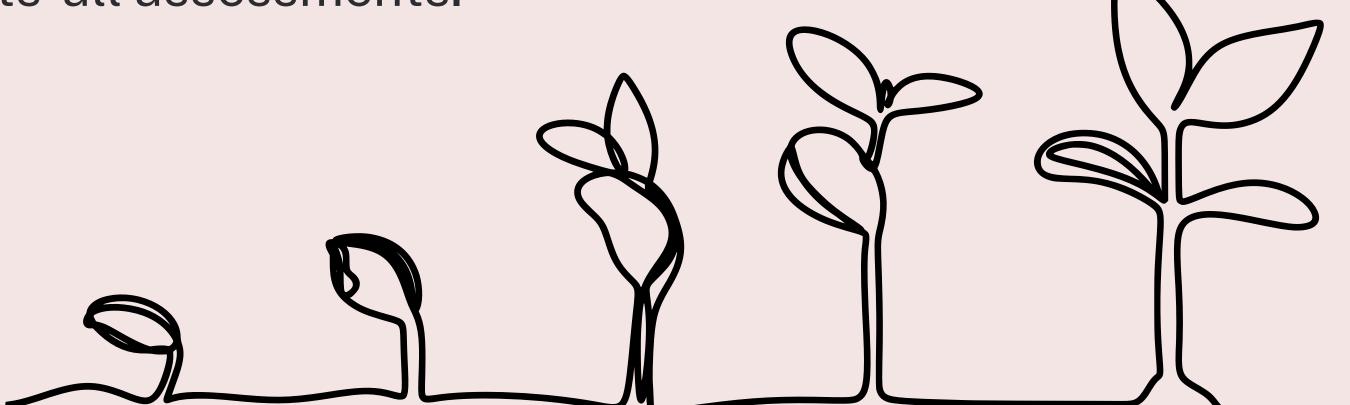
CONSTRUCTIVE FEEDBACK





RULES OF EVALUATION

- **Encourage Growth:** Emphasize learning and progress over perfection, fostering a growth mindset.
- **Provide Timely Feedback:** Offer feedback soon after evaluation so students can learn and improve.
- Maintain Transparency: Be open about how grades are assigned, and provide explanations for scores when needed.
- **Respect Individuality:** Consider individual learning paces and avoid one-size-fits-all assessments.





Thank you!





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RESOURCES:



https://www.unesco.org/en/sustainable-development/education

https://sustainabledevelopment.un.org/memberstates/sweden#:~:text=Sweden%20has%20increased%20funding%20to,and%20equality%2C%20including%20gender%20equality.

https://ecoschools-ch.org/en/what-is-eco-

schools/#:~:text=Eco%2DSchools%20was%20created%20in,ESD)%20programme%20in%20the%20world.

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%20%3A%20indifference

https://www.theguardian.com/sustainable-business/2014/nov/10/brain-climate-change-science-psychology-environment-

elections

https://www.britannica.com/biography/Greta-Thunberg

https://beahrselp.berkeley.edu/

