The Role of Education in Climate Change Awareness: Building Resilient, Informed Future Leaders

OPEN: WIDE MINDS WILL FIND ECO VIRTUAL STEAM SOLUTIONS TOWARDS CLIMATE CHANGE! (WI-MI) 2022-1-RO01-KA220-SCH-00008 4942

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ICEBREAKER ACTIVITY

The Name Game

- participants stand in a circle
- facilitator starts by saying their name followed by an adjective that begins with the same letter as their name ("Creative Carol").
- The next person repeats the previous name and then adds their own.

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“We are the **first generation** to feel the effect of climate change and the **last generation** who can do something about it.”

Barack Obama, former US President

- **Curriculum Innovations for Climate Change Education**

- **The Importance of Interdisciplinary Approaches in Teaching Climate Science**

- **Utilizing Service Learning to Connect Students with Environmental Issues**

- **Engaging Parents and Community in Climate Education Efforts**
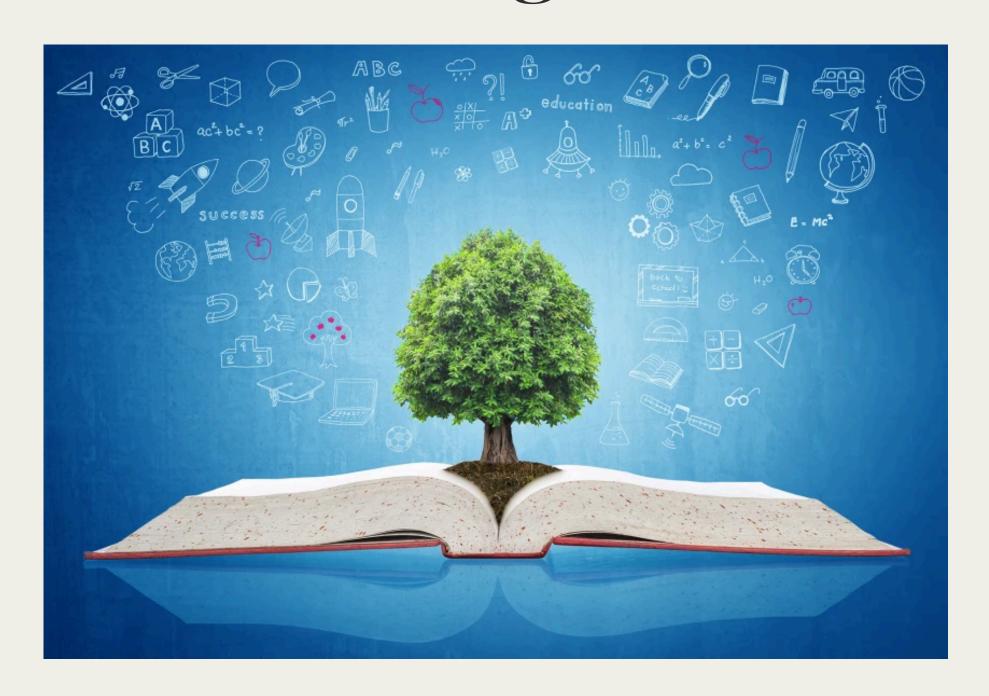
- **Digital Resources and Tools for Teaching Climate Change**

PART 1
Curriculum Innovations for Climate Change Education

- **Climate change education** helps people understand and address the impacts of the climate crisis, empowering them with the knowledge, skills, values and attitudes needed to act as agents of change. (UNESCO)
- Educational systems around the world promote **climate change education** as a key component of its work in education for sustainable development.

CURRICULUM INNOVATIONS
FOR CLIMATE CHANGE EDUCATION

- **Climate change education** is crucial for empowering individuals and communities to understand and combat the challenges posed by climate change
- promote climate change education as a foundational tool to foster awareness, encourage behavioral change, and equip future generations with the skills necessary to develop sustainable solutions.

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The goals of climate change education

- **Raising awareness:** Climate change education aims to raise awareness about the reality and severity of climate change and to help people understand its causes and consequences.
- **Building knowledge:** Climate change education aims to build knowledge and understanding of the science behind climate change, as well as the social, economic, and political factors that contribute to it.

CURRICULUM INNOVATIONS
FOR CLIMATE CHANGE EDUCATION

- **Fostering critical thinking:** Climate change education aims to foster critical thinking and inquiry, encouraging people to ask questions, challenge assumptions, and evaluate evidence related to climate change.

- **Encouraging action:** Climate change education aims to encourage people to take action to mitigate and adapt to climate change, including through personal lifestyle changes, advocacy, and participation in community-based initiatives.

- **Supporting policy development:** Climate change education aims to support the development of policies and strategies to address climate change, including through informed public engagement and dialogue.

Why is it important to study climate change?

- **Climate change** can have significant impacts on ecosystems, including changes in the timing of seasonal events, shifts in species distributions, and increases in the frequency and intensity of extreme weather events such as hurricanes, floods, and wildfires.
- **Climate change** can also have negative impacts on human health, including increased air pollution, more frequent heat waves, and the spread of disease-carrying insects.

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How has climate change education changed over times?

- There has been a significant increase in awareness about climate change and its impacts on the planet and human societies. This has led to a greater emphasis on climate change education in schools, universities, and other educational institutions.
- Many schools and universities have expanded their curriculum to include courses on climate change and related topics such as sustainability, renewable energy, and environmental policy.

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Climate change as part of National curriculum

- In 2019. Croatian Ministry of Education introduced Sustainable development as one of 7 important cross-curricular themes within National Curriculum

- The cross - curricular theme Sustainable Development encompasses all three dimensions of sustainability – environmental, social and economic, and their interdependence. It prepares students for appropriate action in society in order to achieve personal and general well-being.

Climate change as part of National curriculum

- The cross-curricular theme Sustainable Development provides the student with knowledge about the needs of the modern age on a global and local level, as well as knowledge about the diversity of nature, the necessity of sustainable management of natural resources, human potential, personal and joint responsibilities and rights. It supports the development of generic skills such as entrepreneurship, innovation, critical thinking, the ability to adapt to change and the ability to solve problems.

CURRICULUM INNOVATIONS
FOR CLIMATE CHANGE EDUCATION

Climate change as part of National curriculum

- By applying practical work, students are encouraged to behave responsably using natural resources and energy, locally produced food, rational treatment of waste, used materials, active work and cooperation in the community.
- Learning and teaching of the cross-curricular theme Sustainable Development seeks to raise awareness and deepen understanding of all issues related to sustainability, including climate change.

CURRICULUM INNOVATIONS FOR CLIMATE CHANGE EDUCATION

Teaching climate change in classrooms

- Teachers need to be well-prepared to teach climate change, which means having a strong understanding of the science and being able to address the range of student emotions that may arise.
- Climate change can be taught in a variety of subjects, including science, social studies and other subjests.
- There are a number of effective teaching strategies that can be used to teach climate change, such as using hands-on activities, engaging with guest speakers and having students conduct research projects.

CURRICULUM INNOVATIONS
FOR CLIMATE CHANGE EDUCATION

Examples of good practices that can be used in classrooms

- https://climatechange.stanford.edu/curriculum/middle-school-curriculum
- https://climate.nasa.gov/for-educators/
- https://climatekids.nasa.gov/
- https://cleanet.org/clean/literacy/index.html
- https://www.groundworkhv.org/programs/sustainability-education/climate-change-curriculum/#video

CURRICULUM INNOVATIONS
FOR CLIMATE CHANGE EDUCATION

Examples of good practices that can be used in classrooms

- https://www.jpl.nasa.gov/edu/
- https://www.britishcouncil.org/climate-connection/get-involved/resources-school-teachers
- https://thegrid.org.uk/leadership-and-management/climate-change-and-sustainability/curriculum
- https://www.energy.gov/energysaver/spark-squad-comic-books

THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

- Climate change is often confined to science class, but it should be considered an interdisciplinary issue that spans subjects and grade levels
- Combining several content areas can guide students to develop a deep understanding of how climate change affects them and their community.
- Example of good practice as introduction video to the topic – **https://www.youtube.com/watch?v=1fRyaodyekY**

Problems faced by teachers

- The results of the nationwide survey, **Teaching climate change and sustainability: A survey of teachers in England**, published by the UCL Centre for Climate Change & Sustainability Education and published on 13th July 2023, found that teachers from all subjects and at all stages **need more support to help them embed climate change across the curriculum.**

Problems faced by teachers

- teachers from all subjects and all stages of schooling can play a part in climate change education, but they need support to do this
- what teachers need is to be provided with high-quality professional development which is tailored to their particular subject and stage needs.

THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

What is the benefit for students to hear about climate change in all their classes?

- if students keep on hearing something over and over again, it's going to click for them, and they're going to be able to see it outside of their classroom.

- The more that teachers can bring current events and what's happening, the more that students will understand what's happening right now and what they can do about it.

THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

How can I actually implement it in my classroom?

- **Pre-instructional planning** - plan and establish the topics students will examine. Develop an action plan—a set of notes and open-ended questions—that can help guide the classroom experience, whether in person or virtual.
- **Introduce the methodology to students** - explain what interdisciplinary learning is, why it's important, and how it's different from discipline-based learning. You can show students examples of how other students have used interdisciplinary learning to create amazing work!

THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

How can I actually implement it in my classroom?

- **Take it to the classroom** – show students how to use insights from different disciplines by exploring questions with an interdisciplinary lens together.
- **Practice interdisciplinary thinking** – ask students to consider an issue using one discipline. Then, ask them to use knowledge from a different discipline to inform their analysis and find a solution. You can ask students to perform this task alone, but it's helpful to break up students into groups to promote collaboration and invite differing perspectives. Student groups can bring their work back to the entire class and refine their analysis.

How can I actually implement it in my classroom?

- **Provide feedback** – evaluate students using a detailed rubric. Aim to provide students with feedback on their ability to understand the structure and analytical framework of relevant disciplines, as well as how they use knowledge from those disciplines to create an integrated analysis.

- **Assessment** – teach students to self-evaluate regularly throughout each project, assignment, or analysis. Ask students to rate themselves on their ability to identify and apply multiple disciplines relevant to the issue or problem they're studying, synthesize insights from multiple disciplines and integrate ideas across disciplines.

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THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

8 Ways To Teach Climate Change In Almost Any Classroom

- Teachers always say they are searching for more ideas and resources to take on the topic of climate change. Here are some thoughts about how to broach the subject with students, no matter what subject you teach:

https://www.npr.org/2019/04/25/716359470/eight-ways-to-teach-climate-change-in-almost-any-classroom

THE IMPORTANCE OF INTERDISCIPLINARY APPROACHES IN TEACHING CLIMATE SCIENCE

How to integrate climate education into different subjects in your timetable

https://earthwarriorsglobal.com/how-to-integrate-climate-education-into-different-subjects-in-your-timetable/

https://teach-climate.net/teacherguides/ideas-for-elementary-school-teachers/

PART 3
Service learning

What is service learning?

- **Service Learning** is an educational approach where a student learns theories in the classroom and at the same time volunteers and engages in reflection activities to deepen their understanding of what is being taught.
- As a result of **service learning**, students learn more about the community and themselves while fulfilling a need in the community and meeting classroom or degree requirements.

What is service learning?

- **Service Learning** is important because it connects student learning in the classroom with real-world experiences in the community. Students who participate in it are more deeply engaged in their local communities, gain practical skills, develop their career and personal interests, and are usually more engaged citizens.

Service learning stages can be seen in a video –
https://www.youtube.com/watch?v=kFd-yiAfrmE

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Service learning and climate change education

- **Service Learning** is a wonderful, inclusive, and effective way for teachers, students, and schools to contribute in positive ways to climate change education.
- By engaging them in learning about **real-world situations**, we can support them in taking thoughtful and strategic action, and they can contribute positively to the **well-being of people and the environment**. When learning is applied in real-life situations, the purpose of that learning becomes so obvious and meaningful.

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Service learning and climate change education

Examples of good practices that can be implemented in schools:

https://www.youtube.com/watch?v=7t3oZMX8uGw

https://www.youtube.com/watch?v=FIDqn2gsxmg&t=27s

PART 4
Engaging Parents and Community in Climate Education Efforts

The importance of parental involvement

- the extent to which schools nurture positive relationships with families — and vice versa — makes all the difference
- students whose parents stay involved in school have better attendance and behavior, get better grades, demonstrate better social skills and adapt better to school.

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The importance of parental involvement

Three key parent behaviors are the most accurate predictors of student achievement, transcending both family income and social status:

- creating a home environment that encourages learning;
- communicating high, yet reasonable, expectations for achievement;
- staying involved in a child's education at school.

The importance of parental involvement

Parental involvement is the active, ongoing participation of a parent or primary caregiver in the education of a child. Parents can demonstrate involvement at home by:

- reading with children;
- helping with homework;
- discussing school events;
- attending school functions, including parent–teacher meetings;
- volunteering in classrooms.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Why Is It Important to Involve Parents in School?

It Benefits Students

Children whose families are engaged in their education are more likely to:

- earn higher grades and score higher on tests;
- graduate from high school and college;
- develop self-confidence and motivation in the classroom;
- have better social skills and classroom behavior.

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Why Is It Important to Involve Parents in School?

It Positively Influences Children's Behavior

- Decades of research have made one thing clear: parental involvement in education improves student attendance, social skills and behavior. It also helps children adapt better to school.

Why Is It Important to Involve Parents in School?

It Benefits Teachers

- Because it improves classroom culture and conditions, parent involvement also benefits teachers. Knowing more about a student helps teachers prepare better and knowing that they have parents' support ensures that teachers feel equipped to take academic risks and push for students to learn more.

The Imperative Role of Parental Education in Addressing Climate Change

- In a world where climate change poses a growing threat to our planet, being a responsible parent involves more than just providing for your child's immediate needs.
- It requires a commitment to educating yourself about climate change and taking action to safeguard the planet for future generations.

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ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

How to act as a parent in Addressing Climate Change?

- **Understanding the urgency** – climate change is not a distant problem; it's happening right now.
- **Protecting Your Child's Future** – the most immediate reason to educate yourself about climate change as a parent is to protect your child's future.
- **Setting a Positive Example** – your actions can shape their perspective on climate change and motivate them to take action as well.
- **Fostering Critical Thinking** – educating yourself about climate change allows you to engage in informed discussions with your child.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

How to act as a parent in Addressing Climate Change?

- **Reducing Your Carbon Footprint** - as a parent, you can reduce your family's carbon footprint through lifestyle changes, such as using energy-efficient appliances, reducing waste, and adopting sustainable transportation options.
- **Supporting Climate-Friendly Policies** - by staying informed about climate change, you can advocate for policies and initiatives prioritising environmental sustainability.

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Community Science Projects

- **Community science projects** are an important tool in teaching and addressing climate change.
- They allow students to actively engage in and contribute to scientific research that can help us better understand the impacts of climate change on our communities and the environment. This hands-on approach to learning can be more effective than traditional classroom teaching and can help students develop critical thinking skills and scientific literacy.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Community Science Projects

- **Community science projects** can help students develop a sense of ownership and responsibility for their local environment and community. By working on projects that address local environmental issues, students can see the direct impact of their efforts and develop a sense of agency and empowerment.

- **Community science projects** can help raise awareness about climate change and its impacts, promoting greater understanding and concern about this critical issue.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Community Science Projects

- **Community science projects** allow students to work with members of their community to address local environmental challenges, promotes community engagement and collaboration.
- **Community science projects** can promote interdisciplinary learning by integrating science, technology, engineering, art, and maths (STEAM) fields. This approach can help students develop a more holistic understanding of climate change and its impacts, as well as the various ways that different fields can contribute to addressing global challenges.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Teacher role in Community Science Projects

- Teachers play an important role in promoting and implementing community science projects against climate change in schools.
- They are the drivers of engagement by implementing STEAM projects into their lessons and curriculum.
- The teachers' role in bringing forward valuable projects that really support the student's learning success and that can have a positive impact on the (local) community is ineligible.

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Teacher role in Community Science Projects

- **Identify local environmental challenges:** Teachers can work with students to identify local environmental challenges related to climate change
- **Develop project ideas:** Teachers can work with students to develop project ideas that address these environmental challenges,
- **Partner with community organisations:** Teachers can partner with local community organisations,
- **Encourage interdisciplinary collaboration:** Teachers can encourage interdisciplinary collaboration to provide students with opportunities to develop a wide range of skills and knowledge.

Teacher role in Community Science Projects

- **Emphasise Creativity:** Encourage creativity and artistic expression in the project
- **Facilitate project implementation:** Teachers need to provide guidance and support to students as they implement their community science projects
- **Evaluate and Monitor:** it is important to evaluate and monitor the success of the project over time.
- **Share project outcomes:** Teachers can share project outcomes with the broader community

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Good examples of Community Science Projects

- https://education.nationalgeographic.org/resource/citizen-science-projects/
- https://www.experientiallearningdepot.com/experiential-learning-blog/20-citizen-science-projects-for-students-of-all-ages
- https://www.twinkl.hr/blog/15-meaningful-community-engagement-projects-for-schools-this-holiday-season
- https://www.collegetransitions.com/blog/examples-of-community-service-projects/

ENGAGING PARENTS AND COMMUNITY IN CLIMATE EDUCATION EFFORTS

Good examples of Community Science Projects

Community Growing Project -
https://www.youtube.com/watch?v=g4oZ7ixjVC4
Making our schools green -
https://www.youtube.com/watch?v=fm-13qzHWeg
School tree-planting & climate action -
https://www.youtube.com/watch?v=z3_8R8FqGU4

PART 5
Digital Tools

Digital tools

- **Digital tools** are software and online resources that help people do many tasks easily.
- They include apps like word processors and spreadsheets, as well as software for graphic design, data analysis, and project management.
- These tools help people be more productive, work together, and communicate better.

What are the Benefits of Using Technology as a Tool in the Classroom?

- **Enhanced Engagement:** Educational technology can make learning more interactive and engaging through multimedia content, gamification, and interactive simulations, capturing students' interest more effectively than traditional methods.

- **Personalized Learning:** Technology allows for adaptive learning platforms that cater to individual students' needs and learning paces, providing tailored resources and assessments to help each student succeed.

What are the Benefits of Using Technology as a Tool in the Classroom?

- **Efficient Assessment & Feedback:** Tools such as digital quizzes and automated grading systems enable educators to quickly assess student progress and provide instant feedback, saving time and enhancing the learning process.
- **Access to Diverse Resources:** Technology provides students with access to a wealth of online resources, including educational videos, interactive modules, and scholarly articles, broadening their learning materials beyond textbooks.

What are the Benefits of Using Technology as a Tool in the Classroom?

- **Collaborative Learning Opportunities:** Various learning platforms offer features like discussion boards, group chats, etc to facilitate teamwork and communication among students. Thus, technology tools can foster collaboration and teamwork.
- **Streamlined Administrative Tasks:** Technology simplifies a lot of daily tasks like attendance, lesson planning and routine interactions with parents. Educators can use technology for these tasks and focus more on teaching.

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What are the Benefits of Using Technology as a Tool in the Classroom?

- **Data-Driven Insights:** educational apps often include analytics features that provide valuable insights into student performance and engagement. These insights help educators make informed decisions and take the right actions.
- **Flexible Learning Environments:** Technology supports both classroom learning and remote learning, offering great flexibility for learners and educators alike. This is beneficial in accommodating various learning preferences and situations.

What are the Benefits of Using Technology as a Tool in the Classroom?

- **Professional Development:** Thanks to technology, many educational institutes and universities are offering certification courses and online degree courses for teachers enabling them to acquire new skills and learn effective teaching techniques. Teachers can also join professional networks and attend webinars to follow industry updates.

DIGITAL RESOURCES AND TOOLS FOR TEACHING CLIMATE CHANGE
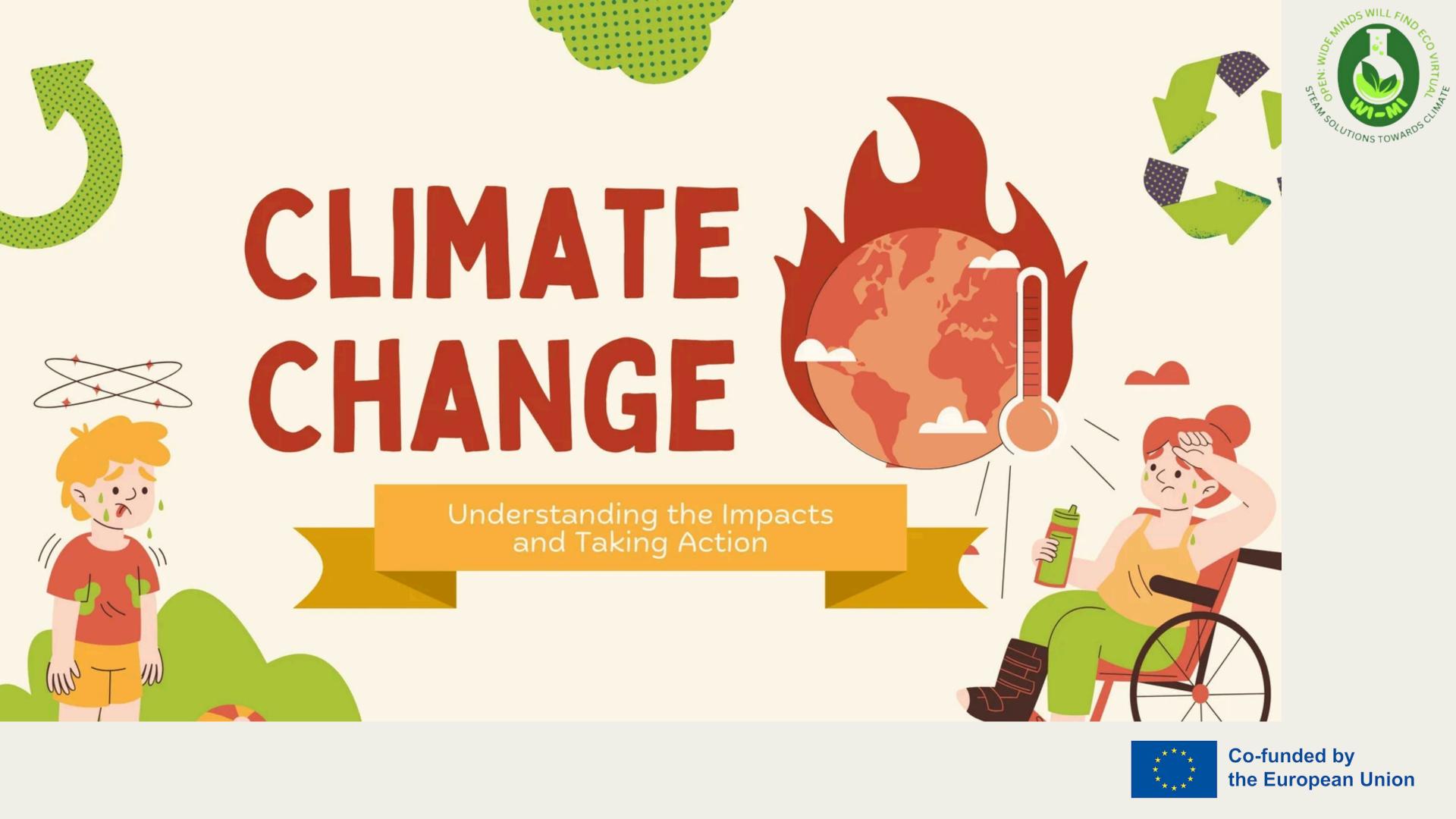
Good examples of digital tools and resources

- https://www.cloudwise.cool/article/6-free-resources-to-teach-about-climate-change/
- https://www.climate.gov/teaching/toolbox
- https://altc.alt.ac.uk/blog/2023/02/5-interactive-climate-change-education-tools-to-wow-your-students/#gref
- https://www.epa.gov/climate-change/climate-change-resources-educators-and-students

Good examples of digital tools and resources

- https://www.oerproject.com/Climate-Project
- https://stemteachingtools.org/sp/climate-learning
- https://www.commonsense.org/education/lists/climate-change-resources-for-students-and-teachers
- https://learning.teachforall.org/climate-ed/climate-ed-resources
- https://teachingthefuture.eu/modules/

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CLIMATE CHANGE

Understanding the Impacts
and Taking Action

Thank you!

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