Climate Change Education (CCE): teaching resources

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Introduction

Practical climate change education (CCE) teaching resources primarily designed for staff that currently don't include CCE in their teaching - subject areas that already include CCE might find these resources, such as the example learning outcomes, a useful checklist.

See CIE's introductory [Learn more about Education for Sustainable Development (ESD)](#) webpages for more on the theory and practice behind climate change education.

If you have expertise on this topic and know of resources that you think would be useful to share across other subject areas, please contact cie@liverpool.ac.uk

Considerations for embedding climate change education into your teaching

- CCE can be used as a topic for wider student sustainability competency development (developing student's agency to influence change) using systems thinking, futures thinking and problem-centred learning activities - see the [ESD toolkit resources.](#)
- Foster opportunities where possible for your students to explore and reflect in a supportive environment their preconceptions, emotions and values on this issue. Some students may be very concerned, some indifferent, and some possibly reject the science behind climate change.
- Explore possibilities for co-creating learning activities with students so that they have some input to specific climate change topics that they find meaningful for example, by geographical location, business sector, or impact on different communities.
- Consider co-teaching with academic colleagues to pool expertise – contact CIE cie@liverpool.ac.uk as we may be able to help you connect across departments.
- Communicate clearly to students any employability and green skills that they will be developing and their relevance to possible career paths.
- Direct interested students, if appropriate, to extra-curricular CCE resources to cover topics that you don't include in your teaching - see the 'Extra-curricular resources for students' section below.

A syllabus for climate change education

Relevant to your subject area consider how you could incorporate any of the following CCE topic areas into your teaching:

- Causes of anthropocentric climate change.

- Global and local impacts of climate change.
- Different stakeholder's perspectives on climate change.
- Interlinkages between climate change and other sustainability challenges.
- Variety of available climate change solutions.
- Social and environmental justice implications for different climate change solutions.
- Basic understanding of why the climate is changing.
- Links between climate change and ecosystems decline.
- Severity of the risk climate change poses.
- Recognition of the need for urgent worldwide coordinated responses.
- Awareness of the scientific process.
- How social norms and practices are driving climate change.
- The ethics of global equality and resource distribution affected by climate change.
- Students emotional responses to the climate crisis.
- Critical reflection on the consequences that decisions and lifestyles, particularly in the Global North, have on the most vulnerable populations around the world.

Developed from: UK Universities Climate Network (UUCN) report [Mainstreaming Climate Change Education in UK Higher Education Institutions](#).

Examples of climate change education across different subject areas

For subject areas that commonly don't include CCE here are a few example topic areas and learning activities:

Archaeology

- How is climate change impacting on cultural heritage, and how does cultural heritage create communities of cohesion and belonging.

English

- Have students critically appraise nature writing on climate change.

History

- What is the historical causation for climate change? How should we seek to describe and analyse it?

Nursing

- Discussions about possible effects of climate change on disease distributions (e.g. malaria).

- Discussion of the documented effects of lifestyle changes on health to give an insight into changes now happening in our own population. For example, increasing rates of skin cancer due to popularity of sunbathing.

Music

- What might be the consequences of global warming on the music and music traditions of African peoples and communities who have to leave their homelands due to drought and famine?

- How might music have contributed to the problem? (Example: the glorification of the automobile in popular music.)

Media and communications

- Analyse the ways in which the environment is constructed and contested, by examining the role of science, media and culture in the communication of environmental issues.

- What underlies our consumer and media culture?

Developed from: [Sustainability Education: Perspectives and Practice Across Higher Education](#)

[Climate Solutions Lab Syllabus Bank](#) - examples of course descriptions from a range of subjects from different universities across the world. Includes examples from non-natural and physical sciences:

Psychology: moral psychology and climate change

There's an old saying that if you want to change the world, you need to know which levers to pull. In this course, we'll consider some of those levers, especially those that lie within ourselves. We'll use research in the interdisciplinary field of moral psychology to explore the philosophic and ethical facets of climate change and aim for a better understanding of what exactly it is about the climate crisis that makes it so difficult for us to grasp and effectively act on.

Sociology: climate and social vulnerability

Vulnerable, at risk, prone, fragile, precarious – coping, secure, adapted, resilient. What do these terms mean? How do they and the concepts behind them inform our approach to reducing the likelihood of damage in the face of climate stress? Climate extremes and climate change call for and justify policies to protect exposed and sensitive individuals and groups. Why, however, are these people vulnerable in the first place? How does gender, ethnicity, race, caste, class, religion, place of origin, age, profession, education shape people's risk? Who is vulnerable and how did they come to be exposed and sensitive?

Law: climate change law and policy

The course aims to provide a basic understanding of the climate change challenge and key legal mechanisms and policies related to climate change mitigation and adaptation. It focuses on international and EU law, while also considering examples from national jurisdictions.

Political sciences: climate change and conflict

Climate Change and Conflict explores how climate change influences cooperation and conflict within nation-states, examining who are the "winners" and who are the "losers." Using a social scientific approach that emphasises formal modelling and empirical analysis, students will consider how climate change impacts the availability and cost of a variety of natural resources. The course will begin with an introduction to necessary scientific frameworks and models, including integrated assessment modelling of economics and game-theoretic models of conflict. Such tools will be applied to different aspects of the climate-conflict nexus, and students will explore the range of policy interventions that can either increase cooperation or conflict.

Health sciences: climate risk and health solutions

Climate risks are no longer theoretical. This course provides students with a broad overview of the health consequences of climate change resulting from changing temperatures, extreme weather, fires, air pollution, and water quality. The course will introduce students to practical solutions that both reduce greenhouse gas emissions and improve human health. These solutions include energy efficiency and decarbonisation in buildings, electrifying transportation, changing food production, and engagement with healthcare organisations. Students will be exposed to a range of practitioners working to implement solutions in a variety of sectors. They will gain practical skills needed to support the development of regulations, policies, and programs. Assignments will give students experience developing written materials and practicing oral skills to engage in climate policy work.

UK Universities Climate Network Briefings – scroll to base of webpage to find 'Mainstreaming climate change education in UK HEI's case studies.'

Embedding research-based education for sustainable development and climate education in HE curricula Strathclyde University

The University of Strathclyde are embedding Research-Based Education (RBE) for Sustainable Development into undergraduate curricula using an innovative pedagogy called Vertically Integrated Projects (VIP) and aligning this with United Nations Sustainable Development Goal (UN SDG)-focused research. The development of student-centred Climate Education workshops is being used to ensure students are offered joined-up Climate Education activity that can support Strathclyde's broader Education for Sustainable Development agenda.

Data sets and media for climate change education

This list of resources is by no means exhaustive – if you have additional relevant resources not on this list, please contact cie@liverpool.ac.uk

Causes of anthropocentric climate change

UNCC: Learn Test your climate change IQ – free online quiz anyone can take and share their results.

Climate science: what you need to know – 6 minute introductory video from a non-technical perspective.

Climate change the state of the science - 4 minute YouTube animation on the causes and impact of climate change (based on the fifth IPCC report) from the Globais.org Climate crisis resources

IPCC reports International – International Panel on Climate Change reports.

UN CC:e-learn– catalogue of useful introductory online climate change courses that typically take a few hours to complete.

Office for Climate Education pedagogic resources database - most resources are aimed at school level, but you might find some basic introductory resources useful to your students.

Global and local impacts of climate change

Globaia human cost of climate change – interactive media showing the impact of climate change on human habitation.

The carbon map – interactive data base illustrating the comparative cause and consequences of climate change by geographical regions.

IPCC YouTube channel playlists

Our World in Data Environmental impacts of food production

Sea level rise map and coastal flood tool

[World Weather Attribution](#) - uses weather observations and climate models to understand how climate change influences the intensity and likelihood of extreme weather events.

Different stakeholder's perspectives on climate change

[The world's largest survey on climate change is out – here's what the results show](#) – The United Nations Development Programme (UNDP).

[COP29: What are NDCs and why do they matter?](#) - World Economic Forum's critical review of nationally determined contributions (NDC's) by different countries, and associated geopolitics.

[A framework for stakeholder engagement on climate adaptation Climate Adaptation National Research Flagship Working Paper Number #3](#)

Interlinkages between climate change and other sustainability challenges

[Harnessing Climate and SDGs Synergies](#) - UN Department of Economic and Social Affairs Sustainable Development.

[Global footprint network](#) - ecological footprint of different countries.

Variety of available climate change solutions

SDGs Academy Library [Goal 13 Climate Action resources](#) – includes introductory videos on public policy, business solutions, renewable energy, nature-based solutions, and climate engineering.

[Net Zero Tracker](#)

[Climate Action Tracker](#)

[Climate math: What a 1.5-degree pathway would take](#) - McKinsey sustainability.

[UK National Grid renewable energy](#)

[UN Climate Change 2023 Highlights](#)

[IEA 50 renewable energy tracker](#)

[Co-benefits of climate change mitigation in the UK: What issues are the UK public concerned about and how can action on climate change help to address them?](#) - Imperial College London's Grantham Institute.

[Co-benefits of Climate Change Mitigation -](#) climate action encyclopaedia of the UN Sustainable Development Goals.

[Our Positive Tipping Points are bringing change to the climate crisis](#) - Exeter University's Global Systems Institute.

[Co-Benefits of Climate Change Mitigation and Adaptation Actions](#) - UK Universities Climate Network.

[Monitoring, learning from and accelerating the transformational changes required to protect both people and the planet](#) – Systems Change Lab.

[Clean Power 2030](#) – National Energy System Operator (NESO) analysis on the foundations for clean power, the core elements of a clean power system, our pathways, critical enablers and the benefits and costs.

[Energy Dashboard Live](#) - this gives a snapshot of the current UK energy mix in a nice simple manner.

[Electricity Maps](#) - this provides a snapshot of electricity generation worldwide with a carbon intensity outlined.

[UK Energy Research Centre](#) - a UKRI funded programme which has been running for a number of years, and there is useful information across a range of topics.

[UK action on climate change](#) - monitoring the actions taken by the UK Government to tackle and adapt to climate change.

Social and environmental justice implications for different climate change solutions

[Climate change is a matter of justice – here's why](#) – UNDP.

[Human mobility, climate change, and health: unpacking the connections](#) - The Lancet Planetary Health.

[Gender, cultural identity, conflict and climate change](#) - Conciliation Resources a group of passionate peacebuilders committed to stopping violent conflict and creating more peaceful societies everywhere.

[Explainer: How gender inequality and climate change are interconnected](#) - UN Women.

Basic understanding of why the climate is changing

[SDGs Academy Library - SDG 13 Climate Action case studies](#) - wide range of video resources on different aspects of climate change.

[Paleoclimate Evidence of Climate Change](#) - SDGs Academy Library.

[Climate Watch Historical GHG Emissions](#) - online platform designed to empower policymakers, researchers, media and other stakeholders with the open climate data, visualisations and resources they need to gather insights on national and global progress on climate change.

Links between climate change and ecosystems decline

[IPCC reports 'ecosystems' search](#)

Severity of the risk climate change poses

['Climate crunch time is here,' new UN report warns](#)

[New UN Climate Change Report Shows National Climate Plans 'Fall Miles Short of What's Needed'](#)

Recognition of the need for urgent worldwide coordinated responses

[IPCC special report global warming of 15C](#)

[Race to Zero](#) - the world's largest coalition of non-state actors taking immediate action to halve global emissions by 2030.

Awareness of the scientific process

[Essential climate variables](#) - The Global Climate Observing System.

[UUCN communicating climate risk a handbook](#)

How social norms and practices are driving climate change

[How social norms are often a barrier to addressing climate change but can be part of the solution](#) - Behavioural Public Policy.

The ethics of global equality and resource distribution affected by climate change

[UNESCO Climate change: ethical and social dimensions](#)

Students emotional responses to the climate crisis

[Exploring psychological responses to the climate crisis to strengthen relationships and resilience for a just future](#) – The Climate Psychology Alliance.

[The Climate Psychology Alliance: useful links and resources](#)

[Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey](#)

Critical reflection on the consequences that decisions and lifestyles, particularly in the Global North, have on the most vulnerable populations around the world

[Poverty, Livelihoods and Sustainable Development](#) - IPCC AR6 report: Chapter 8.

Extra-curricular resources for students

[WWF Footprint Calculator](#)

[BBC climate change food calculator](#)

[TUC greenhouse gas footprint calculator](#)

[EAUC travel better package](#)

[NUS Students Organising for Sustainability Carbon Targets](#)

[Education yourself about climate change](#) – the 'Student Sustainability Hub' in Canvas that all students have automatic access to has some short introductory resources developed by student interns on the basics of climate change. (you can circulate this link to your students but it's not accessible to staff – see below)

[Student Sustainability Hub staff version](#) - staff can gain access to a staff only version of the 'Student Sustainability Hub' to review these resources.

[Climate Fresk](#) – is a free international climate change programme of online and face to face workshops that you can direct your students to – and take yourself.

(CIE staff are Climate Fresk workshop facilitators – please contact cie@liverpool.ac.uk for more information.)

Books:

[How Bad Are Bananas](#) - influential book on the real impact of each of the things we do and buy

[There is No Planet B](#) - feeding the world, climate change, biodiversity, antibiotics, plastics – the list of concerns seems endless. But what is most pressing, what are the knock-on effects of our actions, and what should we do first?

Example learning outcomes for climate change education

At the end of the module/ programme students will be able to:

Causes of anthropocentric climate change

- Differentiate between natural and human-induced causes of climate change.
- Assess the role of industrial activities, deforestation, and agriculture in contributing to greenhouse gas emissions.
- Critically evaluate the impact of fossil fuel consumption on atmospheric CO2 levels.
- interpret climate models to predict future climate scenarios based on current emission trends.
- Evaluate the reliability and limitations of different climate models in forecasting climate change.
- Examine the socio-economic factors that drive human activities contributing to climate change.

- Discuss the implications of climate change on global economies and vulnerable populations.

Global and local impacts of climate change

- Analyse the global consequences of climate change, including sea level rise, extreme weather events, and biodiversity loss.
- Evaluate the impact of climate change on global food security, water resources, and human health.
- Investigate the specific impacts of climate change on local ecosystems, economies, and communities.
- Compare and contrast the effects of climate change in different geographic regions and socio-economic contexts.
- Examine the short-term, medium-term, and long-term consequences of climate change.
- Analyse historical climate data to understand past climate changes and predict future trends.
- Assess the effectiveness of local and global adaptation strategies to mitigate the impacts of climate change.
- Propose innovative solutions to enhance community resilience to climate-related hazards.
- Discuss the socio-economic disparities in the impacts of climate change and the concept of climate justice.
- Evaluate the role of international agreements and policies in addressing the consequences of climate change.
- Conduct independent research on the consequences of climate change in specific regions or sectors.

Different stakeholders perspectives on climate change

- Identify and categorise the various stakeholders involved in climate change, including governments, businesses, non-governmental organisations (NGOs), and local communities.
- Analyse the roles and responsibilities of each stakeholder group in addressing climate change.
- Evaluate the diverse perspectives and interests of different stakeholders regarding climate change policies and actions.
- Discuss the potential conflicts and synergies between stakeholder groups in climate change mitigation and adaptation efforts.
- Examine the role of international organisations, such as the United Nations, in coordinating global climate change initiatives.
- Assess the effectiveness of national and local government policies in addressing climate change and promoting sustainable development.
- Investigate the impact of corporate practices on climate change and the environment.

- Analyse corporate social responsibility (CSR) initiatives and their effectiveness in reducing carbon footprints and promoting sustainability.
- Study the role of local communities and grassroots movements in advocating for climate action and environmental justice.
- Evaluate case studies of successful community-led climate initiatives and their impact on local and global scales.
- Engage in simulations and role-playing exercises to practice negotiating and collaborating with different stakeholders on climate change issues.
- Develop strategies for effective communication and advocacy to promote climate action among diverse stakeholder groups.
- Conduct independent research to analyse the influence and power dynamics among stakeholders in specific climate change scenarios.

Interlinkages between climate change and other sustainability challenges

- Analyse the interconnections between climate change and other sustainability challenges such as biodiversity loss, water scarcity, and food security.
- Evaluate how climate change exacerbates or mitigates other environmental and socio-economic issues.
- investigate the impact of climate change on ecosystem services and their role in supporting human well-being.
- Assess the implications of disrupted ecosystem services on sustainable development goals (SDGs).
- examine the relationship between climate change and natural resource management, including land use, water resources, and energy consumption.
- Propose integrated resource management strategies that address both climate change and other sustainability challenges.
- Explore the socio-economic dimensions of climate change and its interplay with poverty, inequality, and human health.
- Discuss the role of sustainable economic development in mitigating climate change and enhancing resilience.
- analyse the effectiveness of policies and governance frameworks that address multiple sustainability challenges simultaneously.
- Evaluate the role of international agreements, such as the Paris Agreement and the SDGs, in promoting integrated approaches to sustainability.
- Apply systems thinking to understand the complex interactions between climate change and other sustainability challenges.
- Develop models and scenarios to predict the outcomes of various interventions on climate and sustainability.
- Conduct interdisciplinary research projects that explore the linkages between climate change and other sustainability issues.
- Present their findings through comprehensive reports and presentations, demonstrating their ability to integrate knowledge from multiple disciplines.

- Design and evaluate sustainable solutions that address climate change while also tackling other environmental and socio-economic challenges.
- Engage in collaborative projects to implement and test these solutions in real-world contexts.

Variety of available climate change solutions

- Identify and explain various technological, policy, and behavioural solutions to climate change, including renewable energy sources, carbon capture and storage, and sustainable agriculture practices.
- Critically evaluate the effectiveness of different climate change solutions in terms of their environmental, economic, and social impacts.
- Analyse case studies of successful and unsuccessful climate change mitigation and adaptation strategies from different regions and sectors.
- Develop and propose innovative solutions to climate change, considering feasibility, scalability, and potential barriers to implementation.
- Integrate knowledge from various disciplines (e.g., environmental science, economics, political science) to understand the complexity of climate change solutions.
- Assess the ethical implications of climate change solutions, including issues of equity, justice, and the rights of future generations.
- Communicate climate change solutions effectively to diverse audiences, including policymakers, businesses, and the general public.
- Analyse and critique existing climate policies at local, national, and international levels, and suggest improvements based on current scientific understanding.
- Collaboratively design and implement small-scale climate solutions projects within their community or campus.

Social and environmental justice implications for different climate change solutions

- Critically evaluate the effectiveness of different climate change solutions in terms of their environmental, economic, and social impacts.
- Analyse case studies of successful and unsuccessful climate change mitigation and adaptation strategies from different regions and sectors.
- Develop and propose innovative solutions to climate change, considering feasibility, scalability, and potential barriers to implementation.
- Integrate knowledge from various disciplines (e.g., environmental science, economics, political science) to understand the complexity of climate change solutions.
- Assess the ethical implications of climate change solutions, including issues of equity, justice, and the rights of future generations.
- Demonstrate their ability to communicate climate change solutions effectively to diverse audiences, including policymakers, businesses, and the general public.

- Analyse and critique existing climate policies at local, national, and international levels, and suggest improvements based on current scientific understanding.

Basic understanding of why the climate is changing

- Explain the fundamental scientific principles underlying climate change, including the greenhouse effect, carbon cycle, and energy balance of the Earth.
- Describe the historical context of climate change, including natural climate variability and the impact of human activities since the Industrial Revolution.
- Interpret climate data from various sources (e.g., ice cores, tree rings, satellite observations) to understand past and present climate trends.
- Analyse the role of human activities, such as fossil fuel combustion, deforestation, and industrial processes, in driving recent climate change.
- Describe how climate models are used to predict future climate scenarios.
- Identify and explain key climate feedback mechanisms, such as albedo changes, water vapor feedback, and permafrost thawing.
- Compare the global and regional effects of climate change, including temperature changes, sea level rise, and shifts in weather patterns.
- Integrate knowledge from disciplines such as atmospheric science, oceanography, and ecology to gain a comprehensive understanding of climate change.
- Critically evaluate scientific literature and media reports on climate change, distinguishing between evidence-based conclusions and misinformation.
- Develop the ability to effectively communicate the science of climate change to diverse audiences, including policymakers, educators, and the general public.

Links between climate change and ecosystems decline

- Explain the mechanisms by which climate change affects ecosystems, including temperature changes, altered precipitation patterns, and increased frequency of extreme weather events.
- Analyse the impact of climate change on biodiversity, including species distribution, migration patterns, and extinction risks.
- Evaluate how climate change affects ecosystem services such as pollination, water purification, and carbon sequestration.
- Assess the ways in which climate change leads to habitat alteration and fragmentation, and the subsequent effects on flora and fauna.
- Examine case studies of specific ecosystems (e.g., coral reefs, Arctic tundra, tropical rainforests) to understand the diverse impacts of climate change.
- Identify and explain feedback loops between climate change and ecosystems, such as the release of greenhouse gases from thawing permafrost or deforestation.
- Develop and evaluate strategies for ecosystem adaptation and resilience in the face of climate change.
- Integrate knowledge from ecology, climatology, and environmental science to understand the complex interactions between climate change and ecosystems.

- Analyse the implications of climate change for conservation policies, practices and propose policy recommendations to mitigate ecosystem decline.
- Conduct field studies or literature reviews on the impacts of climate change on specific ecosystems.
- Communicate the links between climate change and ecosystem decline to various stakeholders, including policymakers, conservationists, and the general public.
- Explain the ethical dimensions of ecosystem conservation in the context of climate change, considering issues of biodiversity loss and the rights of future generations.

Severity of the risk climate change poses

- Identify and categorise the various risks posed by climate change, including physical, economic, social, and health-related risks.
- Assess the severity of climate change impacts on different sectors, such as agriculture, water resources, human health, and infrastructure.
- Analyse the vulnerability of different populations and regions to climate change, considering factors such as geography, socio-economic status, and existing infrastructure.
- Evaluate the increased frequency and intensity of extreme weather events (e.g., hurricanes, droughts, heatwaves) and their implications for human and natural systems.
- Interpret long-term climate projections and scenarios to understand potential future risks and uncertainties.
- Estimate the economic costs associated with climate change impacts, including damage to property, loss of productivity, and costs of adaptation and mitigation.
- Examine the health risks posed by climate change, such as the spread of vector-borne diseases, heat-related illnesses, and respiratory issues.
- Assess the risks to ecosystems and biodiversity, including habitat loss, species extinction, and disruption of ecological processes.
- Analyse the implications of climate risks for policy-making and propose strategies to enhance resilience and reduce vulnerability.
- Explore the ethical dimensions of climate risk management, including issues of intergenerational equity and the responsibility to protect vulnerable populations.
- Develop the ability to effectively communicate the severity of climate risks to diverse audiences, including policymakers, businesses, and the general public.
- Integrate knowledge from various disciplines (e.g., climatology, economics, public health) to provide a comprehensive understanding of climate risks.
- Design and evaluate adaptation strategies to manage and mitigate the risks posed by climate change.
- Critically evaluate scientific literature and media reports on climate risks, distinguishing between evidence-based conclusions and speculative claims.

Recognition of the need for urgent worldwide coordinated responses

- Articulate the global nature of climate change and the necessity for a coordinated international response to effectively address its impacts.
- Analyse international climate agreements (e.g., Paris Agreement) and assess their effectiveness in fostering global cooperation and action.
- Identify key stakeholders in the global climate response, including governments, international organisations, NGOs, and the private sector, and evaluate their roles and contributions.
- Describe the scientific basis for the urgency of climate action, including tipping points and the time-sensitive nature of mitigation and adaptation efforts.
- Develop strategies for enhancing international collaboration on climate change, including mechanisms for technology transfer, financial support, and capacity building.
- Explain the principles of climate justice and equity, recognising the disproportionate impacts of climate change on vulnerable populations and the need for fair and inclusive global responses.
- Communicate the need for urgent and coordinated climate action to diverse audiences, including policymakers, businesses, and the general public.
- Examine case studies of successful international climate initiatives and identify best practices and lessons learned.
- Integrate knowledge from environmental science, international relations, economics, and social sciences to understand the complexities of global climate governance.
- Demonstrate skills in advocacy and leadership to promote urgent climate action at local, national, and international levels.
- Assess the ethical dimensions of global climate policies, including issues of responsibility, accountability, and the rights of future generations.
- Critically evaluate the barriers to effective global climate action and propose solutions to overcome these challenges.
- Describe the linkages between climate action and the United Nations Sustainable Development Goals (SDGs), and how coordinated efforts can advance multiple global objectives.

Awareness of the scientific process

- Develop and test hypotheses related to climate change phenomena, using appropriate scientific methods and tools.
- Analyse climate data from various sources (e.g., ice cores, satellite observations, temperature records) to draw evidence-based conclusions about climate trends and patterns.
- Describe the role of climate models and simulations in predicting future climate scenarios and evaluating the potential impacts of different variables.

- Critically evaluate scientific literature on climate change, assessing the validity and reliability of different studies and their methodologies.
- Integrate knowledge from various scientific disciplines (e.g., atmospheric science, oceanography, geology) to understand the complex processes driving climate change.
- Design and conduct experiments to investigate specific aspects of climate change, such as greenhouse gas emissions or the effects of temperature changes on ecosystems.
- Evaluate the importance of the peer review process in validating scientific research and ensuring the credibility of climate science findings.
- Communicate scientific findings on climate change to both scientific and non-scientific audiences, using clear and accurate language.
- Explain the ethical dimensions of conducting and reporting climate science research, including issues of transparency, bias, and the societal implications of scientific findings.
- Review the historical development of climate science and the key discoveries and technological advancements that have shaped our current understanding.
- Apply their understanding of the scientific method to real-world climate issues, proposing evidence-based solutions and policy recommendations.

How social norms and practices are driving climate change

- Explain the concept of social norms and how they influence individual and collective behaviours related to climate change.
- Analyse how everyday practices, such as consumption patterns, transportation choices, and energy use, contribute to greenhouse gas emissions and climate change.
- Evaluate the role of cultural values and beliefs in shaping attitudes and behaviours towards the environment and climate change.
- Explain how social norms and practices have either exacerbated or mitigated climate change impacts.
- Assess the implications of social norms for climate policy and propose strategies to shift behaviours towards more sustainable practices.
- Integrate insights from sociology, psychology, anthropology, and environmental science to understand the complex interactions between social norms and climate change.
- Develop communication strategies to promote sustainable behaviours and challenge harmful social norms related to climate change.
- Critically appraise the ethical dimensions of influencing social norms and practices, considering issues of autonomy, justice, and cultural sensitivity.
- Assess the impact of social marketing campaigns and public awareness initiatives on changing behaviours and reducing carbon footprints.
- Engage with local communities to identify prevalent social norms and practices and co-create solutions to promote sustainability.

- Critically evaluate the effectiveness of different approaches to changing social norms and practices, using evidence from behavioural science and social research.
- Compare how social norms and practices related to climate change vary across different cultural and socio-economic contexts globally.

The ethics of global equality and resource distribution affected by climate change

- Explain the concept of social norms and how they influence individual and collective behaviours related to climate change.
- Analyse how everyday practices, such as consumption patterns, transportation choices, and energy use, contribute to greenhouse gas emissions and climate change.
- Evaluate the role of cultural values and beliefs in shaping attitudes and behaviours towards the environment and climate change.
- Examine case studies of different societies to understand how social norms and practices have either exacerbated or mitigated climate change impacts.
- Assess the implications of social norms for climate policy and propose strategies to shift behaviours towards more sustainable practices.
- Integrate insights from sociology, psychology, anthropology, and environmental science to understand the complex interactions between social norms and climate change.
- Develop a communication strategy to promote sustainable behaviours and challenge harmful social norms related to climate change.
- Describe the key ethical dimensions of influencing social norms and practices, considering issues of autonomy, justice, and cultural sensitivity.
- Assess the impact of social marketing campaigns and public awareness initiatives on changing behaviours and reducing carbon footprints.
- Engage with local communities to identify prevalent social norms and practices and co-create solutions to promote sustainability.
- Critically evaluate the effectiveness of different approaches to changing social norms and practices, using evidence from behavioural science and social research.
- Compare how social norms and practices related to climate change vary across different cultural and socio-economic contexts globally.

Students emotional responses to the climate crisis

- Identify and describe your emotional responses to the climate crisis, including feelings of anxiety, grief, hope, and empowerment.
- Analyse the psychological impacts of the climate crisis on individuals and communities, including eco-anxiety, climate grief, and resilience.

- Develop and evaluate coping strategies to manage emotional responses to the climate crisis, such as mindfulness, community engagement, and activism.
- Reflect on your empathy and compassion for others affected by the climate crisis, recognising the diverse emotional experiences and challenges faced by different populations.
- Integrate knowledge from psychology, environmental studies, and sociology to understand the complex interplay between emotional responses and the climate crisis.
- Describe your emotional responses to the climate crisis effectively, and how you would foster an open and supportive dialogues different communities.
- Implement practices that build emotional resilience in the face of climate-related stress and uncertainty.
- Examine the ethical dimensions of addressing emotional responses to the climate crisis, including the responsibilities of educators, policymakers, and media.
- Identify and utilise support systems, such as counselling services, peer support groups, and community organisations, to address emotional challenges related to the climate crisis.
- Engage in advocacy and action projects that address the climate crisis, channelling their emotional responses into positive and constructive efforts.
- Engage in reflective practices to continuously assess and adapt their emotional responses and coping strategies in relation to the evolving climate crisis.
- Compare emotional responses to the climate crisis across different cultural and socio-economic contexts, recognising the global nature of the issue.

Critical reflection on the consequences that decisions and lifestyles, particularly in the Global North, have on the most vulnerable populations around the world

- Develop an understanding of how decisions and lifestyles in the Global North contribute to environmental degradation and climate change, disproportionately affecting vulnerable populations worldwide.
- Analyse the social, economic, and environmental impacts of consumption patterns, industrial activities, and policy decisions in the Global North on vulnerable communities in the Global South.
- Reflect on the ethical responsibilities of individuals and societies in the Global North to mitigate their negative impacts on vulnerable populations.
- Critically examine the consequences of Global North lifestyles on vulnerable populations, such as climate refugees, indigenous communities, and low-income regions.
- Integrate perspectives from environmental science, sociology, economics, and political science to critically assess the global interconnectedness of environmental and social issues.

- Critique existing policies and practices in the Global North, proposing more equitable and sustainable alternatives that consider the well-being of vulnerable populations.
- Identify and advocate for sustainable lifestyle choices and practices that reduce the negative impacts on vulnerable populations globally.
- Communicate the ethical and practical implications of Global North lifestyles on vulnerable populations to diverse audiences, including policymakers, businesses, and the general public.
- Critically assess the skills in advocacy and activism to promote global equity and justice, addressing the root causes of environmental and social disparities.
- Reflect on practices that you can adopt to continuously assess and adapt your own lifestyles and decisions in light of their global impacts.
- Explore the concept of global solidarity and the importance of collaborative efforts to address the shared challenges of climate change and social inequality.
- Critically evaluate the power dynamics and historical contexts that have led to the current global inequalities, fostering a deeper understanding of systemic issues.

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