Unit 7: Climate Change

Content Area: **Global Studies**
Course(s): **Global Citizenship**
Time Period: **Week 24**
Length: **4 Weeks**
Status: **Published**

Unit Overview

In this unit, students will explore public policy and NGO efforts on the issue of climate change. While seeking to understand the various causes and numerous variables involved in the global climate, students will endeavor to assess current efforts to address the problem and to create their own solutions to the problem.

Standards

SCI.7-8.5.4.8.E.a	The Sun provides energy for plants to grow and drives convection within the atmosphere and oceans, producing winds, ocean currents, and the water cycle.
SCI.7-8.5.4.8.F.a	Global patterns of atmospheric movement influence local weather.
SCI.7-8.5.4.8.F.b	Climate is influenced locally and globally by atmospheric interactions with land masses and bodies of water.
SCI.7-8.5.4.8.F.c	Weather (in the short term) and climate (in the long term) involve the transfer of energy and water in and out of the atmosphere.
SCI.7-8.5.4.8.G.1	Represent and explain, using sea surface temperature maps, how ocean currents impact the climate of coastal communities.
SCI.7-8.5.4.8.G.2	Investigate a local or global environmental issue by defining the problem, researching possible causative factors, understanding the underlying science, and evaluating the benefits and risks of alternative solutions.
SCI.7-8.5.4.8.G.a	Water in the oceans holds a large amount of heat, and therefore significantly affects the global climate system.
SCI.7-8.5.4.8.G.b	Investigations of environmental issues address underlying scientific causes and may inform possible solutions.
SOC.6.3.8.B.1	Evaluate alternative land use proposals and make recommendations to the appropriate governmental agency regarding the best course of action.
SOC.6.3.8.D.1	Engage in simulated democratic processes (e.g., legislative hearings, judicial proceedings, elections) to understand how conflicting points of view are addressed in a democratic society.
SOC.6.3.8.CS3	Critically analyze media to assess different viewpoints and detect bias, opinion, and stereotypes.
SOC.6.3.8.CS9	Make informed and reasoned decisions.
SOC.K-12.6.2.E.2	The earth is a global community where the actions of one country can affect lives in other countries.
SOC.K-12.6.2.E.3	The U.S. view of global issues and challenges may not be the same as the views held by other countries and cultures.
SOC.K-12.6.6.E.2	Technological changes impact the environment.

Essential Questions

- Who stands to gain and who stands to lose the most because of climate change?
- What populations are most at risk because of climate change?
- What is the difference between "weather" and "climate?"
- What can governments or individuals do to help create a sustainable economy for humans?
- What are the advantages of using renewable energy and what are the difficulties in adopting its use?
- What variables affect the warming or cooling of the planet?
- What are the effects of the warming or cooling of the planet?

Application of Knowledge: Students will know that...

- "Forcing mechanisms," or processes by which climate change occurs, include changes in solar irradiance, volcanic eruptions, and enhancement of the natural greenhouse effect by emissions of greenhouse gases
- "Global warming" refers specifically to human-influenced climate change
- Climate change refers to change in long-term weather patterns in a region or throughout the globe for various possible reasons
- Environmental crises like those that may be caused by climate change creates millions of "climate refugees" or "environmental migrants"
- Greenhouse gasses are gasses which absorb infrared radiation from the sun in the atmosphere

Application of Skills: Students will be able to...

- Assess their own actions and consumption practices in relation to their impact on climate change
- Discuss the ways in which climate change affects various communities
- Draft creative solutions to problems related to climate change
- Explain in detail at least one variable influencing climate change

Assessments

- Students create a compact listing practices they will dedicate themselves to and encourage in others to help combat climate change
- Group research presentation on one climate change variable
- Informal observations of writing and discussion
- Information from this unit will be included on a locally developed, mid-year or end of course benchmark assessment that may take the form of a test, performance based project, or other summative assessment
- Group action plan on aid for climate refugees

Suggested Activities

- Analyze charts, infographics, and data to assess evidence of climate change and human causality of it
- Students give feedback and provide collaborative solutions after presentations on climate change forcing mechanisms
- Watch documentary on the effects of climate change
- Write reflections or have student-led discussions of articles/news reports on climate change-related issues

Activities to Differentiate Instruction

Differentiation for special education:

- General modifications may include:
    - Modifications & accommodations as listed in the student's IEP
    - Assign a peer to help keep student on task
    - Modified or reduced assignments
    - Reduce length of assignment for different mode of delivery
    - Increase one-to-one time
    - Working contract between you and student at risk
    - Prioritize tasks
    - Think in concrete terms and provide hands-on-tasks
    - Position student near helping peer or have quick access to teacher
    - Anticipate where needs will be
    - Break tests down in smaller increments
- Content specific modifications may include:
    - one-on-one research help
    - vocabulary list supplied in advance
    - oral assessments of learning goals

Differentiation for ELL's:

- General modifications may include:
    - Strategy groups
    - Teacher conferences
    - Graphic organizers
    - Modification plan
    - Collaboration with ELL Teacher
- Content specific vocabulary important for ELL students to understand include: forcing mechanism, climate change, global warming, greenhouse gas, climate refugee

Differentiation to extend learning for gifted students may include:

- Student leadership of discussion, presentation on history of climate change

Integrated/Cross-Disciplinary Instruction

Science: environmental science, earth systems

Social Studies: migrant populations, international organizations/policy-making

Resources

- NASA reports on Climate Change:
  - http://www.nasa.gov/feature/goddard/2016/climate-trends-continue-to-break-records
  - http://climate.nasa.gov/
- Glossary of climate change terms: https://www3.epa.gov/climatechange/glossary.html#F
- Database for environmental research: https://www.dmoz.org/Science/Environment/Climate_Change
- UN Paris agreement on Climate Change: http://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm
- Documentary on climate refugees: Climate Refugees (2010), Documentary movie directed by Michael P. Nash. Starring: Lester Brown, Yvo de Boer, Paul Ehrlich

21st Century Skills

CRP.K-12.CRP1	Act as a responsible and contributing citizen and employee.
CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CRP.K-12.CRP9	Model integrity, ethical leadership and effective management.
CRP.K-12.CRP11	Use technology to enhance productivity.
CRP.K-12.CRP12	Work productively in teams while using cultural global competence.