

## Environmental Science/Art Interdisciplinary Unit Plan on Climate Change

### Objectives:

- Students will create artwork that responds to environmental issues.
- Students will study artists who address contemporary environmental issues in their work.
- Students will become familiar with and learn how to communicate effectively with their audience.
- AP Environmental Science students will instruct Basic Studio and Digital Media II students in contemporary environmental issues relating to climate change.
- Basic Studio and Digital Media II students will research specific environmental issues and artists who address them in their work.
- Basic Studio and Digital Media II students will create artwork that responds to environmental issues they have researched.
- AP Environmental students will provide feedback to the art and design students as they create their images.
- Basic Studio and Digital Media I students will compose written reflections to communicate to their audience their intentions in their environmental response artwork.
- Students will communicate about and develop their artwork using online learning tools, including Blackboard.
- Through this interdisciplinary approach, students will gain a deeper understanding of art as a vehicle for communication and transformation in environmental issues.

### Vocabulary:

#### **Art concepts:**

Visual Communication

Intentionality

#### **Environmental terminology/concepts:**

Biodiversity

Climate Change

Population

Sustainability

Food Security

Energy Resources – Fossil Fuels

Pollution

Atmosphere

### Materials:

#### *Studio Artwork:*

Choice-based materials including, but not limited to: graphite, charcoal, conte crayon, watercolor, pastel, acrylic paint, oil paint, paper, canvases, brushes, etc. Some students might work digitally.

#### *Digital Artwork:*

Drawing pencils, pens, color pencils, sketchbook (project journaling will be completed within student sketchbooks), Adobe Illustrator, Adobe Photoshop

*General:*

Laptops, projector, Internet access

Lesson/procedure:

*Quarter 1*

1. Students from AP Environmental Science will work in groups to research the causes of and environmental issues resulting from climate change. Each group (six total) will then create a PowerPoint presentation to inform the Art/Design students about one key environmental issue relating to climate change.
2. Each student presentation will be posted to Blackboard by November 1<sup>st</sup> for Art and Design students to view.

*Quarter 2*

*Week 1: Intro to environmental topics for art/design students (first full week of November)*

*Days 3-5*

3. Art/Design students will learn about several artists who address environmental issues in their artwork.
4. Art/Design students will record their research in the format of a sketchbook journal using words and images to reflect on what they discover.
5. Art/Design students will view all six PowerPoint presentations and complete a reflection on the climate change issues raised by the AP Environmental Science students.
6. Art/Design students will select a climate change issue that resonates strongly with them and begin to research an artist and the issue with the aim of creating their own artwork in response to the issue. They will consider the topic from before and after perspectives.
7. Homework: Art/Design students will create a series of thumbnail sketches in their sketchbook to brainstorm about their response to the issue.

*Week 2: Completing research and plan for artwork (second full week of November, week before Thanksgiving Break)*

*Day 1*

1. Basic Studio and Digital Media II students will participate in informal group critiques of their initial sketches to receive and provide feedback on their ideas.
2. For homework students will further develop their ideas through additional sketches, text, and possible additional research.

*Days 2-4*

3. Final research and planning of artwork to be created.
4. Art/design students will complete and submit an idea handout describing their topic, their research, artists' work that will inform their work, a timeline for their working process, and sketches for the images they plan to make.

*Week 3: Feedback from AP Environmental students and other art/design students (last week of November after Thanksgiving break)*

5. Art/Design students will post their ideas on a discussion board (or other online collaboration platform such as Voice Thread) that includes all students from AP Environmental Science, Basic Studio Art, and Digital Media II.
6. Environmental and Art/Design students will use the discussion board (or other online collaboration platform) to offer feedback on the art students' plans.

*Weeks 4-7: Art/Design students make artwork – Two weeks before Christmas Break and last two weeks of 2<sup>nd</sup> Quarter*

7. Art/Design students will create artwork for their climate change projects. This work will happen in the classroom and at home; therefore, some students will be working on other projects simultaneously.
8. Students will post sketchbook, in-progress work, and final work images on their Digication portfolios.
9. Students from all three classes will provide feedback on the final pieces through a Blackboard Discussion and through in-person group critiques.
10. All students will write a reflective essay on the environmental issue, process, and student artwork that aligns with their chosen environmental issue
11. Art/Design students will complete self-reflection/assessments in writing to submit to teachers.
12. Students will participate in an exhibit of the artwork and the reflective essays, which will be displayed with the artwork.

Assessment:

Homework preparation

Completed PowerPoint presentations and reflections (AP Environmental students) submitted to Blackboard

Group critiques

Basic Studio students will participate in an in progress critique of their drawings.

Digital Media students will participate in an in progress critique of their artwork.

All students will participate in a final presentation and critique of the artwork with their teams of environmental experts and artists.

Completed artwork created by Basic Studio and Digital Media II students

Project sketchbook journals

Digital Media II and Basic Studio students will maintain a journal about their interdisciplinary experience, including drawings and planning for final artwork, brainstorming, and reflections.

Display of artwork

Hallway bulletin board display of final artwork and potential display during STEAM presentation event

Discussion board participation

Discussion board posts ongoing throughout process  
-sharing of ideas, images, and learned content

Online group postings participation

All participating students will post through their Blackboard groups to contribute to the creation of the artwork.

Comments:

*Technology:*

- Laptops
- Scanner
- Illustrator and Photoshop CC
- Epson printer
- Blackboard learning community
- Blended learning format

*Standards:*

**College Board (AP Environmental Science):**

Understand the causes and environmental impacts of climate change.

Understand the effects of climate change on biodiversity and strategies for reducing these effects.

Understand and clearly articulate the relationship between the concepts of human population, energy, pollution, resource use, and climate change.

**CCSS Literacy Standards:**

CCR Reading Anchor #7: Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words.

CCR Writing Anchor #2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

CCR Writing Anchor #7: Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

CCR Writing Anchor #8: Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.

CCR Speaking & Listening Anchor #1: Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.

CCR Speaking and Listening Anchor #4: Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

**NAEA:**

***Visual Arts***

Artistic Process: CREATING: *Anchor Standard 1:* Generate and conceptualize artistic ideas and work. (VA:Cr1.1.IIIa)

*Anchor Standard 2:* Organize and develop artistic ideas and work. (VA:Cr2.1.IIa)

*Anchor Standard 3:* Refine and complete artistic work. VA-Cr3.1.IIa

Artistic Process: RESPONDING: *Anchor Standard 8*: Visual Imagery influences understanding of and responses to the world. VA:Re.7.2.IIa

*Anchor Standard 9*: Apply criteria to evaluate artistic work. (VA:Re9.1.Ia)

Artistic Process: CONNECTING: *Anchor Standard 10*: Synthesize and relate knowledge and personal experiences to make art. (VA:Cn10.1.IIIa)

*Anchor Standard 11*: Relate artistic ideas and works with societal, cultural, and historical context to deepen understanding. (VA:Cn11.1.IIIa)

### **Media Arts**

Artistic Process: CREATING (Conceiving and developing new artistic ideas and work)

Anchor Standard: Generate and conceptualize artistic ideas and work. (MA:Cr1.1.III)

Anchor Standard: Organize and develop artistic ideas and work. (MA:Cr2.1.III)

Anchor Standard: Refine and complete artistic work. (MA:Cr3.1.III)

Artistic Process: PRODUCING (Interpreting and sharing artistic work)

Anchor Standard: Select, analyze and interpret artistic work for presentation. (MA:Pr4.1.III)

Anchor Standard: Develop and refine artistic techniques and work for presentation. (MA:Pr5.1.III)

Anchor Standard: Convey meaning through the presentation of an artistic work. (MA:Pr6.1.III)

Artistic Process: RESPONDING (Understanding and evaluating how the arts convey meaning)

Anchor Standard: Perceive and analyze artistic work. (MA:Re7.1.III)

Anchor Standard: Interpret intent and meaning in artistic work. (MA:Re8.1.III)

Anchor Standard: Apply criteria to evaluate artistic work. (MA:Re9.1.HS.III)

Artistic Process: CONNECTING (Relating artistic ideas and work with personal meaning and external context.

Anchor Standard: Synthesize and relate knowledge and personal experiences to make art.

(MA:Cn10.1.III)

Anchor Standard: Relate artistic ideas and works with societal, cultural and historical context to deepen understanding. (MA:Cn11.1.III)

### **Next Generation Science Standards (NGSS):**

HS-ESS2-2 Earth's Systems: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.

HS-ESS2-4 Earth's Systems: Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate

HS-ESS3-5 Earth and Human Activity: Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.

HS-ESS3-6 Earth and Human Activity: Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

HS-LS2-2 Ecosystems-Interactions, Energy, and Dynamics: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.

HS-LS2-6 Ecosystems-Interactions, Energy, and Dynamics: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

HS-LS2-7 Ecosystems-Interactions, Energy, and Dynamics: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

**P21:**

- P21 Creativity and Innovation
- P21 Critical Thinking and Problem Solving
- P21 Communication and Collaboration
- P21 Information Literacy
- P21 Media Literacy
- P21 ICT (Information, Communications and Technology) Literacy
- P21 Flexibility and Adaptability
- P21 Initiative and Self-direction
- P21 Social and Cross Cultural Skills
- P21 Productivity and Accountability
- P21 Leadership and Responsibility

**Resources:**

- <https://www.arteducators.org> - National Art Education Association
- <http://nationalartsstandards.org/> - National Core Arts Standards
- <https://www.csun.edu/science/ref/curriculum/reforms/nses/> - National Science Education Standards
- <https://www.nextgenscience.org/> - Next Generation Science
- <http://ngss.nsta.org/AccessStandardsByTopic.aspx> - Next Generation Science Standards, National Science Teachers Association
- <http://www.p21.org/> - Partnership for Twenty-first Century Learning
- <https://sustainabledevelopment.un.org/> - Sustainable Development Knowledge Platform
- <https://www.un.org/sustainabledevelopment/sustainable-development-goals/> - UN Sustainable Development Goals
- <https://www.conservation.org/nature-is-speaking/Pages/default.aspx> Nature Is Speaking – videos about conservation
- <https://apcentral.collegeboard.org/courses/ap-environmental-science/course> - AP Central - AP Environmental Science
- <https://climate.nasa.gov/> - NASA Global Climate Change