

Getting Started: A Guide to Using the Curriculum

GRADE LEVELS

Clue into Climate resources have been created for grades 4-8. However, the curriculum unit is designed to be flexible and resources may be adapted for other grade levels.

MEDIA RESOURCES

- Animations
- Audio
- Diagrams
- Graphs
- Map
- Narrated slideshows
- Videos

FOR MORE INFORMATION

For additional ideas and tools, check out: www.kqed.org/education

OVERVIEW

Clue into Climate: A Digital Media-Based Curriculum Unit on Climate Change was created with input from San Francisco Bay Area teachers and advisors. The curriculum unit is comprised of four content strands, each of which includes 5-7 media resources related to the strand topic. Each strand also contains a strand guide and assessment, a background article and 4-5 lesson plans that provide information and activities to support the use of the media with students. Additionally, the curriculum unit provides a student workbook and a climate education resource guide. *Clue into Climate* resources are aligned with the California State Science Content Standards for grades 4–8 as well as the Essential Principles of Climate Literacy and other national science standards.

Clue into Climate's website on kqed.org is organized around content strands:

Strand 1: Increased Greenhouse Gases Contribute to Climate Change

Strand 2: Climate Change Affects Ecosystems and the Distribution of Organisms

Strand 3: Climate Change Affects the Water Cycle

Strand 4: Climate Change Can be Mitigated by Using Renewable Energy Sources

One the webpage for each strand, you will find:

- An overview of the strand
- A link to the strand guide, strand background article and student workbook
- Links to lesson plans followed by associated media resource/s

HOW TO USE THIS CURRICULUM UNIT

The *Clue into Climate* curriculum unit was designed to be used in multiple ways. Listed below are several ideas for integrating *Clue into Climate* resources into your teaching:

- Use the lesson plans to actively engage students in viewing the media and to reinforce the concepts through additional activities and discussion.
- Conduct an entire unit on the strand topic using a strand guide (for example, *Strand 4 Educator Guide – Renewable Energy* could be used to plan a 3-week-long unit on renewable energy).
- Use the *Clue into Climate Student Workbook* for student engagement and reflection in combination with any of the media resources or lesson plans.
- Read a strand background article to learn more about the subject area prior to teaching a lesson.
- Look in the strand guides or lesson plans for assessment ideas or climate change action items.
- Select *Clue into Climate* literacy connections to explore important literacy and real-world issues.

ADDITIONAL CURRICULAR RESOURCES

Background Articles

Organized by topic, the background articles provide educators with the background information necessary to conduct the *Clue into Climate* lessons.

Student Workbook

The workbook contains activities and information about climate change and *Clue into Climate's* literacy connections. The workbook can be used with any of the content strands as homework, as a place for reflection or as an assessment tool.

SUPPORT

Funding for “Clue into Climate: A Digital Media-Based Curriculum Unit on Climate Change” was provided by the Corporation for Public Broadcasting.

STRAND GUIDES

Strand guides provide information for teaching an entire content strand or multiple lessons. Strand guides include

- a strand overview
- a unit plan
- subjects and content standards (selected grade levels)
- strand essential questions
- literacy connection information
- additional standards information
- multiple choice and short answer assessment with answer key
- project-based assessment
- interdisciplinary connections
- an “Explore Your Earth” section that includes outdoor activities
- a “What Can We Do At School?” section with ideas for taking action at school
- additional resources specific to the Bay Area

LESSON PLANS

Clue into Climate **lesson plans** offer questions, activities, assessment ideas, and additional resources to actively engage students in viewing the media and learning the concepts. Each lesson plan contains the following sections:

- an overview of the lesson topic
- subjects and content standards (selected grade levels)
- essential questions
- an overview of the associated media resource/s
- a vocabulary list
- two activities
- assessment ideas
- a “What Can We Do?” section
- a list of additional resources that includes related websites and lesson plans
- literacy connections (selected lessons)
- student worksheet (selected lessons)







LITERACY CONNECTIONS

In addition to teaching the science of climate change, this unit addresses the following important literacy and real-world issues:







- **Media Literacy:** The ability to use different types of media and to examine the purpose and source of media.
- **STEM Literacy:** The ability to think critically about science and math, to solve problems, and to ask meaningful questions (STEM stands for science, technology, engineering, and mathematics).
- **Climate Careers:** An understanding of the variety of jobs related to climate change.
- **Global Impact:** An understanding of how climate change may affect the different regions of the world.

Look for these important connections within the lesson plans.








CLUE INTO CLIMATE LESSON PLANS

Strand	Lesson Plan	Associated Media Resource/s	Media Viewing Activity	Additional Activity	Literacy Connection
	Lesson 1a: Carbon Dioxide and Climate Change	Graph (PDF): Atmospheric Carbon Dioxide Levels	Answer graph interpretation questions about increasing carbon dioxide levels	Design a hypothesis poster about the effects of increasing carbon dioxide levels	Media Literacy: Discuss credible sources and types of media
	Lesson 1b: The Greenhouse Effect and Climate Change	Diagram (PDF): The Greenhouse Effect and Greenhouse Gases Video: "At the Core of Climate Change"	Interpret the greenhouse effect diagram	Complete video viewing questions about how scientists gather data from ice cores	Climate Careers: Write an "ask a climate scientist" interview
	Lesson 1c: Methane and Our Changing Climate	Audio feature: "Methane - The Other Greenhouse Gas"	Draw a diagram of methane's path	Design pamphlets about sources of methane	STEM Literacy: Explore different views on climate change
	Lesson 1d: Greenhouse Gases and the Amazon	Video: "Regulating Greenhouse Gases"	Conduct a fishbowl discussion about climate change and the Amazon	Map and discuss deforestation in the Amazon	Global Impact: Research and discuss how governments are addressing climate change
	Lesson 1e: Climate Modeling	Video: "Climate Models" Video slideshow: "Forecasting Suitable Habitat for Redwoods from the Present to 2100" Diagram (PDF): Forecasting Suitable Habitat for North America's Wolverines From the Present to 2090	Answer video viewing questions and discuss how climate models work	1. Experiment with a mini-climate model 2. Develop a conservation plan in response to climate change	
	Lesson 2a: The Changing Arctic Ecosystem	Video: "A Warmer World for Arctic Animals"	Fill out a video viewing chart about how climate change is affecting Arctic predators	Create ecosystem profiles and diagrams	Global Impact: Discuss how climate change is affecting the Arctic

CLUE INTO CLIMATE LESSON PLANS

Strand	Lesson Plan	Associated Media Resource/s	Media Viewing Activity	Additional Activity	Literacy Connection
	Lesson 2b: Adapting to Climate Change	Video slideshow: "Forecasting Suitable Habitat for Redwoods from the Present to 2100" Diagram (PDF): Forecasting Suitable Habitat for North America's Wolverines From the Present to 2090	Interpret and discuss the diagram and video slideshow about changing suitable habitats for redwoods and wolverines	Discuss and invent animal adaptations	STEM Literacy: Discuss the science behind, and difficulties with, predicting future suitable habitats
	Lesson 2c: Animals on the Move	Video: "Resurveying California's Wildlife" Video: "The Intertidal Zone and Sea Level Rise"	Fill out a viewing chart and write a journal entry about how animal distributions have changed	Complete Venn diagrams and future wheels about the effects of climate change on the distribution of organisms	Media Literacy: Discuss different views on climate change and how these opinions are expressed
	Lesson 2d: Plants in Peril	Video slideshow: "Disappearing Plants"	Discuss and debate how plants will be affected by climate changes	Set-up an experiment to test the effects of temperature on plants	Climate Careers: Discuss how scientists make decisions and the technologies they use
	Lesson 3a: The Water Cycle	Interactive animation: "Climate Change and the Water Cycle"	Take notes and draw diagrams about the water cycle	Design digital stories about the water cycle	Global Impact: Research water issues around the world
	Lesson 3b: Climate Change and the Water Cycle	Video: "Following Raindrops" Interactive animation: "Climate Change and the Water Cycle"	Answer and discuss video viewing questions and create a prediction poster about the importance of understanding how water moves through the water cycle	Play a prediction game about how climate change affects the water cycle	Climate Careers: Investigate different types of science careers
	Lesson 3c: A Global Glacier Melt	Video slideshow: "Visiting Dana Glacier"	Draw and discuss pre- and post-viewing ideas about glaciers	Draw a glacier comic strip illustrating how glaciers have changed and might change in the future	Media Literacy: Discuss media sources and whether all glaciers are melting

CLUE INTO CLIMATE LESSON PLANS

Strand	Lesson Plan	Associated Media Resource/s	Media Viewing Activity	Additional Activity	Literacy Connection
	Lesson 3d: The Impact of Climate Change on the Ocean	Video: "The Intertidal Zone and Sea Level Rise" Graph (PDF): Projected Sea Level Rise	Answer viewing questions and create concept maps about how climate change is affecting the intertidal zone	Create a PowerPoint presentation about sea level rise	STEM Literacy: Explore graphs and the range of uncertainty
	Lesson 3e: How Climate Change Affects Our Water Supply	Video: "Snowpack" Map: Decreasing California Snowpack	Complete a viewing chart about how decreased snowpack affects urban areas, agriculture and ecosystems	Research and present a report on important reservoirs	
	Lesson 4a: Comparing Renewable Energy Sources	Animation: "Energy Sources" Diagram (PDF): Energy Sources	Complete graphs about how much electricity comes from renewable sources	Research and compare renewable energy sources	
	Lesson 4b: New Breakthroughs in Solar Power	Video: "Solar Power"	Complete a chart and Venn diagram comparing conventional solar and nanosolar technologies	Write and record a news story about new solar technologies	Media Literacy: Research and discuss sources of media
	Lesson 4c: Turning Waste Into Energy	Video: "Turning Waste into Energy"	Complete a KWLQ viewing chart about methane	Measure food waste from a day's lunch	Climate Careers: Discuss careers in bioenergy production
	Lesson 4d: Geothermal Energy: Harnessing the Power of the Earth	Video: "Geothermal Energy"	Complete video viewing questions and a pro/con chart about geothermal energy	Write a persuasive essay for or against geothermal energy	Global Impact: Research countries that are investing in geothermal energy
	Lesson 4e: Plug-In Hybrids: The Latest in Electric/Hybrid Car Technology	Video: "Plug-in Hybrids"	Complete a viewing chart comparing gasoline-powered, standard hybrid, and plug-in hybrid cars	Design cars of the future	STEM Literacy: Examine vehicle emissions statistics