

Title: *Picturing a Sustainable Future: Investigating the Causes and Effects of Climate Change Through Photographs*

Study Guide Theme: Climate Change

Featured Photos:



Image: *Dry Lake*



Image: *Blue Sky Sign*



Image: *Toxic Landscape*

Overview: The students will use the *Dry Lake* image to launch an investigation of climate change. They will then delve more deeply into the causes and effects of climate change through the use of the *Blue Sky Sign* and the *Toxic Landscape* images. At the conclusion of this investigation, the students will apply their understanding by launching a campaign against idling zones on their school campus.

Grade level(s): 3-5

Subject(s): Science, Social Studies, ELA

Corresponding National Standards:

ELA

CCSS.ELA-LITERACY.RI.3.7
 CCSS.ELA-LITERACY.RI.4.5
 CCSS.ELA-LITERACY.RI.5.3
 CCSS.ELA-LITERACY.W.3.1
 CCSS.ELA-LITERACY.W.3.3
 CCSS.ELA-LITERACY.W.4.1

CCSS.ELA-LITERACY.W.4.3
 CCSS.ELA-LITERACY.W.5.1
 CCSS.ELA-LITERACY.W.5.3
 CCSS.ELA-LITERACY.SL.3.1
 CCSS.ELA-LITERACY.SL.3.2
 CCSS.ELA-LITERACY.SL.4.1

CCSS.ELA-LITERACY.SL.4.2
 CCSS.ELA-LITERACY.SL.5.1
 CCSS.ELA-LITERACY.SL.5.2

Science

3-LS4-3. 4-ESS3-2.
 3-LS4-4. 3-ESS2-2.
 4-ESS2-1. 3-ESS3-1.

Social Studies

Standard 1
 Standard 3
 Standard 9- Global Connections

Corresponding Global Competency Skills: [Asia Society](#)

Investigate the World
 Recognize Perspectives

Communicate Ideas

Take Action

Essential Question(s) (include 1-3):

What is climate change?

Why is climate change a global concern?

What are the issues surrounding identifying solutions to addressing climate change?

Specific Strategies and Activities by Grade Level:

Introduction and Photo Analysis (30 minutes):

The teacher will open the lesson with the Barnard quote, “a picture is worth a thousand words.” The *Dry Lake* image should be projected on the board. The teacher will ask the students to think of one word that they feel best describes the image. (Share aloud.)

The teacher will then ask the students to “step inside the image,” and answer the following questions in their science journal/note-taking guide provided:

- What do you see?
- What do you feel?
- Who is the person in the image?
- Where is the person going?

The teacher will invite the students to partner-share what they have written, and he/she should walk around the room to listen in on the partner-sharing.

After allowing the students the time to share their thoughts with a partner, the teacher will have a few share aloud with the larger group. (It is preferable to identify contradicting viewpoints during the walk-around while the students share with their partners. This way, the teacher can spark conversation about how important a variety of perspectives are in gleaming the most complete story of an image.)

- The teacher will ask them to take another look at the image, and this time focus specifically on the ground.
 - How long has it been this way? Or, has it always been like this?
 - If it hasn't always been this way, what happened to trigger this change?
 - What do you suppose this change has done to the rest of the environment? (What lies beyond the frame of the image?)
 - Invite the students to partner-share what they have written
 - Walk around the room to listen in on partner-sharing
- These questions should help lead the class to a climate/biome discussion. The subject of Climate Change may arise, if it does, the teacher should feel free to move on to defining Climate Change. Otherwise, the teacher should move through this series of questions next:
 - What is climate?
 - Why do we care if the Earth is getting warmer?
 - Can our actions make a difference?

Exploration 15-20 minutes:

As a class, the teacher and students will explore NASA's [Climate Kids](#) website about “Global Climate Change” to answer the previous questions. Students can use individual devices to access the site, or the group can work together using a teacher laptop with projector.

Following the exploration, the teacher will help the students make connections between the *Dry Lake* image, and their understanding of Climate Change by exploring the following questions: (The teacher will provide the image's specific information.)

- Where was this photograph taken? (Pakistan; dry bank at Rawal dam, positioned next to a lake that provides water for Islamabad)
- When was this photograph taken? (June 2012)
- Do you think that climate change has had an effect on this area? What is your evidence?

Application 30 minutes:

The teacher will introduce the next part of this lesson with a raw egg and a baking pan. Standing in a place where the students can see, the teacher will hold up the egg and ask, “What will happen when this raw egg is dropped into the pan?” The students will hopefully answer that the egg will break. The teacher will then ask, “What will cause the egg to break?” The teacher will drop the egg into the pan, and then the teacher will identify the broken egg in the pan as the “effect” of the drop. The drop “caused” the egg to break. The word cards “Cause” and “Effect” should be posted on the board, or somewhere in the room where the students can see them for the next step of the lesson.

Working in small groups or partnerships, the students will be provided with one of two other images (*Blue Sky Sign* and *Toxic Landscape*). The students will work through the “Cause or Effect” activity sheet. This activity will require the students to investigate the image provided and determine whether it depicts a cause of climate change, or if the image portrays an effect. If the students determine that the image is a cause of climate change, they will need to explain what the potential effects could be on the surrounding environment. After the students have completed this sheet, the teacher will point out that the images are centered in the middle of a larger blank space. The teacher will then instruct the students to “complete the picture” by drawing in the blank space what they would expect to see beyond the frame of the image.

Then the students will watch the film, *My Beautiful Nicaragua*, by 12-year old filmmaker, Edelsin Linette Mendez. Following the film, the teacher will lead the class in a discussion about the effects of climate change that they noticed in the film, and the potential causes that have created the problems that Edelsin and her village face. (ByKids.org)

Extending the Learning:

The teacher will share the site for the [“Turn Off Your Engine”](http://TurnOffYourEngine.org) campaign. The students will be encouraged to assist with creating “no idling” areas on their school property, by writing to their school administration about the health benefits for students and the environment of “no idling” zones, using evidence from the aforementioned learning experiences.

Additional Resources:

Environmental unit about global warming by *Learning to Give*: [Causes, Effects, Solutions](#)
[The Teacher Friendly Guide to Climate Change](#)

Materials:

science journal (or utilize the attached note-taking guide, or a “Notes” app on a device)
 pen/pencil
Dry Lake, *Blue Sky Sign*, and *Toxic Landscape* images from [OverBook](#)
 Egg
 Baking Pan
 “Cause” Word Card
 “Effect” Word Card
 NASA *Climate Kids* website
 “Cause or Effect” activity sheet
 “Turn Off Your Engine” campaign website
 crayons/markers

Bibliography:

This study guide was created by Lori Townsend, Charlotte Country Day School, as part of the 2018 World View Fellows Program: The OVERBOOK Project on the Environment and Sustainability
 For more information about the program, please visit <http://worldview.unc.edu/>

Lenz, G. (2010, September 20). *Toxic Landscape*. Alberta, Canada.

Bangash, B.K. (2012, June 27). *Dry Lake*. Islamabad, Pakistan.

Li, F. (2013, January 23). *Blue Sky Sign*. Beijing, China.

Earth Science Communications Team at NASA's Jet Propulsion Laboratory / California Institute of Technology. (2018, September 27). *NASA: Climate Kids*. <https://climatekids.nasa.gov/>.

Government of the State of North Carolina, Environmental Quality Department. *Turn off your Engine Campaign*. <https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-air-quality/idle-reduction/turn-off-your-engine-campaign>.

Learning to Give. *Environmental Service-Learning Toolkit*. <https://www.learningtogive.org/resources/environmental-service-learning-toolkit>

Zabel, I. H. H., D. Duggan-Haas, and R. M. Ross (eds.). (2017). *The Teacher-Friendly Guide to Climate Change*. Paleontological Research Institution, Ithaca, New York, 284 pp.

Chopra, J. (Producer), & Mendez, E.L. (Director). (2017). *My Beautiful Nicaragua*. [Motion picture]. USA: ByKids.