

TPS Cotsen / UCLA Lab School Primary Source Lesson

Los Angeles Smog over Time

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Recommended grade level

Grade Level: Upper I (5th Grade)

Time required

45 – 60 minutes

This lesson was created for a physical classroom and can be adapted to a digital one.

Overview

This lesson is designed to spark students' thinking about our atmosphere, as part of their study of Earth Systems. Students examine a series of historical photographs of smog in Los Angeles from the 1920s to the present moment to both pique their curiosity about air and the atmosphere around them as well as to interject the notion of human impact.

Objectives

Students collaborate in small groups to investigate and ask questions about primary sources. Students use an analysis tool to record their observations and thinking as well as to reflect on their ideas with their peers. Students build on their background knowledge about Earth Systems and make conjectures about how the atmosphere and other spheres interact.

Standards

Next Generation Science Standards

ESS2.A: Earth Materials and Systems

Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)

ESS3.C: Human Impacts on Earth Systems

Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

Topic

Earth Systems

Credits for Primary Sources

1. "Smog in Early Los Angeles," Water and Power Associates,
https://waterandpower.org/museum/Smog_in_Early_Los_Angeles.html
2. Masters, Nathan, L.A.'s Smoggy Past, in Photos, Lost LA, KCET, March 12, 2011.
<https://www.kcet.org/shows/lost-la/las-smoggy-past-in-photos>
3. Primary Source Analysis Tool (Library of Congress)
<http://www.loc.gov/teachers/primary-source-analysis-tool/>
4. Primary Source Analysis Tool for Photographs – Teacher Guide (Library of Congress)
https://www.loc.gov/teachers/usingprimarysources/resources/Analyzing_Photos_and_Prints.pdf

Preparation

Teacher organizes students into groups of four (two pairs per table)

Materials

- 4 – 6 primary sources (image page plus source page) per table - each source is in a plastic sleeve with only image visible to students
- 1 magnifying glass per student
- 1 primary source analysis sheet per student (2 sided with analysis tool on both sides)
- 1 pencil per student

Primary Sources

1. "Smog in Early Los Angeles," Water and Power Associates,
https://waterandpower.org/museum/Smog_in_Early_Los_Angeles.html
2. Masters, Nathan, L.A.'s Smoggy Past, in Photos, Lost LA, KCET, March 12, 2011.
<https://www.kcet.org/shows/lost-la/las-smoggy-past-in-photos>

Lesson Procedure

Before the lesson –

Teacher groups students into groups of 4 (two pairs per table)

Teacher reviews Teacher Guide for Primary Source Analysis Tool for Photographs (above)

The Lesson

Teacher calls students to the gathering area and asks, “What do you think you know about the atmosphere?” Students respond and teacher charts their ideas (regardless of veracity). Teacher uses the Reading and Analyzing Nonfiction (RAN) strategy and tool.

Teacher asks “What might you know about the atmosphere in Los Angeles?” Students respond and teacher charts their ideas (regardless of veracity).

Today, we’re going to do a little bit of exploring. At each table are some photos along with magnifying glasses and sheet to record your thinking.

(If students already know how to use the Primary Source Analysis tool, you can skip the next part. If not, you’ll need to teach them how to use the analysis tool, using one of the photos, before they can practice on their own.)

Using the Primary Sources Analysis tool

Use the document reader to show “Los Angeles County – Some Facts and Figures, 1925.” Ask students to look closely at the image without talking for about one-two minutes. Then on the board outside the image, make a chart that roughly duplicates the Analysis Tool (see below). Ask students to tell you only what they **actually** observe (e.g. letters, city buildings, smoke coming from chimneys, etc.)

Be sure that they are only talking about things they actually see here. This is not the place to interpret – just to describe.

Next, point out the **Reflection** column. Ask them to say what they think the things they have observed might **mean**. Let them know that they need to keep the reflection or interpretation separate from the observation. Point out that they should have a reflection for every observation.

Finally, questions can come from observations or reflections.

Observation	Reflection	Questions
What you actually see	What you think it might mean	What do you wonder about? What info would you like?
letters buildings man on a tractor	Information to give to someone Picture of LA City farming	Who would want to read about LA in the 1920's? Why would you put the city and the farms on this piece?

Let students know that their job today is to be an investigator. What can they observe about the photos on their tables?

Teacher writes this guiding question on the board:

What is going on in the atmosphere? How do you know? Why is this happening?

Each student should choose one photo to start with. They will work alone for 5-10 minutes while they observe, reflect and ask questions about the primary source they have chosen. Remind students to look closely first and to take their time. They can use the magnifying glass for this part.

After 10 minutes, ask students to turn and talk to their partner about what they have observed, their reflections on the meaning and questions they might have.

Teachers ask students talk for a few minutes about their first photo with their elbow partner. Then the whole table can talk about the guiding question – What is going on in the atmosphere? How do you know? Why is this happening? As investigators, they can share their information and come up with a theory to present to the whole group.

After about 5 minutes, student groups come to the gathering area with their photos, analysis sheets and theories. As the teacher circulates in the room, s/he has identified 2-3 groups to share their theories for class discussion. Students put the photo they want to use on the document reader to explain their theory. Students discuss the group's theory and corroborate or challenge it.

After the theories are shared comes the “reveal.” One student in each group takes out the source sheet that provides information about the origin and content of the photo.

Finally, students revisit the chart they started about what they think they know about the atmosphere. Teacher adds new information from the students.

Teacher asks, if it hasn’t already come up, how humans impact the Earth’s atmosphere.

Differentiation

Students who have worked through one primary source may choose a second to look at and record their thinking on the primary source tool on the second side.

For students who need more support, teacher will have a conversation with them to support them in observations, reflections and questions. Students might also make drawings with labels to communicate their thinking.

Extensions

Students who finish early or who want to dive deeper can use their laptop to look up the articles on their own and to do further research about the atmosphere in Los Angeles and other places on Earth.

Assessment

Since this lesson is more of a provocation than a research lesson, assessment focuses on student ability to make and record observations, reflect on those observations and devise thoughtful questions. Teacher circulates throughout the room to check in on student progress and make informal notes. Teacher also keeps an eye out for thoughtful wonderings, things that might be brought to the final share session. The teacher may also choose to collect the students’ completed Primary Source Analysis tools to review.