

Arizona Ablaze: Assessing the Impact of Wildfires

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Grade Level 7
Duration 3 class periods

National Standards	AZ College and Career Ready Standards	Other Arizona Standards
<p>GEOGRAPHY STANDARDS Element Five: Environment & Society 15. How physical systems affect human systems.</p>	<p>ELA Reading Standards for 6-8 for Literacy in History/Social Studies Reading Key Ideas and Details 6-8.RH.1 Cite specific textual evidence to support analysis of primary and secondary sources. 6-8.RH.2 Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions. Integration of Knowledge and Ideas 6-8.RH.7 Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts. 6-8 Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Writing Production and Distribution of Writing 6-8.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. a. Produce clear and coherent functional writing (e.g., formal letters, envelopes, procedures, labels, timelines, graphs/tables, experiments, maps, captions, charts, diagrams) in which the development, organization, and style are appropriate.</p>	<p>SCIENCE STANDARD Strand 4 Life Science Concept 3 Populations of Organisms in an Ecosystem PO 4. Predict how environmental factors (e.g., floods, droughts, temperature changes) affect survival rates in living organisms</p> <p>SOCIAL STUDIES STANDARD Strand 4 Geography Concept 5 Environment & Society PO 2 Describe the consequences of natural hazards (e.g. Dust Bowl, hurricanes, droughts, earthquakes).</p>

SIOP Elements		
<p>Preparation Adapting content Linking to background Linking to past learning Strategies used</p>	<p>Scaffolding Modeling Guided practice Independent practice Comprehensible input</p>	<p>Grouping Option Whole class Small groups Partners Independent</p>

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Integrating Processes	Application	Assessment
Reading Writing Speaking Listening	Hands on Meaningful Linked to objectives Promotes engagement	Individual Group Written Oral

TESOL Standard(s)

ESL: English for Content

Through The Use Of ESL Methodologies, The Student Will:

EFC-A. Create, read, and interpret visual information relating to science, social studies, and math.

EFC-C. Compose in a variety of forms.

C1. Use Math, Social Studies, and Science target vocabulary.

EFC-E. Comprehend reading materials.

E1. Read a variety of Math, Science, and Social Studies materials.

Arizona English Language Proficiency Standards

Stage IV

Basic

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate knowledge of reading comprehension by:

B-4: answering who, what, where, when, why, which and how questions about text

B-8: summarizing the main idea and supporting details from text

Stage IV

Basic

Writing

Standard 1: The student will express his or her thinking and ideas in a variety of writing genres.

B-3: taking notes using a teacher selected and student created graphic organizer or cloze notes

Overview

Fire is a natural part of a forest's growth and repair cycle; consider it a necessary agent of change. However, when fires burn unexpectedly and out of control, they can have a devastating effect on the local ecosystem for years to come. Wildfires in Arizona have been increasing in frequency and size in recent years. It is important to understand the impact they are having on the biodiversity of the area.

Purpose

In this lesson, the students will describe the events of a modern wildfire and predict the effects of

wildfires on a local ecosystem. This lesson includes strategies for teaching diverse learners.

Key Vocabulary

fuel: all living and dead plant material that can be ignited by a fire.

crown fire: burning only on the top layers of the tree; the most intense and difficult kind of wildfire to contain.

prescribed fire: a planned fire intentionally started by park managers.

wildfire: an unplanned fire caused by nature, human action, or an escaped prescribed fire.

Arizona Ablaze: Assessing the Impact of Wildfires

Materials

- Forest Layers Diagram
- Wildland Fires Background Reading
- Wildland Fires Vocabulary Cards
- Wallow Fire Visual Overview
- Wallow Fire Document Set (Article, FAQ, Progression Map, Visuals)
- Wildfire Impact Rubric
- Wildland Fires Vocabulary Test
- The Impact of Wildfires Paragraph Frame and Answer Key

Objectives

The student will be able to:

1. Describe the social and environmental effects of wildfire.
2. Predict the impact of wildfire on the organisms in the local ecosystem.

Procedures

Prerequisite Knowledge: Students should know the levels of organization in an ecosystem. Students should know how to interpret a food web diagram.

SESSION ONE

Engage:

- a. Inform students they will be “transported” to a specific ecosystem not too far from their school. The only limitation is that students are not allowed to see the ecosystem. Instead, they must rely on their other senses to determine where they are.
- b. Direct students to put their heads down and to cover their eyes. Remind students to pay close attention to what they hear, smell, and feel.
- c. Start the sensory experience by including as many of the following as possible: light a pine scented candle, turn a fan on to a low setting, play an audio clip such as <https://www.youtube.com/watch?v=OdlJ2x3nxzQ> (the idea is to evoke a pine forest with birds, breezes, etc.) (**Application: Promotes Engagement**).
- d. Transition from a healthy forest to one encountering a wildfire by slowly removing the previous sense cues. In their place, add as many of the following as possible: light a campfire scented candle, turn on a space

heater, play a crackling fire audio clip such as <https://www.youtube.com/watch?v=p8LUCbRKIYM> etc.

- e. Remove all sensory cues and instruct students to “return” to the classroom. Allow students time to compare their observations in pairs or small groups (**Grouping Options: Partners & Small Groups**).
- f. Ask students which ecosystem they visited. Prompt students to justify their answer with specific observations (**Integrating Processes: Speaking**).

Explore:

- a. Inform students that the focus of the lesson is wildfires and their effect on society and the environment.
- b. Distribute one copy of the Forest Layers Diagram to each student.
- c. Ask students to divide the forest into logical layers. Do not tell students where they layers are supposed to go or how many there should be (**Application: Promotes Engagement**).
- d. Allow students time to compare their “completed” diagrams in pairs or small groups (**Grouping Options: Partners & Small Groups**).
- e. Ask students to justify their layers as best as they can (**Integrating Processes: Speaking**).

Explain:

- a. Distribute one copy of the Wildland Fires Background Reading to each student.
- b. Assist students with numbering the paragraphs and identifying at least one of the key vocabulary words (**Scaffolding: Modeling**).
- c. Direct students to continue using mark-the-text strategies to highlight important information. Students may consider circling key vocabulary and highlighting the ten most important facts. Consider distributing the vocabulary cards to diverse learners at this time (**Integrating Processes: Reading; Scaffolding: Comprehensible Input**).
- d. Ask students to make any necessary edits to their Forest Layers Diagram based on the information provided in the background reading (**Application: Promotes Engagement**).

SESSION TWO

Explore:

- a. Review the wildland fire vocabulary from the previous day.
- b. Inform students that they will now be focusing on one specific wildfire from Arizona’s recent history.

Arizona Ablaze: Assessing the Impact of Wildfires

- c. Present the Wallow Fire Visual Overview to students. Direct students to make observations and inferences as each image is presented (**Application: Promotes Engagement**).
- d. Ask students to summarize what they know about the Wallow Fire based only on those visuals (**Integrating Processes: Speaking**).

Explain:

- a. Divide students into teams of 4. Each student will be responsible for analyzing a different document related to the Wallow Fire (**Grouping Options: Small Groups**).
- b. Distribute one Wallow Fire Document Set to each group. The four documents pose different challenges; consider having diverse learners work with the FAQ or Visuals while exceptional learners work with the Progression Map.
- c. Give students time to analyze their document individually (**Integrating Processes: Reading**).
- d. Model one appropriate format for a classifying map using non-academic categories (e.g.: types of vehicles). Direct students to create one classifying map for the team using the following three categories: environmental, social, economic (**Scaffolding: Modeling**). Students can do this electronically using a program like Popplet <http://popplet.com/> or on paper.
- e. Direct teams to fill in the classifying map using information from all four documents in the Wallow Fire Document Set. A complete map should have at least four pieces of information for each category (**Application: Promotes Engagement**).
- f. Ask students to summarize what they now know about the Wallow Fire based on these new documents (**Integrating Processes: Speaking**).

SESSION THREE

Elaborate:

- a. Inform students that they will now focus on only the environmental impacts of wildfires in Arizona.
- b. Ask students to review the levels of organization in an ecosystem and identify sample organisms for the forest ecosystem affected by the Wallow Fire (**Preparation: Linking to past learning**).
- c. Direct students to select two specific organisms from the forest ecosystem.
- d. Prompt students to write a paragraph explaining the impact wildfires have on those two organisms. Possible areas of focus include population size, distribution, life expectancy,

resource availability, etc... Consider using the paragraph frame for diverse learners (**Assessment: Individual & Written**).

Evaluate:

- a. Assess student paragraphs using the Wildfire Impact Rubric.
- b. Assess student vocabulary comprehension with the Wildland Fire Vocabulary Quiz.

Assessment

Students will score

- 4 or higher in each category on the Wildfire Impact Rubric.
- 80% or higher on the Wildland Fire Vocabulary Quiz.
- 80% or higher when selecting an accurate word for the paragraph frame (diverse learners).

Extensions

Have students compare data from the Wallow Fire (featured in this lesson) to other significant wildfires in Arizona.

Have students research additional pictures of the Wallow Fire in order to create a photo timeline.

Sources

Wildland Fires Background Reading
<https://www.nps.gov/fire/wildland-fire/what-we-do/wildfires-prescribed-fires-and-fuels.cfm>

Wallow Fire Images
http://www.wmicentral.com/multimedia/wallow-fire-in-photos-a-photo-gallery/collection_6287fc62-8e28-11e0-931b-001cc4c002e0.html

Wallow Fire Article
<http://archive.azcentral.com/news/articles/20110614-arizona-fires-wallow-fire-largest-arizona-fire.html>

Wallow Fire FAQ
<http://archive.azcentral.com/news/articles/20110605-arizona-wallow-fire-QA-05-ON.html>

Wallow Fire Progression Map
<http://inciweb.nwcg.gov/photos/AZASF/2011-05-31-00:57-wallow/picts/pict-20110628-100953-0.png>