



Mountaintop Removal Mining in Appalachia

OVERVIEW

ESSENTIAL QUESTION

What is mountaintop removal, how does it affect the environment and people's health?

OVERVIEW

*In this lesson, students will learn about mountaintop removal by conducting a hands-on activity and watching clips from a documentary film *Mountain Top Removal*. Students will also understand how music helps build environmental awareness by listening to songs by musicians Ben Sollee and Daniel Martin Moore, and creating their own ballad about an environmental issue.*



Photograph: Lyntha Scott Eiler

Mountaintop removal is a mining technique common in the Appalachian Mountains that involves removing the tops of mountains to extract coal, rather than mining tunnels into them. By removing tops of mountains, mining companies destroy plants, damage natural geological formations and disrupt waterways. Today, over 500 mountains have been destroyed and 2000 streams have been obliterated through mountaintop removal mining. Mountaintop removal also produces coal slurry, which is replete with mercury, arsenic, and other hazardous materials that, if not stored properly, poisons plants, animals, and people.

Given the danger mountaintop removal mining poses, citizens in the Appalachian region and fought against the practice. This lesson uses clips from the 2007 documentary *Mountain Top Removal*, which examines how mountaintop removal has affected people in West Virginia by following the "Pennies for Promise" campaign, which sought to relocate an elementary school after the students were exposed to coal slurry.

The lesson is framed around the music of Ben Sollee and Daniel Martin Moore, who created the 2010 album *Dear Companion* in order to shine light on the issue of mountaintop removal, and raise money to help end the practice. By examining the work of Sollee and Moore, students gain insight on the way artists can use their platform to speak out on environmental issues.

OBJECTIVES

Upon completion of this lesson, students will:

1. KNOW (KNOWLEDGE):

- The process and purpose of mountaintop removal
- The environmental effects of mountaintop removal
- How citizens can advocate for an environmental issue
- Ben Sollee and Daniel Martin Moore's album *Dear Companion*, and their advocacy of environmental issues
- The form and brief history of the Ballad

2. MASTERY OBJECTIVE:

- Students will be able to explain the process and the environmental impacts of mountaintop removal by conducting a hands-on experiment and writing their own ballad.

ACTIVITIES

MATERIALS REQUIRED (1 PER STUDENT GROUP):

- Large cookie sheet or cafeteria tray
- Plastic cups and bowls
- Pitcher with clear measurement indicator
- A kitchen or sink towel
- A plastic drop-cloth or table cloth

MOTIVATIONAL ACTIVITY

1. Play the Youtube video Ben Sollee and Daniel Martin Moore - "Dear Companion" (Live on KEXP) up to 3:11 (<https://youtu.be/PSeQpvBdsg8>). After the clip, ask students:
 - What did you think of the song?
 - Does the song remind you of anything?
 - What is the song about? How do you know? (*At the beginning of the video, Moore mentions it was a song based off of a letter a coal miner wrote to his wife.*)

2. Display **Image 1, Excerpt of Dear Companion Review**. As a classroom, read the text in the image aloud. Then ask students:
 - Where are the majority of the musicians featured in *Dear Companion* from? How do you know? (*The text alludes in numerous places that the musicians are from Kentucky - Lexington, Cold Spring, and Louisville are all towns in Kentucky.*)
 - According to the text, what is the purpose of the album *Dear Companion*? (Hint: ask students to examine the second paragraph).
 - The word “Appalachian” is mentioned in the text. What does that term signify?
3. Display **Image 2, Subregions of Appalachia Map**. Inform students that “Appalachian” refers to the culture, people, and landscape of the Appalachian Mountains. Then ask students:
 - What are some of the states that make up the Appalachian region?

PROCEDURE

1. Inform students that in class they will be learning more about mountaintop removal in the Appalachian Mountains, including the process and its effects on the environment and people. To discover mountaintop removal, they will be watching clips from the documentary *Mountain Top Removal*, which takes place in West Virginia.

handout activity. (*If procuring enough materials is difficult for student groups, teachers may alternatively demonstrate the activity before the class.*)
2. Play **Clip 1, The Process of Mountaintop Removal**. Then ask students:
 - How did the clip describe the mountaintop removal process? What are the steps?
 - What did you feel when you were watching this process?
 - Why might mountaintop removal be hazardous to the environment?
4. After the activity, ask student groups to report how their activity went. Then ask the class:
 - Based on the activity, what role do trees and other vegetation play in absorbing rainfall and other water?
 - Imagine there was a town at the bottom of one of the valleys you created for the experiment. What might happen to the town during record rainfall or a flood, if there is little surrounding trees and vegetation?
3. Divide students into groups, and then pass out to each group **Handout - Mountaintop Removal Activity**. Tell students they will be doing a hands-on activity to better understand the effects of mountaintop removal. Monitor student groups as they work through the
5. Inform students that in addition to flooding, the extraction of materials through mountaintop removal creates a mixture of coal, water, and other elements. This mixture is known as “coal slurry,” and exposure to it has health effects. Play **Clip 2, The Health Effects of Coal Slurry**. Then ask students:

- What are some of the health effects of mountaintop removal mentioned?
- How would you feel if you knew there were dangerous chemicals around your school? What would you do?

6. Inform students that residents of West Virginia chose to fight back against mountaintop removal. Play **Clip 3 - Mountain Justice Summer and the Pennies for Promise Campaign**. Then ask students:

- What are some of the goals of the activist group, Mountain Justice Summer? (*To raise awareness about mountaintop removal.*)
- What is the purpose of the Pennies for Promise campaign? Why is building a new school so important to these families? (*To build a new elementary school, away from a coal processing plant, for the benefit of student's health.*)
- Besides raising money for a new school, what else are the activists doing? (*Spreading awareness about mountaintop removal.*)

SUMMARY ACTIVITY

1. Play the Youtube video Ben Sollee and Daniel Martin Moore - "Dear Companion" (Live on KEXP) once again, while displaying **Image 3, "Dear Companion" Lyrics** on the board. Ask student to read the lyrics while listening to the song. Then ask students:

- What is the form of the lyrics? Can you describe how the lyrics are structured?

2. Explain to students that Ballads are traditionally organized into multiple stanzas, or versus. Each stanza typically follows the same construction, and is sung to the same melody. In the case of "Dear Companion," each stanza is organized in an "AAB" format, where a line is spoken, then repeated, then followed by a new line. Explain that using this repeating structure allows the the singer to tell a story using as many stanzas as they would like. Ask students:

- What story is being told in "Dear Companion"? How does this story make you feel?
- "Dear Companion" appeared on an album protesting mountaintop removal. Why might this song have been included in the album?

- What do you think possible next steps might be for activists?

7. Play **Clip 4, Marching on the Capitol**. Then ask students:

- Why did activists decide to march on the capitol? (*Because Massey Energy was granted permission to build another coal silo by the school.*)
- Who did the activists want to talk to? What were their demands? (*They wanted to talk to government officials, especially West Virginia Governor Joe Manchin, and demand another school for the students.*)
- How did Governor Joe Manchin and other government official respond? (*They said the issue had to be put before the school board, and then started arresting the activists.*)
- How do you feel about what you saw in the clip?



- Could “Dear Companion” be considered a protest song? Why or why not?
- In what other ways could Ballads or other music be used for activism?

EXTENSION ACTIVITIES

1. After researching an environmental cause, write a Ballad about the issue, following the same lyrical structure as “Dear Companion.”
2. Read this ABC News Timeline related to 2023’s train derailment disaster in East Palestine, Ohio (<https://abcnews.go.com/US/east-palestine-derailment-timeline-key-events-toxic-train/story?id=97522161>). Then write a paper comparing and contrasting this event with the events cataloged in the clips you watched in class.
3. Research current activism on mountaintop removal, and create a presentation on what sort of developments have occurred since the events depicted in the film *Mountain Top Removal*.



STANDARDS

COMMON CORE STATE STANDARDS

College and Career Readiness Anchor Standards for Reading (K-12)

Integration of Knowledge and Ideas 7: Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

College and Career Readiness Anchor Standards for Writing (K-12) (Extension Activities only)

Text Types and Purposes 3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.

Production and Distribution of Writing 4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Production and Distribution of Writing 5: Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

Research to Build and Present Knowledge 7: Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.

College and Career Readiness Anchor Standards for Speaking and Listening (K-12)

Comprehension & Collaboration 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.

Comprehension & Collaboration 3: Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

College and Career Readiness Anchor Standards for Language (K-12)

Language 1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

Vocabulary Acquisition and Use 6: Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.



NEXT GENERATION SCIENCE STANDARDS (NGSS)

MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.

HS-ESS3-4 Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

SOCIAL STUDIES – NATIONAL COUNCIL FOR THE SOCIAL STUDIES (NCSS)

Theme 1: Culture

Theme 3: People, Place, and Environments

Theme 5: Individuals, Groups, and Institutions

Theme 6: Power, Authority, and Governance

Theme 8: Science, Technology, and Society

Theme 10: Civic Ideals and Practices

NATIONAL STANDARDS FOR MUSIC EDUCATION – NATIONAL ASSOCIATION FOR MUSIC EDUCATION (NAFME)

Core Music Standard: Responding

Interpret: Support interpretations of musical works that reflect creators' and/or performers' expressive intent.

Core Music Standard: Connecting

Connecting 11: Relate musical ideas and works to varied contexts and daily life to deepen understanding.



RESOURCES

VIDEO RESOURCES

- *Mountain Top Removal: The Process of Mountaintop Removal*
- *Mountain Top Removal: The Health Effects of Coal Slurry*
- *Mountain Top Removal: Mountain Justice Summer and the Pennies for Promise Campaign*
- *Mountain Top Removal: Marching on the Capitol*

HANDOUTS

- Handout – Mountaintop Removal Activity