



Lesson Six - Attention, Please!

Grade Level: 5th Grade

Time: Two 60-minute sessions

Essential Question: How can we be stewards of Wyoming's mineral and energy resources to benefit current and future generations?

Objectives: Students will:

- Review that Wyoming minerals are nonrenewable.
- Explain why we should be good stewards of Wyoming minerals.

Purpose: Students learn about why technological innovations are important to the stewardship of Wyoming's nonrenewable minerals.

Required Materials/Resources:

- Technology to display student Public Service Announcement (PSA) (if needed)
- *Cleaner Coal Coming to Wyoming* transcript (one per student) (Source 1)
- Blank paper for advertisements
- Art supplies (markers, colored pencils, crayons, etc.)
- Numbers for advertisements (sticky notes)
- Voting ticket (one per student)
- Voting ticket ballot box (bucket, hat, Tupperware, etc.)
- Stewardship PSA Assignment (one per student and one for the teacher to use as a scoring guide)

Suggested Teacher Preparation:

- Gather all supplies for students to create their PSAs.
- Decide what format(s) students can use for the PSAs. See Part 1: Step 4. (You might need additional resources if choosing the audio and/or video formats.)
- Decide how much time students will have to create their PSAs during Part 1: Step 4.

Standards:

Science: 5-ESS3-1, 3-5-ETS1-2 (Explicit)

Social Studies: SS5.5.4 (Practiced/Encountered)

Vocabulary:

- **Nonrenewable Resources** - resources that cannot be replenished (made again) in a short period of time
- **Public Service Announcement (PSA)** - a news article or graphic that shares information with the public
- **Renewable Resources** - resources that are capable of being replenished

Instructional Procedure/Steps:

Part 1:

1. Say: **“What does it mean that Wyoming minerals are nonrenewable?”** *Nonrenewable means that when the minerals are gone, they are not coming back. This is in contrast to renewable resources which are energy sources that can be replenished.* Say: **“Why is it important for us to be able to continue using those minerals? How would your life be impacted if Wyoming were to run out of its mineral resources?”** *Student responses should connect back to the mystery bag in Lesson 1, as well as the revenue impact on education, jobs, etc. The minerals are necessary for a large number of everyday products that are important to us. Running out of our mineral resources will have a huge impact on Wyoming since minerals are a major*

revenue source for Wyoming. Remind students that they learned in a previous lesson that in 2016, Wyoming's mineral industry paid \$1.94 billion in taxes to the state of Wyoming and employed 8,954 people, so they are a resource that we should develop and manage well.

TEACHER NOTE:
This is an opportunity to emphasize the role that entrepreneurs can play in driving innovation.

2. Say: **“Remember, in order to make good stewardship decisions, it is important to ask questions to become informed about all of the options/outcomes of a decision.”**
3. Say: **“One possible option for sustaining our mineral industry is the development of new technologies such as the new proposed coal plant in Sheridan.”** Pass out and share the *Cleaner Coal Coming to Wyoming* transcripts. Discuss with students the impacts, both positive and negative, of this new technology for coal and the plant itself. *Possible answers include: Positive impacts: burns cleaner, burns less coal, more jobs, more money in Wyoming’s economy. Negative impacts: it’s not a Wyoming company, and some money will leave the state, do the owners of the mine care about Wyoming, what if it fails?*

 In this task, students will be engaged in the higher order thinking skill of application.

4.  Next, students will create a persuasive public service announcement (PSA) to convince both citizens and mineral companies to develop and use minerals responsibly since minerals are nonrenewable. Each student should create his/her own PSA. Go over the Stewardship Public Service Announcement (PSA) Assignment to explain what a PSA is and to let students know that they should address the following prompt with their PSA: **As a state, we make decisions about our minerals all the time. What things do we need to think about to ensure that as a state we are being good stewards of our mineral resources so that our minerals last for future generations?** Students must present a convincing argument on why it is important to

TEACHER NOTE:
Either give students all of the format options or just one of them. If students are making T.V. commercials, put a time limit on them. Students could also do additional research to better support their arguments.

TEACHER NOTE: As students are developing their PSAs, be on the lookout for students who suggest that we can be stewards by not mining anymore. While that would “save” the minerals, we would no longer be using and benefiting them. The teacher can help students to understand that while mineral resources are finite, good stewardship doesn’t have to mean not using them at all, but rather using them wisely and mining responsibly.

steward Wyoming’s minerals. Their PSA can be in print (for a newspaper/magazine), voice only (recorded for radio), or a television commercial. Have students work on their PSAs during the time you have allowed. Say: **“You will have the rest of the time today to complete your PSAs. There will be a brief amount of time to put finishing touches on them tomorrow.”**

Part 2:

1. Allow students time to complete their PSAs. As students finish, have PSAs displayed around the room, ensuring that video and audio ones can be played if you gave students those options. Number each PSA. This number will be used for voting for the most persuasive PSA.



2. When all PSAs are displayed/ready to go, give students time to travel around the room and view, listen to, or watch the PSAs in order to decide which one provided the best argument for stewardship. Give a voting ticket to each student. Have students write the number of the PSA that was the most persuasive on the ticket and put it in the ballot box. Students must provide rationale for his/her choice. Students cannot vote for their own work.



In this task, students will be engaged in the higher order thinking skill of evaluation by judging and defending the most effective PSA.

3. Once all votes are collected, tally them up. Display the top 3 PSAs, and then, as a class, discuss what made them the best. Assess each student’s PSA using the scoring guide provided. *Students should recognize that the top PSAs mention the following points: Wyoming minerals are nonrenewable and will run out eventually; to be a good steward of Wyoming minerals, it is important to understand how they are mined, what we use the minerals for, how they impact our economy, and how to care for the land after we mine the minerals; as good stewards, we also need to be informed about all the important components of the mining*

industry. Part of that process is asking good questions in order to find the answers needed to make choices that will benefit current and future generations.

Assessment: Students will create a PSA to demonstrate their understanding of how to be a good steward of Wyoming minerals and energy. Use the PSA scoring guide to evaluate student work.

Credits/Sources:

1. kcwy13.com. (2017, June 15). *Cleaner Coal Coming to Wyoming*. Retrieved July 31, 2017, from <http://www.kcwy13.com/content/news/Cleaner-Coal-Coming-to-Wyoming-428750053.html>