



Lesson Five: Geyser Gazer

Grade Level: 5th Grade

Time: 2 days: 45 minutes per day

Essential Question: How can we be stewards of Wyoming's public and private lands to benefit current and future generations?

Objective: Students will:

- Calculate on average how many people visit Yellowstone National Park.
- Describe a geyser.
- Identify how campers and visitors can be good stewards.

Purpose: Students learn that tourists who visit Wyoming contribute in a major way to our economy and are expected to be responsible stewards while visiting our state.

Required Materials/Resources:

- Diet Coke (one two-liter bottle) (This brand works best. However, use whatever brand you have available.)
- Mentos mints (one package)
- Video: <https://www.youtube.com/watch?v=wE8NDuzt8eg>
Old Faithful Geyser eruption Yellowstone NP (Source 7) Video length: 1 minute 44 seconds
- Will Boekel Geyser Gazer Story text (one per student and teacher) (Source 1)
- Portrait of Will Boekel for Portrait Gallery
- Highlighters (one per student)
- Month/Visitors sort (one per pair of students)

- Yellowstone Visitation Statistics (one per student) (Source 2)
- Campsites Stewardship PowerPoint presentation
- Video: https://www.youtube.com/watch?time_continue=7&v=PkCnf6YVXI *Camping When Hunting: What Not to Do* (Source 3) *Video length: 6 minutes 42 seconds*
- Video https://www.youtube.com/watch?v=L4_oq7aaaDo *Play Clean Go Mountain Biking* (Source 4) *Video length: 1 minute 6 seconds*
- Scratch paper
- Travel and Tourism by County (Source 6)
- Stewardship postcard (one per student)

Suggested Teacher Preparation:

- Decide where outside you will do the geyser demonstration.
- Purchase a bottle of Diet Coke and package of Mentos.
- Run the Stewardship postcards back to back.
- Review the Will Boekel Geyser Gazer story, videos, and the *Travel and Tourism (statistics) by County* for your county.
https://drive.google.com/drive/folders/1QdPby4Dd6BL7teTvsz0nxv64X1x_QhUA

Standards:

Social Studies: SS5.1.1, SS5.3.2 (Practiced/Encountered)

ELA: 5.RI.3 (Practiced/Encountered)

Math: 5.NBT.5 (Practiced/Encountered)

Vocabulary:

- **Economy** - financial system of interaction and exchange
- **Industry** - a group of businesses that provide a particular product or service
- **Tourism** - the activity of traveling to a place for pleasure that can generate revenue from the enjoyment of Wyoming's land and/or resources
- **Tourist** - vacationer, traveler, sightseer, visitor

Instructional Procedure/Steps:

Day 1:

1. This activity should only take about five minutes. Take students outside to demonstrate what a geyser looks like. Bring the two-liter bottle of Diet Coke and the Mentos package with you. Say: **“Yellowstone National Park is home to a certain famous, regular geological feature that millions of tourists visit each year. We will use the soda and Mentos to demonstrate that geological feature. Turn to a partner to see if you can come up with the type of geological feature I am going to demonstrate and the name of the specific, famous one that tourists come from all over to visit.”** *Geyser and Old Faithful*. Have pairs share out. If no students provide the answers, tell students what they are. Next, have students stand back to watch the soda/Mentos representation of a geyser. Say: **“Since you will be gazing at this homemade geyser, the job I have for you is to be a ‘geyser gazer.’ Look carefully to see what is happening with this geyser.”** Remove the lid of the soda bottle, put in two or three Mentos at the same time, step back, and watch the “geyser” erupt. When the “geyser” is finished, clean up, and return to the classroom.
2. Back in the classroom, play the *Old Faithful Geyser eruption Yellowstone NP* video. When finished watching the video, have students respond to what they saw.
3.  Pass out the Geyser Gazer Story texts and highlighters. Say: **“In today’s text, you will learn about a college student who is drawn to Yellowstone National Park because of geysers. He, and his fellow enthusiasts, are known as ‘Geyser Gazers.’ Follow along as I read the story of Will Boekel. Listen intently for information about how Will handles**

himself as a tourist in Yellowstone National Park. Make sure to highlight anything you think is important about tourism in the story. Now, follow our text protocol, and listen as I read the story about Will Boekel.” Read the text aloud to students. Next, have students read the text with a partner, and compare the parts that each person highlighted from when the teacher read the article.

4. When pairs are finished, have students share out their findings with the whole group. Ideas that should be brought forth include the following: *Students should be able to say that people have been gathering to watch Old Faithful erupt since 1870. People from around the world visit Yellowstone to watch Old Faithful erupt. Will Boekel was a responsible steward while visiting. Will was promoting tourism through his recordings of his observations. When finished discussing, post Will Boekel’s portrait to the Portrait Gallery. Say: “We are going to put our materials away, and discuss how many people actually come to Yellowstone per year.”*
5. Pass out the Month/Visitors sort to each pair of students. Have students pair the numbers with the months to make a prediction about the number of visitors to the park each month. Collect sorts when students are finished for Day 1.

Day 2:

6. Pass out students’ Month/Visitors sorts from yesterday and the Yellowstone Visitation Statistics. Have students compare the statistics from this document to their sorting predictions from step 5. Have pairs share out the accuracy of their predictions with the whole class.

7. Say: **“Thinking of all of those people visiting Yellowstone National Park at the same time, I want you to visualize in your mind a picture of a campsite that good stewards have visited. Close your eyes and think about what that site looks like.”** Display the Campsites Stewardship PowerPoint presentation for students to compare their visualizations with actual examples. Say: **“Now that you’ve seen an image of a campsite visited by tourists who demonstrated good stewardship, I want you to close your eyes and visualize a campsite that features poor stewardship.”** Play the *Camping When Hunting: What Not to Do* video. Ask students to discuss with a partner this question: **“Which campsite do you think Will Boekel would have left for others?”** Allow students to respond. When finished, say: **“That video was made by a group called Tread Lightly! and was created to demonstrate what poor stewardship looks like. Tread Lightly! is a slogan that highlights good stewardship on Wyoming’s lands. Another slogan for good stewardship is Play, Clean, Go.”** Play the *Play, Clean, Go Mountain Biking* video.
8. Say: **“We obviously want all tourists to be good stewards. Now we are going to calculate on average how many visitors come to Yellowstone, and figure out potentially how much money that they can make for Wyoming.”** Have the students complete a multi-step word problem using the numbers from their Yellowstone Visitation Statistics sheet. Pass out scratch paper. Give students time to complete step one before moving on to step two. Say:
- **“Step 1: Find the sum of the average number of visitors for all twelve months.”** 3,834,585 visitors

- **“Step 2: Let me hypothetically say that each visitor has to pay \$8 to enter the park. Using your sum from step one, multiply it by eight to see what money could be made from only visitors’ entrance fees to the park.”** $3,834,585 \times 8 = \$30,676,680$

Provide students with correct numbers before moving on to the next lesson step.



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



9. When finished, lead the students in a discussion about the total revenue generated from Yellowstone alone in an average year. Have students respond to a question before moving on to the next one. Ask:
 - **“When the state earns tens of millions of dollars per year, like in Yellowstone, what does that do for the state?”**
 - **“How does this money effect Wyoming’s economy?”**
 - **“How does this money create jobs for Wyoming citizens?”**
 - Say: **“People like Will Boekel, who works at the front desk of the Old Faithful Inn, are able to find employment due to the tourism industry. He is one of many people who are employed because of this industry.”** Display the Travel and Tourism Statistics for your county the *Travel and Tourism (statistics) by County* for your county. https://drive.google.com/drive/folders/1QdPby4Dd6BL7teTvsz0nxv64X1x_QhUA Say: **“Tourism supported 32,290 jobs in Wyoming in 2018, (Source 5) and some of the people in these jobs might be your parents, friends, families, etc. Tourists are extremely important to Wyoming’s economy. If we are not stewards of Wyoming’s lands, tourists will not generate as much money for Wyoming.”**

Assessment: When finished with the discussion, pass out the Stewardship postcards. Students create a stewardship postcard that they could send to a friend or family member. On the back of the postcard, students need to state two ways that tourists can be stewards of Wyoming's lands. Collect postcards when students are finished. Check postcards for stewardship examples from the lesson: *Tread Lightly! (including camp in a designated campsite, staying on the road, dispose of trash in a trash can, clean up your camping spot before leaving); Play, Clean, Go (enjoy the great outdoors, remove mud, dirt, plants, and seeds, plan your next adventure)*

Credits/Sources:

1. Crocker, Ruth W. (2017). *People of Yellowstone: Will Boekel*. Mystic, CT: Elm Grove Press.
2. National Park Service. (2013-2017). *Visitation Statistics*. Retrieved October 13, 2018, from <https://www.nps.gov/yell/planyourvisit/visitationstats.htm>
3. Tread Lightly! On Land and Water. (n.d.). *Camping When Hunting: What Not to Do*. Retrieved November 13, 2017, from https://www.youtube.com/watch?time_continue=7&v=Pk_Cnf6YVXI
4. Play Clean Go. (2016, December 7). *Play Clean Go Mountain Biking*. Retrieved August 20, 2017, from https://www.youtube.com/watch?v=L4_oq7aaaDo
5. Wyoming Office of Tourism. (2017 April). *2017 WY Travel Generated Impacts*. Retrieved October 13, 2018, from <https://www.travelwyoming.com/industry>
6. Wyoming Office of Tourism, Cameron Ross, Strategic Partnerships Senior Manager. (n.d.) *Travel and Tourism by County*. Retrieved October 13, 2018, from https://www.travelwyoming.com/sites/default/files/uploads/industry/WY_Travel_Impacts_2018_final.pdf

7. Beach, Rick. (2013, July 24). *Old Faithful Geyser eruption Yellowstone NP*. Retrieved October 13, 2018, from <https://www.youtube.com/watch?v=wE8NDuzt8eg>
8. Photo credits are listed in the PowerPoint presentation.