



Lesson Three: Hooves on the Ground

Grade Level: 3rd Grade

Time: 30-40 Minutes

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

Objectives: Students will:

- Identify how Wyoming is unique based on the livestock and the land
- Identify how Wyoming's livestock is cared for and looked after
- Identify who is involved with Wyoming livestock
- Identify the importance of Wyoming's land to the livestock
- Hypothesize what an increase in population would do to the land in Wyoming and how it would impact the livestock

Purpose: Students will understand that Wyoming is unique because of the amount of space available for our livestock.

Required Materials/Resources:

- "Land for Livestock" PowerPoint (Sources 1- 8)
- Materials for livestock simulation
- Masking tape for marking pastures in livestock simulation activity
- Assessment response cards A-D
- Purple strips of paper to represent larkspur

TEACHER NOTE:
Begin class with the Lesson 3: Land for Livestock PowerPoint pulled up. These slides will give your students background information and will talk about Wyoming's unique size and population. By the end of the lesson, students should see that the size and population of Wyoming make it possible for us to have such a successful livestock industry.

Suggested Teacher Preparation:

- Load PowerPoint on the Smart Board
- Copy, count out, and cut task cards
- Read through teacher script (embedded in the lesson plan)
- Prepare assessment cards (A, B, C, D).
- Print Larkspur poster

Standards:

Science: 3-LS4-4 (DCI and CCC), 3-5-ETS1-2 (Explicit),
3-LS4-3 (Practiced/Encountered)

Social Studies: SS5.5.4 (Explicit), SS5.4.1 (Practiced/Encountered)

Math: 3.G.2 (Practiced/Encountered)


ELA: 3.SL.1 (Practiced/Encountered)


CVE: CV5.3.1 (Explicit), CV5.2.1, CV5.2.2 (Practiced/Encountered)

Vocabulary:

- **Graze** - eat grass or forage in a pasture
- **Grazed** - pasture grass that has been partially eaten by livestock
- **Larkspur** - native plant with blue flowers that is poisonous when eaten by livestock
- **Livestock** - animals kept for use and profit
- **Pasture** - fenced-in area of grazing land
- **Rotational grazing** - the practice of moving grazing livestock between pastures as needed or on a regular schedule

Instructional Procedure/Steps:

1.  Present the first seven slides from the PowerPoint. Slide 8 poses the question: **Since we have so much space, and so few people, what do you think we use all this land for?** Stop on this slide and let the students generate conversation about the amount of space in

 In this task, students will be engaged in the higher order thinking skill of synthesis by predicting, inferring, and imagining how the land would be used.

Wyoming and how the space is used. Emphasize the agricultural uses of the land: *houses, farming, ranching, schools, parks, etc.* Focus on the way our ranchers use the land of Wyoming for livestock. Finish showing the PowerPoint.

2. Next, introduce the Livestock Simulation Game. Assign each student a task card. (There are cows, sheep, a cattle rancher, and a sheep rancher). Use the teacher script to play the simulation.

TEACHER NOTE: Based on your class size, the cow task cards and the sheep task cards will be your most flexible. You can add as many of them as your class needs to ensure that each student gets one card. It is important that you make sure there are more cattle than sheep to make the simulation accurately represent Wyoming's ranchers. There can only be one cattle rancher and one sheep rancher in the game. The teacher's script is designed to introduce potential challenges that a rancher would face. The entire class will work together to create potential solutions. The teacher script will help guide you toward specific solutions to make the simulation accurate. Feel free to add in your own challenges to the simulation based on your experience level. However, the given challenges are set up purposefully and should not be replaced because they will help students reach the essential question of the lesson.

TEACHER NOTE: Slide 9 of the PowerPoint contains a land ownership map. In addition to private and federally owned lands, Wyoming also contains lands known as State Trust Lands. These are lands granted to Wyoming and designated to generate revenue for public schools and other state institutions. While they are owned by the State, public access is limited depending on location and designated use.

3. **LIVESTOCK SIMULATION GAME - TEACHER SCRIPT:**
Remember that the bold text is what teacher says to students! Students should stay seated until it is their time to enter the simulation. (This will be the sheep rancher and sheep.)

- Say: "**Welcome to _____ (teacher's last name) Ranch!**" **We have a great rancher and his/her job is to take care of the livestock. The entire classroom is our ranch, and the cattle rancher is going to graze his/her cattle anywhere inside the classroom. Cattle, please get started by walking around "grazing."**

Rancher, your job is to make sure you keep an eye on all of them.


Choose one or two "cattle" students who will continue to escape from the ranch by going into the hallway or another area outside of the classroom. Tell the student(s) to escape two to three times in order to give the rancher an idea of how hard it is to keep track of cattle. If your rancher doesn't realize that the cattle have escaped, remind him/her that his/her job is to keep the cattle together. The rancher should begin to feel a little overwhelmed by the idea of keeping all these cattle together in such a large space. This will lead us to our first "problem."

TEACHER NOTE: This would also be a great area to include some focus around the math standard 3.G.2. You can explain to students that you are partitioning your whole classroom into four equal parts to make each pasture $\frac{1}{4}$ of your whole grazing area.

- Say: **"Everyone freeze. Cattle, you did a marvelous job of grazing! In fact, you did so well, that all of the grass in the pasture has been grazed. Rancher, were you able to keep a close eye on all your cattle? *Make sure rancher mentions the escaped cattle he/she had to keep wrangling.* Part of how ranchers show their stewardship is by taking care of not only the cattle, but the land the cattle use. Is there a way we could let grass continue to grow, feed the cattle, and keep them together so we are being good stewards?**



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

-  The whole class (including ones who have not entered the simulation) should participate in this problem-solving activity. Divide your classroom into four equal spaces with masking tape to create four pastures. Lead the discussion toward the idea of rotational grazing. Students should realize that grass needs time to grow, but the cows still must eat. If a rancher limits the grazing to one pasture at

a time, the cattle will be able to eat, as well as give the grass in the other pastures enough time to grow and the land time to rest.

- Say: **"Our new plan is to try rotational grazing; that means we graze one pasture at a time so that the other pastures can rest and grow. Rancher lead your cattle to their first pasture. Allow them to graze in our newly designated area. Make sure you keep a close eye on your cattle!"**
- Pull one cow aside and have them try to escape from the pasture up to two times.
- Ask: **"Rancher, what did you notice when you had your cattle grazing together in this pasture? When your cattle tried to escape, how was it different from when they were grazing all over the classroom?"** *Rancher should mention that it was easier to monitor the cattle in a smaller space.*
- Ask: **"The grass in our pasture is almost gone. What can we do to keep our cattle fed, but make sure our land gets time to rest and re-grow?"** *Students should suggest moving to the next pasture. Allow the rancher a moment to move the cattle to the second pasture.*
- Allow the students to graze for a couple of minutes in the second section. When time is up, have the rancher move the cattle to the third section where another problem will arise. While students are grazing in the second section, spread some purple paper strips in pasture 3 to represent larkspur and put up a sign in the third section that says "Caution: Larkspur Here! Deadly to Cattle!"

- Ask: **"Freeze! Half of your grass has been grazed. What should we do next?"** *Students will answer to go to the third pasture. Say: "Before our rancher moves on, we need to make sure that our next pasture is ready."* Point out the larkspur sign. Ask: **"Uh oh, larkspur is a plant that is deadly to cattle, and none of the other pastures are ready for grazing yet. What could we do?"** *At this point, your sheep should realize that their cards say that they eat larkspur. If not, encourage the students still seated to re-read their task cards for a helpful hint.*
- Say: **"The cattle rancher should now go talk with the sheep rancher and see if they can help clear the larkspur from pasture three."** Have the sheep rancher lead the sheep into pasture three to eat larkspur by picking up the shreds of purple paper while cattle finish grazing in pasture two.
- Ask: **"The larkspur has been cleared from pasture three. Great job, but now the grass and weeds in pasture four are too tall, and that is a big fire hazard. We don't want our grass to catch on fire because that is our food source, and we need it. What can we do?"** At this point, the students who are sheep should realize that they can move to pasture four to eat the tall grass and weeds as suggested on their task card. Then, the cattle can move into pasture three to eat the grass that remains.
- Say: **"Great idea! The sheep would be perfect to clear away those tall grass and weeds! Sheep rancher, why don't you move your sheep to the next pasture, and cattle rancher, you can also move your cattle."** Give students up to one minute to rotate and graze.

- Say: **"Great news! We have had enough rain for our grass to grow back in the other sections. Things are growing well, and your cattle and sheep are eating well! Your rotation is working the way it should!"** This is the end of the simulation.

Reshow slides 6, 7, and 10 from the PowerPoint. Discuss the following questions: **"After reviewing these slides, remember that Wyoming is the ninth largest state but the least populated state. How does our state's size and our small population help ranchers graze their livestock? Wyoming also has very large ranches. If our population grew as big as Colorado, how would this affect our ranch sizes?"** *Students should respond with the idea that a bigger population will lead to smaller available land space and vice versa. Make sure students see why it is important to have enough space to graze livestock properly. If we didn't have as much space, it would be harder to have a successful livestock industry.*

Say: **"Part of what makes Wyoming unique, is that the people who live here love the open space. We have always had great space for grazing, livestock, and ranches. We want that to continue in order to be good stewards of the land."** If time allows, the class could play another round of the game to give students an opportunity to have different roles.

4. Collect task cards from students. Pass out assessment questions.

TEACHER NOTE:
Please note, we are not discouraging responsible growth. We hope to encourage our students to find future opportunities in Wyoming. However, we also want to highlight how open spaces make Wyoming unique and allow ranching and other economic drivers to thrive.



In this task, students will be engaged in the higher order thinking skill of evaluation by evaluating outcomes and judging how ranchers are good stewards.



Assessment: Students will choose and respond to one of the four assessment questions. Say: "**Make sure to defend your answer with evidence from the activity.**" After about five minutes of writing, have the students find a partner who chose a different question and discuss their answers. Next, they could meet with someone who had the same question and see how their answers varied. Collect the responses to make sure students understand that land and livestock must be taken care of.

- A. How are ranchers in Wyoming good stewards of the land? Defend your answer by giving evidence from the activity.
- B. Why is Wyoming's land important to livestock? Defend your answer by giving evidence from the activity.
- C. If Wyoming grew in population, how would it affect the land and livestock? Defend your answer by giving evidence from the activity.
- D. How is Wyoming agriculture unique? Defend your answer by giving evidence from the activity.

Credits/Sources:

1. FarmCentric. (2018, June 28). *Cattle Inventory vs Human Population by State*. Retrieved August 2, 2018, from <http://beef2live.com/story-cattle-inventory-vs-human-population-state-0-114255>
2. FarmCentric. (2018, July 12). *Top 10 States with the Most Sheep & Lambs*. Retrieved August 2, 2018, from <http://beef2live.com/story-top-10-states-sheep-lambs-0-117992>
3. State of Wyoming. (2018). *Wyoming Facts and Symbols*. Retrieved August 2, 2018, from <http://www.wyo.gov/about-wyoming/wyoming-facts-and-symbols>
4. United States Census Bureau. (2017, July 1). *Quick Facts: Wyoming*. Retrieved August 2, 2018, from <https://www.census.gov/quickfacts/fact/table/wy/PST045217>

5. United States Census Bureau. (2017, July 1). *Quick Facts: Colorado*. Retrieved August 2, 2018, from <https://www.census.gov/quickfacts/fact/table/co/PST045217>
6. World Population Review. (2018). *US States – Ranked by Population 2018*. Retrieved August 2, 2018, from <http://worldpopulationreview.com/states/>
7. NSTATE,LLC. (2017, December 19). *Wyoming Economy*. Retrieved August 2, 2018, from http://www.netstate.com/economy/wy_economy.htm
8. Wyoming Association of Conservation Districts. (2017). *Wyoming Land Ownership Maps*. Cheyenne: Wyoming.