

Lesson 2: Animals Need Shelter

Grade Level: 2nd Grade

Time: 60 minutes

Subjects: ELA, Science, Engineering

Overview: This lesson is Lesson 2 of 5 in the *Farmers and Ranchers Care about their Animals!* unit of the *Growing Readers* micro-curriculum, based on the book series by Kansas author Dan Yunk. Building on the first read in Lesson 1, students deepen their understanding that farmers and ranchers care for animals by providing safe and appropriate shelter. Through a discussion of animal shelter needs, an authentic engineering design challenge, and explicit writing instruction, students design, build, and compare shelters for different farm animals while strengthening second-grade literacy skills. Second graders distinguish long and short vowel sounds in one-syllable words, write a full informative paragraph that introduces a topic, develops it with facts and a definition, and ends with a concluding statement, and practice choosing between adjectives and adverbs depending on what they modify.

Skillset: Activating and connecting prior knowledge from the read-aloud; understanding that different animals have different shelter needs; engineering design and building; testing, revising, and comparing structures; distinguishing long and short vowel sounds in one-syllable words, including recognizing vowel teams and the soft g sound pattern; using facts and definitions to develop informative writing; writing a concluding statement; using adjectives and adverbs correctly; recalling information from experience to support writing; and Kansas connections through farming and ranching.

Kansas Academic Standards

Kansas ELA Standards

RF.2.3.a. Distinguish long and short vowels when reading regularly spelled one-syllable words.

W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points and provide a concluding statement or section.

W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

W.2.10.e Use adjectives and adverbs and choose between them depending on what is to be modified.

Science & Engineering Standards

K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2 Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

National Agriculture Literacy Outcomes

Plants and Animals for Food, Fiber, and Energy

T2.K-2.b Identify animals involved in agricultural production and their uses (i.e., work, meat, dairy, eggs).

T2.K-2.c Recognize that farmers and ranchers are responsible for raising animals that provide food and fiber for people.

Agriculture and the Environment

T5.K-2.a Identify the ways farmers use land to grow crops and raise animals.

Objectives

Science & Engineering Objectives

Students will be able to:

- Define the problem a farmer faces when an animal shelter is damaged, using questions and observations.
- Identify that different animals have different shelter needs and that not all farm animals live in barns, since some animals' own natural features already provide protection.
- Design and build a shelter suited to the specific needs of their assigned animal, explaining how their shelter's shape helps it function.
- Test their shelter and revise their design based on what they observe.
- Compare their shelter design with a classmate's design for a different animal, describing the strengths and weaknesses of each.

English Language Arts Objectives

Students will be able to:

- Distinguish long and short vowel sounds when reading one-syllable, shelter-related words.
- Write an informative paragraph that introduces a topic, develops it with facts and at least one definition, and provides a concluding statement.
- Recall information from the engineering experience to support their writing.
- Use adjectives and adverbs correctly, choosing the correct form depending on whether they are modifying a noun or a verb.

Materials Needed

Whole Class:

- Book: *Farmers and Ranchers Care about their Animals!* by Dan Yunk, illustrated by Michelle Johnson (physical copy or author read-aloud on the unit landing page)
- Chart paper titled: *"What Does a Good Shelter Do?"*
- Chart paper for shared writing model
- Word cards for long and short vowel sort (e.g., pen, hut, shed, mud, nest, pig, gate, hive, coop, feed, rain, coat, cage, range)
- Markers
- Animal cards — one per student, teacher-assigned (cow, pig, chicken, horse, sheep, goat)

Engineering Challenge:

- Popsicle sticks (approximately 15–20 per student)
- Modeling clay or playdough (enough for each student to use as connectors)
- Small pieces of cardboard (one per student — for walls or roof base)
- Construction paper cut in a fan/accordion fold to resemble a metal roof (one per student)

- Building mats or trays (one per student, to contain materials)

Writing:

- Build-a-Shelter writing sheet — companion document (one per student)
- Pencils and crayons

Lesson Procedures

1. Connecting to What We Know

- Explain to students: “In our last lesson, we read that farmers and ranchers take care of their animals every day, rain or shine, hot or cold. One of the most important ways they take care of their animals is by making sure they have shelter. Today we are going to think like engineers and design a shelter of our own.”
- Hold up the book and turn to page 7, the picture of the rancher hauling hay through the snow to a herd of sheep. Read aloud: “This care for their animals takes place every day of the year, rain or shine, hot or cold.”
- Ask students:
 - “If it is raining and really cold outside and you have a chicken, what might happen to that chicken without shelter?”
 - “Have you ever seen a barn or an animal shelter? What did it look like? What do you think it was for?”

2. Whole Class Discussion — What Does a Good Shelter Do?

- Display chart paper: “*What Does a Good Shelter Do?*”
- Explain to students: “Before we build, let’s think like farmers and ranchers. A shelter protects an animal from the weather and keeps it safe. But not every animal needs the same kind of shelter.”
- Ask students and record responses on the chart:
 - “What does a shelter need to keep out? What might hurt an animal?” (Rain, wind, snow, heat, cold, predators)
 - “Does every farm animal live in a barn? What animals might stay outside?”
- Explain to students: “Here is something important: not all farm animals live in barns all the time. Cattle, sheep, and goats already have thick coats that protect them, and they can find natural shelter under trees or behind a windbreak when the weather is bad. A windbreak is a row of trees, a fence, or a hill that blocks the wind. Their bodies already do some of the work of a shelter! But smaller animals like chickens and pigs usually need a more protected shelter because their bodies cannot handle cold and wet weather as well.”
- Explain to students: “Farmers and ranchers also protect their smaller animals from predators using special guard dogs that live with the flock or herd. A good shelter helps keep predators out too.”
- Ask students:
 - “Why do you think a cow’s own thick coat means it might need less shelter than a chicken?”
 - “What is a windbreak, and how does it help protect animals?”
- Add student responses to the chart under two columns: “Animals that need a shelter” and “Animals that can shelter outside.” This visual will support student decision-making during the engineering challenge.

3. Distinguishing Long and Short Vowels

- a. Explain to students: “Before we build and write today, let’s practice a reading skill: telling the difference between long and short vowel sounds in one-syllable words. Knowing this will help you spell shelter words correctly when you write about the shelter you build today, like shed, coop, and cage. If you know whether a vowel says its name or its short sound, you’ll know whether that word needs a silent e or a double letter at the end.”
 - b. Explain to students: “A short vowel says its short sound, like the a in cat or the e in pen. A long vowel says its own name, like the a in gate or the e in feed. Long vowels often have a silent e at the end, or two vowels working together, like ai or ee.”
 - c. Model a think-aloud with shelter-related word pairs:
 - “Let’s look at the word pen. P-e-n. The e says its short sound. Pen has a short vowel.”
 - “Now let’s look at the word cage. C-a-g-e. The a says its own name because of the silent e at the end. Cage has a long vowel. Listen closely to the g in cage, too: it says /j/, not /g/. Here’s the pattern: when g is followed by an e, an i, or a y, it usually makes the soft /j/ sound, like in cage, giant, and gym. But when g is followed by a, o, or u, it usually keeps its hard /g/ sound, like in gate, goat, and gum. The letter that comes right after the g is what tells us which sound to use.”
 - “Let’s try hut. H-u-t. The u says its short sound. Hut has a short vowel.”
 - “Now let’s try coop. C-o-o-p. When two vowels sit next to each other like this, we call them a vowel team, and they work together to make one sound. Here, the two o’s team up to make a long vowel sound, /ū/, like in moon or spoon. Coop has a long vowel because of that oo vowel team. You’ll hear that same oo sound in other words, like food, roof, and boot.”
 - d. Practice as a class: display word cards with shelter and farm words divided into two piles for students to sort: shed, hut, mud, nest, pig (short vowel) and gate, hive, feed, rain, coat, cage, range (long vowel).
 - e. Ask individual students to read a word aloud, identify whether it has a long or short vowel sound, and explain how they know.
 Differentiation: For students who need additional support, provide a reference chart with an example word for each vowel sound to compare against during sorting. For students ready for a challenge, ask them to generate their own long or short vowel word related to farms or shelters.
4. Engineering Challenge Introduction — The Farmer’s Problem
- a. Explain to students: “Now I have a real problem for you to solve. Last night there was a big thunderstorm. One of the animal shelters on a farm blew down. The farmer needs your help. Your job today is to build a new shelter that will protect a farm animal from the weather.”
 - b. Distribute animal cards — one per student, teacher-assigned. Keep table groups diverse, so students are not all building for the same animal.
 - c. Explain to students: “Your animal card tells you which animal you are building for. Before you build, ask questions and think about what your animal needs.”
 - d. Display and read through the engineering questions together:
 - “Which animal needs this shelter?”
 - “Does it need shade to stay cool, or warmth to stay warm?”
 - “Does it need room to move around inside?”

- “Will rain get inside if the roof is flat? How can you make a roof that sheds water?”
 - “Can the wind blow it over? How can you make it strong?”
 - “Does your animal need protection from predators?”
 - “Does your animal already have natural protection, like a thick coat? How does that change what your shelter needs to do?”
- e. Give students two to three minutes to think about their animal’s needs before building begins.
- This planning step is critical for meeting K-2-ETS1-1. Students should be able to articulate at least one design decision before they begin building. Prompt students who are unsure: “Look at the chart we made. What does your animal need most?”
5. Build-a-Shelter — Engineering Challenge
- a. Distribute building materials: popsicle sticks, playdough connectors, cardboard, and fanned construction paper for roofing. Each student builds on their own tray or mat.
- b. Explain to students: “Use the playdough to hold your sticks together — that is your connector. The fanned paper can be your roof — notice how the folds help water run off the sides instead of sitting on top. Remember: engineers test and revise. If something falls down, that is not a mistake — that is information. Change your design and try again.”
- c. Students build independently. Allow approximately 15 minutes.
- d. Circulate and prompt engineering thinking:
- “What is your roof made of? Will water run off it or sit on top?”
 - “Is your shelter strong enough? What would happen if the wind blew on it?”
 - “What did you change from your first idea? Why?”
 - “How does your shelter do the same job as your animal’s own natural features, like fur or feathers?”
- Students with cattle, sheep, or goat cards may build a simple three-sided windbreak or shade structure rather than a full barn — this is accurate and should be affirmed. The goal is design thinking connected to the animal’s actual needs.
6. Gallery Share, Comparison, and Discussion
- a. After building, invite students to do a brief gallery walk around the room or share from their seat.
- b. For each student or small group, ask:
- “Which animal did you build for? What does your shelter protect your animal from?”
 - “Did you change anything while you were building? What did you fix?”
- c. Pair students with a partner who built for a different animal. Ask them to compare designs, addressing K-2-ETS1-3:
- “What is one thing your shelter and your partner’s shelter have in common? What is one way they are different, and why?”
 - “Which design might work better in strong wind? Which might work better on a hot day? Why?”
- d. Ask the class:
- “Whose shelter looks like a barn? Whose looks different? Why might a shelter look different for different animals?”

- e. Gather students back together in the whole-group meeting area, leaving shelters at their trays or mats for now.
 - f. Explain to students: "As we talked about our shelters just now, we used describing words without even thinking about it. Someone might have said their shelter is strong, or that they built it quickly. Those describing words help your listener picture exactly what you mean. Let's look closely at two kinds of describing words we can use in our writing, too."
7. Adjectives and Adverbs
- a. Explain to students: "Good writers choose their words carefully. Today we are going to practice using two kinds of describing words: adjectives and adverbs. In a few minutes, we are going to write about the shelter you built, and I want you to use at least one adjective and one adverb in your writing."
 - b. Explain to students: "An adjective describes a noun — a person, place, or thing. In the sturdy shelter, sturdy is an adjective describing the shelter. An adverb describes a verb — an action word. It tells how, when, or where something happens, and it often ends in -ly. In I built the shelter carefully, carefully is an adverb describing how I built it."
 - c. Model contrasting examples using the same describing idea as both an adjective and an adverb:
 - "The strong wind blew the roof off." Strong is an adjective describing the noun wind.
 - "The wind blew strongly against the shelter." Strongly is an adverb describing the verb blew.
 - "That is a quick fix." Quick is an adjective describing the noun fix.
 - "We quickly fixed the roof." Quickly is an adverb describing the verb fixed.
 - d. Ask students: "In the sentence, The rancher carefully built a sturdy shelter, which word is the adjective and which word is the adverb? How do you know?"
 - e. Provide practice sentences for students to choose the correct form depending on what is being modified:
 - "The wind blew (strong / strongly)."
 - "That is a (careful / carefully) design."
 - "The sheep huddled (close / closely) together in the shelter."

Differentiation: For students who need additional support, provide sentence frames that name the noun or verb being modified so students can check whether an adjective or adverb fits. For students ready for a challenge, ask them to write their own sentence about their shelter that uses both an adjective and an adverb.
8. Informative Writing: Facts, a Definition, and a Concluding Statement
- a. Gather students where they can see chart paper clearly.
 - b. Explain to students: "Now we are going to write about our shelter. In second grade, informative writing has four parts: you introduce your topic, you give facts about it, you include a definition of a word your reader might not know, and you end with a concluding statement that wraps up your whole paragraph. Watch for the adjective and adverb I use, too."
 - c. Explain definitions: "A definition tells what a word means. For example, if I use the word windbreak in my writing, I should tell my reader what a windbreak is, in case they do not know."
 - d. Model writing a four-part informative paragraph on chart paper, thinking aloud:

- “My topic: I built a sturdy shelter for a sheep. Sturdy is an adjective describing my shelter. My topic sentence introduces what I built.”
 - “My facts: It has a roof that sheds rain. I carefully built it low to the ground to block the wind. Carefully is an adverb describing how I built it.”
 - “My definition: My shelter works like a windbreak. A windbreak is a structure that blocks strong wind from reaching an animal. I am defining a word my reader might not know.”
 - “My concluding statement: A good shelter helps a sheep stay safe and healthy all year long. This sentence wraps up my whole paragraph, not just one fact.”
- e. Point to each part and name it: topic sentence, fact sentences, definition sentence, concluding statement. Point out the adjective and adverb and name what each one describes.
9. Independent Writing — Build-a-Shelter Writing Sheet
- a. Distribute the Build-a-Shelter writing sheet.
 - b. Explain to students: “Write your own informative paragraph about the shelter you built, just like we practiced together on the chart paper. Introduce your topic — your animal and shelter. Give at least two facts. Include a definition of one shelter-related word. Remember the adjectives and adverbs we practiced, like sturdy and carefully — use at least one adjective and one adverb in your writing. Then write a concluding statement.”
 - c. Students complete the writing sheet independently.
 - d. Circulate and support:
 - Prompt for topic: “What animal did you build for? Start your paragraph by naming it.”
 - Prompt for facts: “What does your shelter protect your animal from? What is it made of?”
 - Prompt for definition: “Is there a word in your writing your reader might not know, like windbreak or shelter? How could you explain what it means?”
 - Prompt for adjectives: “Think back to our practice sentences. Can you describe your shelter with an adjective, like sturdy, strong, or tall? What noun is it describing?”
 - Prompt for adverbs: “Can you describe how you built your shelter with an adverb, like carefully or quickly? What verb is it describing?”
 - Prompt for concluding statement: “How does your paragraph end? Write one statement that wraps up your whole paragraph.”
 - Support for vowel spelling: “Say the word slowly. Does the vowel say its name, or its short sound? Check your spelling.”

Differentiation: Teacher may provide a word bank with shelter-related adjectives and adverbs if needed. Students who need additional support may dictate their paragraph while the teacher or a classroom helper scribes, or may use the sentence frames from Step 7 to check whether their describing word is an adjective or adverb. Students ready for a challenge can be prompted to add a third fact or a second definition.
10. Closing Discussion and Kansas Connection
- a. Gather students back together with their writing sheets.
 - b. Ask students:
 - “What animal did you build a shelter for? What facts did you write about it?”

- “In our book, farmers care for their animals every day. How does building a shelter show that a farmer cares for their animals?”
- c. Kansas Connection:
- d. Explain to students: “Kansas farmers and ranchers build and maintain shelters for their animals all across our state. On beef cattle ranches in the Flint Hills, cattle use natural features like hills, draws, and windbreaks for protection. On farms in western Kansas, chickens and pigs have carefully built shelters that keep them safe from the weather and from predators. Whether a shelter is a big red barn or a simple three-sided windbreak, it is there because a farmer or rancher took the time to build it.”
- e. Ask students:
 - “Have you ever seen an animal shelter on a farm or ranch? What did it look like?”
 - “Do you know anyone who takes care of farm animals? What do they do to keep their animals safe?”

Assessment: Student understanding is assessed through teacher observation during the whole-class discussion, engineering challenge, gallery share and comparison, shared writing, and independent writing. The teacher should note whether students can define the problem and articulate at least one design decision based on their animal’s needs, compare their design to a classmate’s design and describe a strength or weakness of each, distinguish long and short vowel sounds when reading one-syllable words, write an informative paragraph that introduces a topic, develops it with facts and a definition, and provides a concluding statement, use adjectives and adverbs correctly depending on what they modify, and recall information from the engineering experience to support their writing. The Build-a-Shelter writing sheet serves as the primary written artifact for this lesson.

Supplemental Activities: Display the completed Build-a-Shelter writing sheets alongside the “What Does a Good Shelter Do?” anchor chart from this lesson and the charts from Lesson 1. Guide students to see the connection: farmers build shelters because they care about their animals’ safety and well-being. For an extension activity, invite students to sort the animal cards into two groups, “Needs a shelter” and “Can shelter outside using natural features,” reinforcing the discussion from Step 2. Students may also play a quick long-and-short-vowel sort using the word cards from Step 3 as a literacy center.

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Student Name: _____

Build-A-Shelter

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