Lesson 4: Farm Equipment Engineers

Grade Level: Second Grade

Time: 75 minutes (building and testing portion approximately 30 minutes)

Subjects: ELA, Science, Agriculture

Overview: This lesson is Lesson 4 of 5 in the *Jobs Farmers Do* unit within the *Growing Readers* micro-curriculum, based on a series of books written by Kansas author Dan Yunk. Building on Lesson 2, where students repaired farm equipment, students discover that farmers also solve problems by designing and building the equipment they need. As farm equipment engineers, students take on a real farm problem, build their own solution, and learn through testing that a first try can always be improved. They gain confidence as problem solvers and see the value of trying, changing, and trying again. Students strengthen their reading of longer words by breaking two-syllable words into parts and listening for long vowels. They then turn their building experience into a story that tells what happened in order, shares what they did, thought, and felt, and ends with a clear closing. As they write, they learn to drop a silent e before adding an ending. By comparing their designs with classmates, students recognize that a problem can have more than one good solution. They connect their work to the wagons, carts, and augers Kansas farmers depend on every day.

Skillset: Activating prior knowledge across lessons, defining a simple problem, decoding two-syllable words with long vowels, designing and building a physical model, testing a design and collecting data, improving a design, comparing two designs, recalling information from a hands-on experience, writing a narrative with a sequence of events, temporal words, details about actions, thoughts, and feelings, and a sense of closure, and applying the drop the e rule when adding endings.

Kansas Academic Standards
Kansas ELA Standards
RF.2.3.c Decode regularly spelled two-syllable words with long vowels.
W.2.3 Write narratives in which they recount a well-elaborated event or short sequence of events, include details to describe actions, thoughts and feelings, use temporal words to signal event order and provide a sense of closure.
W.2.8 Recall information from experiences or gather information from provided sources to answer a question.
W.2.11.d Generalize learned spelling patterns when writing words, including compound words, the doubling rule, and e-drop rule.

Kansas Science Standards
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
Science, Technology, Engineering, and Mathematics
T4.K-2.b Recognize and identify examples of simple tools and machines used in agricultural settings (e.g., levers, screws, pulley, wedge, auger, grinder, gears, etc.).

Objectives
English Language Arts Objectives
Students will be able to:
- Decode two-syllable words with long vowels by breaking them into syllables.
- Recall what happened during the challenge to answer questions on their recording sheet.
- Write a narrative that tells a short sequence of events in order using order words, with details about their actions, thoughts, and feelings, and an ending.
- Spell words with endings by dropping the silent e before adding -ing, -ed, or -er.

Science Objectives
Students will be able to:
- Build a physical model whose shape helps it carry a load of feed.
- Test their equipment, count how much feed made it to FINISH, change their design, and test it again.
- Compare two designs using how much feed each one carried, and tell what each one did well.

Agriculture Objectives
Students will be able to:
- Identify tools and machines farmers use to move feed and crops, such as wagons, wheels, grain carts, and augers.
- Explain that farmers build and improve equipment to solve problems on the farm.

Materials Needed
Whole Group:
- Book: *Jobs Farmers Do* by Dan Yunk, illustrated by Michele Johnson, with photographs by Scott Stebner and John Schlageck (physical copy, page 8 only)
- "Farmer Problem Solvers" chart paper, with four picture cards posted ahead of time and a question written beside each card (container: What will hold the feed? / arrow: How will you move it? / lid: How will you keep it from falling out? / strong arm: What will make it strong?)
- Farmer Problem Solvers picture cards, companion document (four cut-out cards: a container, an arrow, a lid, a strong arm)
- "Engineer Words" chart, written before the lesson (paper / making / taping / sliding / using / safer / wider)
- "Story Helper" chart, written before the lesson in three columns (Order Words: First, Next, Then, After that, Finally / Thinking Words: I thought, I wondered, I noticed / Feeling Words: proud, excited, happy, surprised, upset, worried)
- "Drop the e" chart, with the title and rule written before the lesson and the examples filled in during shared writing (When a word ends with a silent e, drop the e before adding an ending that starts with a vowel, such as -ing, -ed, or -er. / make → making / slide → sliding / tape → taping / safe → safer / tape → taped)

- 1 teacher testing area near the carpet, with START and FINISH marked about 2 to 3 feet apart
- 1 bare paper cup and 1 small empty box for the teacher demonstration
- 10 pieces of feed for the teacher demonstration (pom-poms, cotton balls, dry beans, or large counters)
- 1 teacher sample piece of equipment, built ahead of time from a paper cup with an index card lid taped on, kept out of sight until shared writing
- 1 teacher sample recording sheet, enlarged or displayed (chart paper, document camera, or poster-sized copy), used to model the whole sheet from start to finish and left posted during independent writing
- Markers

Farm Equipment Engineers Challenge (per student):

- 1 starter base, either a paper cup or a small box, chosen by the student
- 10 pieces of feed (pom-poms, cotton balls, dry beans, or large counters)

Farm Equipment Engineers Challenge (shared per small group of 3–4 students):

- 1 basket, tray, or container holding the building materials below
- Extra paper cups and small boxes, so every student can choose a starter base
- Small cardboard pieces, cut ahead of time into a mix of small rectangles and squares
- Craft sticks
- Drinking straws
- Index cards or cardstock
- Tape, with several strips torn ahead of time and placed along the table edge
- String or yarn
- Pipe cleaners
- Small cardboard tubes, optional, cut to safe sizes ahead of time
- 1 testing area with START and FINISH marked about 2 to 3 feet apart (a tray, a section of table, a piece of butcher paper, or a space marked with painter's tape)

Writing:

- My Farm Equipment recording sheet, companion document (one per student).
- Supported My Farm Equipment recording sheet, companion document for differentiation.
- Pencils

(Note: See the separate Teacher Preparation instructions below for setting up the material baskets and testing areas before the lesson begins. Do not build an example for students to copy. The teacher demonstration in section 4 uses a bare cup only, so students don't see a finished solution before building. Keep the teacher sample cup with a lid out of sight until shared writing. Each student builds and tests their own equipment, so each student writes about their own work.)

Lesson Procedures

1. Connecting to What We Know
    a. Before the lesson, complete the Teacher Preparation instructions below. Write the Engineer Words chart, the Story Helper chart, and the title and rule on the Drop the e chart. Display the Farmer Problem Solvers chart, the Engineer Words chart, the Story Helper chart, and the Drop the e chart near the carpet. Set the bare cup, the small box, 10 pieces of feed, and one basket of building materials beside the teacher testing area. Keep the teacher sample cup with a lid out of sight.
    b. Gather students on the carpet where they can all see you.

c. Explain to students: "In our last lessons, we became farm mechanics and farm business owners. Today we are going to find out about one more job farmers do, and this one is a building job."
d. Ask students the questions below. Call on two or three students for each one.
    - "Who remembers what equipment is?" (the machines and tools farmers use to do their work)
    - "What is one piece of farm equipment we fixed when we were mechanics?" (a tractor, a wagon)
e. Explain to students: "That's right. Today we are not going to fix equipment. We are going to build it. First, let's look at a photograph from our book that shows a farmer with a problem."

2. Spotting the Farmer's Problem
    a. Hold up *Jobs Farmers Do* and turn to page 8.
    b. Explain to students: "We are not going to read our whole book again today. We are just going to look at one photograph, because it shows us a problem we are going to solve."
    c. Point to the photograph of the farmer feeding sheep out of a bucket.
    d. Ask students:
        - "What is this farmer doing?" (feeding sheep)
        - "What is the farmer using to carry the feed?" (a bucket)
        - "The farmer has a whole flock of sheep to feed. Do you think one bucket is enough? Why or why not?"
    e. Explain to students: "A bucket works, but the farmer can only carry a little bit at a time. That is a problem. Remember what Grandpa told Kailey. He said farmers have to know how to solve problems. Today we are going to solve a farmer's problem."
3. Reading Engineer Words
    a. Point to the Engineer Words chart.
    b. Explain to students: "Engineers use these words when they talk about their work. Each word has two syllables, or word parts. When I read a long word, I break it into syllables and read one part at a time."
    c. Point to paper and draw a slash between pa and per.
    d. Think aloud: "When one consonant sits between two vowels, I try breaking the word before the consonant. Pa. The first syllable ends with the vowel a. When a syllable ends with a vowel, the vowel usually says its name. /p/ /ā/. Pa. Per. /p/ /er/. Pa, per. Paper."
    e. Point to the slash between ma and king and draw it.
    f. Think aloud: "Ma. The first syllable ends with a, so the a says its name. /m/ /ā/. Ma. King. /k/ /i/ /ng/. Ma, king. Making."
    g. Point to taping and draw a slash between ta and ping.
    h. Ask students:
        - "Where does the first syllable end?" (after the a)
        - "The first syllable ends with a vowel. What sound does the a make?" (/ā/, its name)
        - "Read it with me." (ta, ping, taping)
    i. Point to each remaining word on the chart. Have students break each word into syllables and read it with you:
        - "Sliding. Sli, ding. The i says its name."
        - "Using. U, sing. The u says its name."

        - "Safer. Sa, fer. The a says its name."
        - "Wider. Wi, der. The i says its name."
    j. Ask students: "What do you notice about the first syllable in every one of these words?" (It ends with a vowel, and the vowel says its name)
    k. Explain to students: "You might use some of these words when you write about your equipment today. Listen for them while you build."
4. Introducing the Farm Equipment Engineers Challenge
    a. Keep students on the carpet where they can all see the teacher testing area and the Farmer Problem Solvers chart. Do not hand out any baskets or materials yet.
    b. Explain to students: "Today you are going to be farm equipment engineers. An engineer is a person who builds something to solve a problem."
    c. Point to the START and FINISH points in the teacher testing area.
    d. Explain to students: "Here is the farmer's field. The feed is piled up right here at START. The farmer needs it over here at FINISH."
    e. Pick up one piece of feed, carry it slowly from START to FINISH, and set it down. Repeat once more, slowly.
    f. Ask students:
        - "If I keep going one piece at a time, how long will this take?"
        - "What could I build to move a lot of pieces at once?"
    g. Explain to students: "That is your job today. Build something that carries a load. A load means a whole bunch at once, not one at a time."
    h. Hold up the bare paper cup and the small empty box.
    i. Explain to students: "Every engineer gets to pick one of these to start with, a cup or a box. This is just your starting piece. It isn't finished yet, and it isn't strong enough yet. Your job is to make it work."
    j. Place the 10 pieces of feed at START and fill the bare cup with them while students watch.
    k. Explain to students: "Watch me. I am going to move my load from START to FINISH."
    l. Carry the cup across, tipping it enough that a few pieces spill, and set it down at FINISH.
    m. Count the pieces left in the cup aloud, one at a time.
    n. Ask students:
        - "What did you see happen?" (some feed fell out)
        - "How many pieces made it to FINISH?"
        - "What went wrong?" (the cup tipped and was hard to carry)
    o. Explain to students: "Some of my feed fell out. That is the problem you are going to fix. After you test, you will count how many pieces made it to FINISH. Then you will change one thing and test again. I am not going to show you what to change. Every engineer decides that for their own equipment."
    p. Hold up the basket of building materials so all students can see it. Do not pass it out.
    q. Explain to students: "Your basket has cups, boxes, cardboard, craft sticks, straws, index cards, tape, string, pipe cleaners, and tubes. You may use any of them."
    r. Point to the Farmer Problem Solvers chart.
    s. Explain to students: "Engineers ask questions while they build. There is no single right way to build, so each engineer at your table might solve the problem

differently. Here are four questions to think about." Point to each picture card and read its question aloud:
    - "What will hold the feed?" (Point to the container card.)
    - "How will you move it?" (Point to the arrow card.)
    - "How will you keep it from falling out?" (Point to the lid card.)
    - "What will make it strong?" (Point to the strong arm card.)

t. Explain to students: "You will share the basket with your group, but each engineer builds their own equipment. Here is what you will do." Hold up one finger for each step:
    - "One, pick your cup or box."
    - "Two, build your equipment."
    - "Three, fill it with your 10 pieces of feed."
    - "Four, move it from START to FINISH and count how many pieces made it."
    - "Five, change one thing to fix what went wrong."
    - "Six, test it again and count again."

u. Ask one student to repeat the first step back to you before anyone moves to a table.

5. Farm Equipment Engineers Challenge: Build and Test
    a. Divide students into groups of 3–4 and send each group to a table.
    b. Place one basket of building materials in the center of each table, within reach of every student.
    c. Have each student choose one starter base, a paper cup or a small box, and keep it in front of them.
    d. Explain to students: "Your base belongs to you. Keep it in front of you, not in the middle with the shared basket. You may start building now."
    e. Students build their own equipment. Students may build a wagon, cart, scoop, sled, bucket, or any other design they choose.
    f. Circulate and support while students build:
        - Prompt for the problem: "What job will your equipment do?"
        - Prompt for shape: "What part will hold the feed? What keeps it from falling out?"
        - Prompt for strength: "Which piece is strongest?"
        - Prompt for testing: "How will you know if it works?"
        - Prompt for thoughts and feelings: "What are you thinking right now? How do you feel about how it is going?"
    g. When a student is ready to test, give that student 10 pieces of feed at the START point of their group's testing area.
    h. Students take turns at their group's testing area, filling their equipment and moving the load from START to FINISH.
    i. After each student's first test, have the student count the pieces that made it to FINISH and say the number out loud.
    j. Ask that student:
        - "Did anything fall out?"
        - "Did any part bend or fall over?"
        - "Was it easy to move?"
    k. Explain to that student: "Remember your number. Now change one thing to fix what went wrong."

l. Students test their equipment a second time and count the pieces that made it to FINISH again.
m. Ask that student: "Did more feed make it this time, fewer, or the same? How do you feel about that?"
n. Have students leave their finished equipment at their seat, return any unused materials to the shared basket, and come to the carpet.
(Note: Two tests are enough. Students who finish early may add a handle or a lid and test again. For students who need more support, start with a cup and add only one piece, or have an adult hold a piece steady while they tape. Pre-torn tape strips save building time.)

6. Shared Writing: First and Next
   a. Gather students on the carpet where they can all see the sample recording sheet, the Story Helper chart, and the Drop the e chart.
   b. Explain to students: "Engineers write down what happened so other people can learn from their work. Today you will write a story about your equipment. A good story does three things."
      - "It tells what happened in order, using order words."
      - "It tells what you did, and what you thought and felt."
      - "It ends by telling how everything turned out."
   c. Point to the Story Helper chart. Read each column aloud while pointing to each word: order words, thinking words, and feeling words.
   d. Hold up the teacher sample cup with the lid.
   e. Explain to students: "This is the equipment I built. I am going to write my story about it first. Watch closely, because you will do the same thing next."
   f. Point to the name line and write your name on it.
   g. Point to question 1 and read it aloud while pointing to each word: "What did you build first?"
   h. Think aloud: "What did I build first? I started with a paper cup. My story starts with the order word First. My sentence is: First, I started making a feed bucket out of a paper cup."
   i. Think aloud: "Making comes from the word make." (Write make on the Drop the e chart.)
      - "Make ends with a silent e."
      - "I want to add the ending -ing. The ending -ing starts with a vowel, i."
      - "When a word ends with a silent e and the ending starts with a vowel, I drop the e before I add the ending." (Cross out the e in make. Write → making beside it.)
      - "Make, making. I dropped the e."
   j. Think aloud: "Paper is a two-syllable word we read today. Pa. The a says its name, so I write p, a. Per. P, e, r." (Write First, I started making a feed bucket out of a paper cup. on the lines under question 1.) "Now I read my sentence. First, I started making a feed bucket out of a paper cup."
   k. Point to question 2 and read it aloud while pointing to each word: "What happened when you tested it? How did you feel?"
   l. Think aloud: "What happened when I tested it? My cup tipped, and the feed slid out. Only 6 pieces made it to FINISH. I want to tell what happened and how I felt. I felt upset. My sentences are: Next, I tested it, and the feed went sliding out. I felt upset because only 6 pieces made it to FINISH."

m. Think aloud: "Sliding comes from the word slide." (Write slide on the Drop the e chart.)
    - "Slide ends with a silent e, and -ing starts with a vowel."
    - "So I drop the e before I add -ing." (Cross out the e in slide. Write → sliding beside it.)
    - "Slide, sliding."
n. Think aloud: "Now I write my sentences." (Write Next, I tested it, and the feed went sliding out. I felt upset because only 6 pieces made it to FINISH on the lines under question 2.) "Now I read my sentences. Next, I tested it, and the feed went sliding out. I felt upset because only 6 pieces made it to FINISH. I used the order word Next. I told what happened and how I felt."

7. Shared Writing: Then and Finally
    a. Point to question 3 and read it aloud while pointing to each word: "What did you change, and why?"
    b. Think aloud: "What did I change, and why? I thought a lid would keep the feed from sliding out. That is what I thought, so I tell my reader. My sentences are: Then I thought a lid might help. I made a lid by taping a card on top of my cup."
    c. Think aloud: "Taping comes from the word tape." (Write tape on the Drop the e chart.)
        - "Tape ends with a silent e, and -ing starts with a vowel."
        - "So I drop the e before I add -ing." (Cross out the e in tape. Write → taping beside it.)
        - "Tape, taping."
    d. Think aloud: "Now I write my sentences." (Write Then I thought a lid might help. I made a lid by taping a card on top of my cup. on the lines under question 3.) "Now I read my sentences. Then I thought a lid might help. I made a lid by taping a card on top of my cup."
    e. Point to question 4 and read it aloud while pointing to each word: "How did it work at the end? How did you feel?"
    f. Think aloud: "How did it work at the end? I tested it again, and all 10 pieces made it to FINISH. My lid kept the feed safe. I felt proud. This is my ending, so I use the order word Finally. My sentences are: Finally, all 10 pieces made it to FINISH! My feed bucket is safer now, and I feel proud."
    g. Think aloud: "Safer comes from the word safe." (Write safe on the Drop the e chart.)
        - "Safe ends with a silent e."
        - "I want to add the ending -er. The ending -er starts with a vowel, e."
        - "So I drop the e before I add -er." (Cross out the e in safe. Write → safer beside it.)
        - "Safe, safer."
    h. Think aloud: "Now I write my sentences." (Write Finally, all 10 pieces made it to FINISH! My feed bucket is safer now, and I feel proud. on the lines under question 4.) "Now I read my sentences. Finally, all 10 pieces made it to FINISH! My feed bucket is safer now, and I feel proud."
    i. Point to the sketch space and draw a cup with a lid while students watch.
    j. Read the whole story aloud, pointing to each word as you read: "First, I started making a feed bucket out of a paper cup. Next, I tested it, and the feed went sliding out. I felt upset because only 6 pieces made it to FINISH. Then I thought a

lid might help. I made a lid by taping a card on top of my cup. Finally, all 10 pieces made it to FINISH! My feed bucket is safer now, and I feel proud."

k. Point to the checklist. Read each line aloud and check each box on the sample sheet as you answer:
    - "I used order words. Yes, First, Next, Then, and Finally." (Check the box.)
    - "I told what I did. Yes, I made a feed bucket, tested it, and added a lid." (Check the box.)
    - "I told what I thought and felt. Yes, I thought a lid might help. I felt upset, and then I felt proud." (Check the box.)
    - "I used the drop the e rule when I added an ending. Yes, making, sliding, taping, and safer." (Check the box.)
    - "I wrote an ending. Yes, finally, all 10 pieces made it to FINISH! My feed bucket is safer now, and I feel proud." (Check the box.)
l. Point to the Drop the e chart.
m. Ask students: "The ending -ed starts with a vowel too. How would I write taped? Tape plus -ed." (Drop the e, then add -ed: t, a, p, e, d) Write tape → taped on the Drop the e chart.
n. Explain to students: "When you write today, watch for words that end with a silent e, like make, tape, use, move, or slide. If you add -ing, -ed, or -er, drop the e first."

8. Independent Writing: My Farm Equipment
    a. Leave the sample recording sheet, the Story Helper chart, the Drop the e chart, and the Engineer Words chart posted where all students can see them.
    b. Explain to students: "Now it is your turn. Here is what you will do."
        - "Write your name at the top."
        - "Answer each question about your own equipment in complete sentences."
        - "Use order words to tell what happened in order. The Story Helper chart can help."
        - "Tell what you did, what you thought, and how you felt."
        - "When you add -ing, -ed, or -er to a word that ends with a silent e, drop the e first."
        - "Sketch your equipment."
        - "Check your work with the checklist at the bottom."
    c. Send students to their seats, where their equipment is waiting. Hand each student a recording sheet and a pencil.
    d. Circulate and support:
        - Prompt for recall: "Look at your equipment. What did you build first? What happened when you tested it?"
        - Prompt for order: "What happened first? What did you change next? How did it work at the end? Which order word fits?"
        - Prompt for thoughts and feelings: "What were you thinking when the feed fell out? How did you feel when you tested it again?"
        - Prompt for the drop the e rule: "What is the base word? Does it end with a silent e? Does your ending start with a vowel? What do you do with the e?"
        - Prompt for the ending: "How did your equipment work on your last test? How did you feel? That is your ending."
    e. When students finish, have them read their story aloud to a neighbor or to you.

(Note: Accept phonetic spellings for longer words, such as stringe for string. For students who need more support, let them hold their equipment and say each sentence aloud before writing, or provide a copy of the recording sheet with an order word printed at the start of each answer. For students ready for more, challenge them to add how many pieces of feed made it on each test, or a sentence that tells what they would change if they built it again.)

9. Closing Discussion and Kansas Connection
    a. Have students bring their completed recording sheets and their equipment to the carpet.
    b. Choose two students who solved the problem in different ways. Place their equipment side by side where everyone can see it.
    c. Ask each of the two students:
        - "How many pieces of feed made it to FINISH on your second test?"
        - "What did you change after your first test?"
    d. Ask students, pointing to the two pieces of equipment on display:
        - "Both of these move feed. How are they different?"
        - "Which one carried more feed? How do we know?"
        - "What did this one do well?" (Point to the first piece of equipment.)
        - "What did this one do well?" (Point to the second piece of equipment.)
    e. Ask students: "Read us your ending. How did your equipment work at the end, and how did you feel?"
    f. Kansas Connection:
    g. Explain to students: "Kansas farmers move feed and crops every single day, and they use equipment to do it. Wagons and grain carts roll on wheels, which makes heavy loads easier to move. An auger is a machine shaped like a giant twisty screw. It turns to lift grain up into a truck or a tall bin. When something does not work well enough, farmers change it and try again, just like you did today."
    h. Ask students:
        - "Whether farms are just down the road from you or something you have only seen in pictures, where have you seen a wagon, a cart, or a truck moving something heavy?"
        - "Think about the food in your kitchen at home. Someone had to move it from a field all the way to you. What is one piece of equipment that might have helped?"
        - "What is one thing you could tell your family tonight about the equipment you built?"

Assessment: Teacher observation during the Engineer Words reading, the challenge, shared writing, and independent writing provides ongoing evidence of student understanding. Watch for whether students break two-syllable words into syllables and read the long vowel in the first syllable. During the challenge, note whether students build a model whose shape helps it carry a load, count the feed that reaches FINISH, and change their design after testing. During the closing, note whether students use their counts to compare two designs and describe what each one did well, and whether they can name equipment farmers use to move feed and crops. The completed recording sheet is the primary artifact. It shows whether students recalled their experience to answer each question and told events in order with order words. It also shows whether they included details about their actions, thoughts, and feelings, wrote an ending, and dropped the silent e when adding endings. The finished equipment serves as the second artifact.

Supplemental Activities: Display the finished equipment alongside the completed recording sheets under a title such as "Farm Equipment Engineers at Work!" Add load, engineer, and auger to the word wall, and keep adding new words to the Drop the e chart throughout the unit. For an extension, set up a building center where students design equipment for a different farm job, such as carrying water to animals or moving hay bales, and test it the same way, counting how much each design carries.

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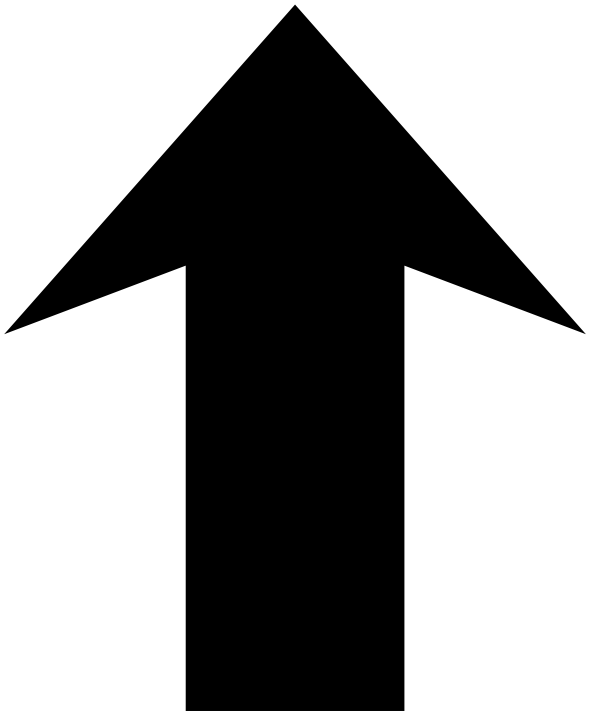
Teacher Preparation Instructions

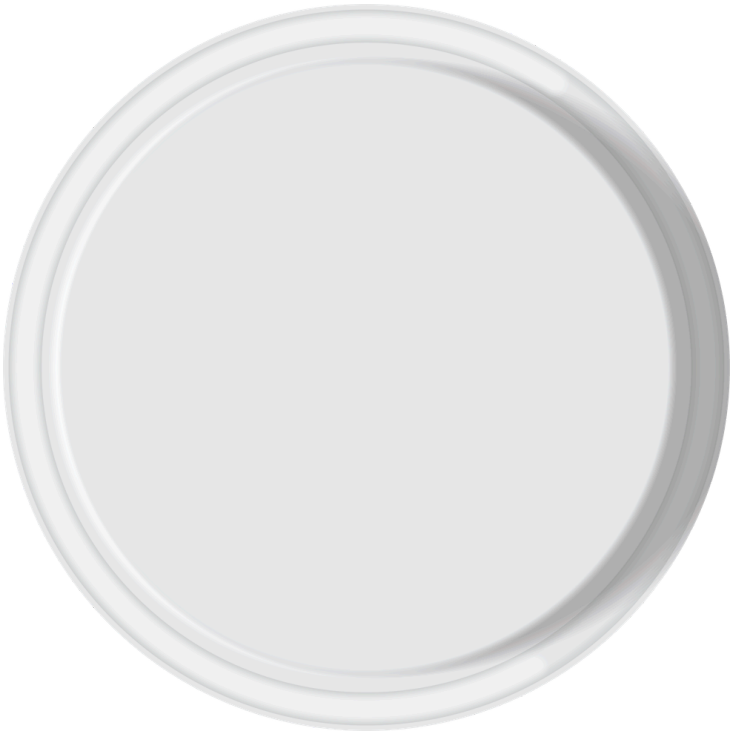
1. Before students arrive, place the shared building materials into one basket, tray, or container for each small group.
2. Set out enough paper cups and small boxes for every student to choose one starter base, plus a few extras.
3. Print and cut out the four Farmer Problem Solvers picture cards. Post them on the chart paper and write the matching question beside each card.
4. Prepare one testing area for each group and one teacher testing area near the carpet. A testing area can be:

A tray
A section of table
A piece of butcher paper
A space marked with painter's tape

5. Mark a clear START and FINISH point in each testing area, about 2 to 3 feet apart.
6. Count out 10 pieces of feed (pom-poms, cotton balls, dry beans, or counters) for every student, plus 10 for the teacher demonstration.
7. Tear several strips of tape ahead of time and place them along the edge of each table so students can use them independently.
8. Cut cardboard into small, easy-to-handle pieces ahead of time. A mix of rectangles and squares works well.
9. If using cardboard tubes or boxes, make sure they are already cut to safe sizes before the lesson.
10. Build the teacher sample by taping an index card lid onto a paper cup. Keep it out of sight until shared writing.
11. Do not build an example for students to copy. The goal is for students to create their own solution.
12. Before beginning, check that all materials are safe, clean, and free of sharp edges.









Name:_____

My Farm Equipment Recording Sheet

1. What did you build first?

_____

_____

_____

2. What happened when you tested it? How did you feel?

_____

_____

_____

3. What did you change, and why?

_____

_____

_____

4. How did it work at the end? How did you feel?

_____

_____

_____

Name:_____

My Farm Equipment Recording Sheet

5. Sketch your equipment below.

- ☐ I used order words.
- ☐ I told what I did.
- ☐ I told what I thought and felt.
- ☐ I used the "drop the E" rule when I added an ending.
- ☐ I wrote an ending.

Name:_____

My Farm Equipment Recording Sheet

1. What did you build first?

First, _____

_____

_____

2. What happened when you tested it? How did you feel?

Next, _____

_____

_____

3. What did you change, and why?

Then, _____

_____

_____

4. How did it work at the end? How did you feel?

Finally, _____

_____

_____

Supported version.

Name:_____

My Farm Equipment Recording Sheet

5. Sketch your equipment below.

- ☐ I used order words.
- ☐ I told what I did.
- ☐ I told what I thought and felt.
- ☐ I used the "drop the E" rule when I added an ending.
- ☐ I wrote an ending.

Supported version.