



Lessons presented by
Oklahoma State University
Ferguson Family Dairy Visitor Center
 With Southwest-Southland Dairy Farmers

Instructor	Jaycie Heath
Grade Level	6-8
Lesson Title	Robotic Milker (In Person, Scheduled or Unscheduled)

TEACHER PREPARATION

Learning Goals & Standards/Performance Indicators	
Learning Goals	Standards
1. Upon completion of this lesson students will be able to identify basic functions of the DeLaval VMS-V300 Robot and identify how its function improves the efficiency of the dairy.	1. <u>SS: 6.4</u> The student will analyze the interactions of humans and their environment in the Western Hemisphere. <ul style="list-style-type: none"> • 6.4.1 Describe the commercial agriculture and industrial regions that support human development • 6.4.2 Evaluate the effects of human modification on the natural environment through transformation caused by subsistence and commercial agriculture, industry, demand for energy, and urbanization. 2. <u>SS: 7.4.4</u> Evaluate the effects of human modification of and adaptation to the natural environment through transformation caused by agriculture, the use of modern irrigation methods, industry, demand for energy, and urbanization. 3. <u>OKH.6.2</u> Analyze the impact of economic growth in various sectors including: <ul style="list-style-type: none"> <input type="checkbox"/> C. continuing role of agriculture
Resources and Materials	
<input type="checkbox"/> Visuals in the center <input type="checkbox"/> Student tour guides <input type="checkbox"/> DeLaval VMS <input type="checkbox"/> Dairy Herd Manager, Nicole Sanders	
Announcement and Other Preliminaries	
1. Welcome students to the Ferguson Family Dairy, introduce self and what you do for the dairy, etc.	

LESSON DELIVERY

Anticipatory Set

- What do you think of when I say robot?
 - Encourage students to answer and describe what they think of as a robot.
- What are some potential uses for robots? Why might robots be important to different industries?
 - Does anyone have a Roomba or shark vacuum at home? Home helper robots are very common and there's even a robot that mows people's yard for them!
 - Robots help us perform tasks and save time which can be important in growing industries or industries where there isn't enough labor. We have a new robot here at the dairy that helps us milk the cows, and today we are going to learn about the ways that it is beneficial to the function of the dairy.

Direct Instruction

<p>1st Learning Goal: Upon completion of this lesson students will be able to identify basic functions of the DeLaval VMS-V300 Robot and identify how its function improves the efficiency of the dairy.</p>	
Content Outline	Instructional Strategies
<p><u>Meet our Robotic Milker!</u> (from Nicole Sanders, Dairy Herd Manager)</p> <ul style="list-style-type: none"> • This is our DeLaval VMS-V300 Robot, it can milk up to 60 cows per day; we have about 55 cows who are entered in the system and can use the robot. • Each cow spends on average about 6 minutes and 30 seconds in the robot and sets her own daily milking schedule, with some stipulations on the number of times she can be milked. <ul style="list-style-type: none"> ◦ This helps keep the cows more comfortable by giving them the freedom to decide when they need to be milked. A comfortable cow is more productive and therefore can produce a higher quality product. The robot provides us with the opportunity to maximize production in our cows by allowing them to be milked more often throughout the day. • Entry into the robot is completely voluntary and it only took the initial group of cows about a month to learn to use the robot. Now, the first group of cows can help train new 	<ul style="list-style-type: none"> • For this lesson I think it would be best to have students positioned in front of the robot viewing window so they can see cows enter and the statistics on the monitor as the lesson goes on. • Encourage students to ask questions throughout and it will be important that they can observe the cows using it.

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cows on the robot and it only takes about two weeks for them to begin using it regularly.

Why do we have a robot? (From DeLaval VMS)

- *Direct students to the monitor as it reports data from the cows;* As you can see, the robot captures vast amounts of data from every milking, from every cow - even from each quarter. The robot can tell us:
 - Milk flow
 - How much milk she gave last time versus this time.
 - How many times she has been milked in the robot.
 - And more, all in real time, and all specific to one cow.
- The DeLaval robot constantly measures each cow's milking performance and adjusts the accordingly to milk her. Which can result in faster and less stressful milking, allowing for more milkings per day and shorter waiting times for cows.
- We can see all this information in reports that the robot sends directly to our herd manager, Nicole. Allowing workers here to track when cows go into the milker, how often they are being milked, and Nicole can change how many times each cow can be milked based on the cow's individual performance, age, and lactation stage. This means that the robot can be tailored to work the best for each cow.
 - Our herd manager gives permission for how many times each cow can be milked a day, and the robot knows this. As the cow enters the robot it scans her tag and knows if she has maxed out her number of milkings in one day or not. If she doesn't have permission to be milked again the front gate opens and she leaves.
- Using a robot can also improve cleanliness while milking.

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- It prepares each quarter of the udder for milking by using a combination of teat spray for disinfection and the DeLaval PureFlow™ cup for proper cleaning.
 - The robot uses a separate, dedicated cup to reduce the chance of cross-contamination or residue during the preparation stage, before beginning to milk the cow.
 - Once attached, the DeLaval PureFlow™ cup uses a unique combination of air, water and optional DeLaval PureFlow™ cup cleaning additive to clean, stimulate and strip the teat to get ready for milking.

- The robot has also provided student workers with the opportunity to gain hands on experience with up-and-coming methods of milking. We can even provide students with the ability to network with members of the industry. This allows students to form relationships with perspective employers. (Nicole Sanders, Dairy Herd Manager)

Learning Activity

- Students should be encouraged to label a diagram of the robot with benefits of its use, identify what information the metrics screen displays, and anything else that helps the students remember the robotic milker.

Assessment

- Questioning:
 - How does the robot help the dairy?
 - How does the robot help the cows?
 - How is the robot helping students?

Closure

Closing Announcements/Reminders
<ul style="list-style-type: none">• Answer any questions they may have• Show them the robot and viewing windows one more time• Thank students for coming to the Ferguson Family Dairy