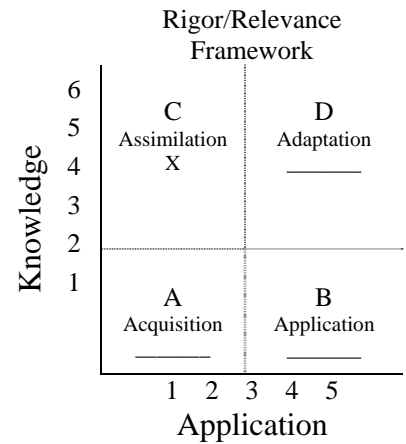


**Dairy Cattle Evaluation**  
**Linear**  
**Lesson 7**



Area and/or Course: Animal Science/Dairy

Teacher Goal(s):

1. Students to gain exposure to Linear Evaluation.
2. Students to understand the concepts of Linear Evaluation.
3. Student to start gaining an understanding of how Linear Evaluation is used.

**Lesson Title: Linear**

Objectives:

The student will be able to (TSWBT). (OR Skill Set numbers in parentheses at the end of the objective statement.)

1. Describe the 5 traits associated with Linear Evaluation. (AGPC 01.05.04.01)
2. Use Linear Evaluation to assist in placing of classes. (AGPC 01.05.04.02)
3. Describe why linear evaluation is important. (AGPC 01.05.04.04)

CIM/CAM Standard met by Objectives:

<u>Page</u>	<u>Category</u>	<u>Subject</u>	<u>Common Curr. Goal</u>	<u>Benchmark &amp; Number</u>
1. E-20	English	Communication	Tech. Speak	10:1
2. S-6	Science	Life Science	Organisms	8:1,4
3. S-8	Science	Life Science	Heredity	8:1,2,3

Materials, Equipment, Audio-visual aids:

1. Power Point
2. Quiz
3. Handout
4. Unified Score Card
5. Linear Worksheet

References:

1. Holstein Foundation
2. American Jersey Cattle Club
3. Hoards Dairymen
4. Oregon State University Dairy Cattle Evaluation Extension Publication
5. World Holstein Friesian Association

During our last class, we went over Body Capacity; its components, and why it is important. Who can tell me why Body Capacity is important in relation to the evaluation of dairy cattle?  
*It is a measurement of how much the animal can eat!!*

What are the two components of Body Capacity?

1. Barrel
2. Chest

As we go around the room, I would like for each of you to use different terminology to describe some component of Body Capacity.

**Set:**

Today we are going to be going over Linear Type Evaluation. How many of you know what a Classifier is?

*They are an individual hired by one of the breed associations to evaluate animals based on 5 traits.* You have not know this, but we have been covering the very same 5 traits. Would anyone like to take a shot at what these traits are?

1. Frame
2. Dairy Character
3. Body Capacity
4. Feet and Legs
5. Mammary System

Linears make it possible to objectively assess traits of the cow. The goal is to take the subjectivity out of looking at the animals. The idea is that personal biases will not affect the final score of the animal.

**Summary:**

At the completion of this lesson, you will be able to:

- 1 Describe the 5 traits associated with Linear Evaluation.
2. Use Linear Evaluation to assist in placing of classes.
3. Describe why linear evaluation is important.

<p>Subject Matter Outline/Problem and Solution (Application Points lace in throughout lesson) (Modeling, Guided Practice, and Content)</p> <ol style="list-style-type: none"> <li>1. Linear Type Evaluation <ol style="list-style-type: none"> <li>a. Frame-15%</li> <li>b. Dairy Character-20%</li> <li>c. Body Capacity-10%</li> <li>d. Feet and Legs-15%</li> <li>e. Udder-40%</li> </ol> </li>   <li>2. Linear Type Evaluation <ol style="list-style-type: none"> <li>a. 50 point scale</li> <li>b. Comparing against ideal</li>    <li>c. Objective comparison</li>    <li>d. Breed Classification</li> </ol> </li>     <li>3. Frame 15% <ol style="list-style-type: none"> <li>a. Rump</li> <li>b. Stature</li> <li>c. Front end</li> <li>d. Back</li> </ol> </li> </ol>	<p>Strategy – includes Teacher Activity, Student Activity, Questions/Answers and Objectives</p> <p><b>Students are taking notes.</b></p> <p>These are the same areas we evaluated throughout the past 5 lessons.</p> <p>The percentages of emphasis should help you to further fine-tune your evaluation consistency.</p> <p>All of these traits are based on a 50 point scale. Not all of the traits are in the “bigger the better” category. These traits are the two-way traits we have talked about.</p> <p>For traits like rump angle or rear legs side view a 25 is ideal. Rear udder width or height are not two-way traits. A 50 in these traits is what the breeds are striving for.</p> <p>Q: How many of you have ever worked with a classifier?</p> <p>A: A classifier is hired by the breed association to evaluate cows of a certain breed.</p> <p>Q: What are the 5 components of frame?</p> <p>Q: Are there any two-way traits?</p> <p>A: Yes.. Rump slope</p>
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<p>e. Breed Characteristics</p> <p>4. Rump</p> <ul style="list-style-type: none"> <li>a. Width between pins</li> <li>b. Slight slope from hips to pins</li> <li>c. Thurls wide and centered between pins</li> </ul> <p>5. Rump Width</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Narrow 2.5"</li> <li>b. 25-Intermediate 4.5"</li> <li>c. 45-Extremely Wide 6.5"</li> </ul> <p>6. Rump Angle</p> <ul style="list-style-type: none"> <li>a. 5-High Pins 1.5"</li> <li>b. 25-Slight Slope 1.5"</li> <li>c. 45-Extreme Sloped 4.5"</li> </ul> <p>7. Stature</p> <ul style="list-style-type: none"> <li>a. Measured at the point of withers</li> <li>b. Height at point of withers and pins should be proportionate</li> <li>c. Varies by breed</li> </ul> <p>8. Stature in Inches by Breed (Table)</p>	<p>These measurements are in inches and are taken from pin to pin.</p> <p>The wider the better.</p> <p>Q: Will rump width change with age?</p> <p>A: Yes.</p> <p>Notice that the ideal (25) still has a slight slope. The 1.5" slope from hips to pins is desired. Levelness from hips to pins is not wanted.</p> <p>This will vary with breed. For example a tall Jersey is shorter than the shortest Holstein.</p> <p>We want cows to slightly walk up hill. At no time do we want the hips to be taller than the withers.</p> <p>Utilize this table to help yourself develop a baseline.</p>
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<p>9. Strength</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Narrow</li> <li>b. 25-Intermediate</li> <li>c. 45-Extremely Strong and Wide</li> </ul>	<p>Q: Where is strength measured?</p> <p>A: Width of front legs.</p> <p>Q: If a cow is extremely wide-what other traits should we expect?</p> <p>A:</p> <ul style="list-style-type: none"> <li>1. Fullness in the crops</li> <li>2. Full behind the shoulder</li> <li>3. Depth of heart</li> </ul> <p>Q: If a cow is extremely narrow between her front legs, what other traits might we expect?</p> <p>A:</p> <ul style="list-style-type: none"> <li>1. Open in the crops</li> <li>2. Wing shouldered</li> <li>3. Toe out on front feet</li> <li>4. Shallow fore rib</li> </ul>
<p>10. Dairy Character-20%</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Tight</li> <li>b. 25-Intermediate</li> <li>c. 45-Extrememly Open</li> </ul>	<p>Notice the flow of the ribs. The first picture shows ribs going straight down and a short fat neck. This looks pretty “beefy” to me.</p> <p>On the other hand, notice the “beefy” cow has the most depth of heart (strength?). The extreme on the right is what we would call frail. Notice the ribs nearly go straight back.</p> <p>The goal of breeders is to have strength for longevity while the animal exhibits adequate dairy character to pay the light bill.</p>
<p>11. Body Capacity-10%</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Shallow</li> <li>b. 25-Intermediate</li> <li>c. 45-Extremely Deep</li> </ul>	<p>The more the better.</p> <p>Q: Is body capacity affected by age?</p> <p>A: Yes. Why? Babies.</p>

<p>12. Feet and Legs-15%</p> <ul style="list-style-type: none"> <li>a. Foot angle-Pasterns</li> <li>b. Rear legs <ul style="list-style-type: none"> <li>i. Rear view</li> <li>ii. Side view</li> </ul> </li> </ul> <p>13. Foot Angle</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Low</li> <li>b. 25-Intermediate                      45 degrees</li> <li>c. 45-Extremely Steep</li> </ul> <p>14. Rear Legs-Rear View</p> <ul style="list-style-type: none"> <li>a. 5-Extreme Hock-In</li> <li>b. 25-Slight Hock-In</li> <li>c. 45-Tracks Extremely Straight</li> </ul> <p>15. Rear Legs-Side View</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Posty</li> <li>b. 25-Intermediate</li> <li>c. 45-Extremely Sickled</li> </ul> <p>16. Udder-40%</p> <ul style="list-style-type: none"> <li>a. Udder Depth</li> <li>b. Front Teat Placement</li> <li>c. Rear Udder</li> <li>d. Height</li> <li>e. Width</li> </ul>	<p>15% is not enough emphasis for feet and legs.</p> <p>Q: Which of the views of the rear legs is considered a two-way trait?</p> <p>A: Side view</p> <p>Q: What breed is know for a very steep foot angle?</p> <p>A: Brown Swiss</p> <p>Q: Would a cow with a very low foot angle be expect to be strong or weak in her pasterns?</p> <p>A: Weak</p> <p>Q: Is rear legs-rear view a two-way trait?</p> <p>A: No.</p> <p>A 25 is the perfect score for side view. In concrete situations, a leg with a little extra set is preferred over a straight leg.</p> <p>Q: Why?</p> <p>A: Have you ever tried to stand all day on concrete with you knees locked?</p> <p>Q: What are the 6 udder traits? Can anyone give me some reasons terms for these traits?</p>
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<ul style="list-style-type: none"> <li>f. Fore Udder</li> <li>g. Teat Length</li> <li>h. Udder Balance and Texture</li> </ul>	
<p>17. Udder Depth</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Deep -2"</li> <li>b. 25-Intermediate 2"</li> <li>c. 45-Extremely Shallow 6"</li> </ul>	<p>Q: Is udder depth affected by age?</p> <p>A: Yes.</p> <p>As a cow ages, we are more allowing of an udder closer to her hock. The hock is always the baseline. In a perfect world, we always want the udder carried above the hock no matter the age.</p>
<p>18. Front Teat Placement</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Wide</li> <li>b. 25-Centrally Placed</li> <li>c. 45-Extremely Close</li> </ul>	<p>Q: Is this a two-way trait?</p> <p>A: Yes.</p> <p>Q: What will happen if the front teats are too close?</p> <p>A: The milking machine will not stay on.</p> <p>Most breed associations are now also evaluating rear teat placement.</p>
<p>19. Rear Udder Height</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Low 13.3"</li> <li>b. 25-Intermediate 10.5"</li> <li>c. 45-Extremely High 8.7"</li> </ul>	<p>Q: Can the rear udder ever be too high?</p> <p>A: Can you have too much money?</p> <p>The height is determined by measuring from the bottom of the vulva to the top of the rear udder</p>
<p>20. Rear Udder Width</p> <ul style="list-style-type: none"> <li>a. 5-Extremely Narrow 5"</li> <li>b. 25-Intermediate 5.5"</li> <li>c. 45-Extremely Wide 7.5"</li> </ul>	<p>Q: Can an udder ever be too wide?</p> <p>A: No</p>

<p>21. Udder Cleft</p> <p>a. 5-Extremely Weak flat      1”</p> <p>b. 25-Intermediate                1.25”</p> <p>c. 45-Extremely Strong            2.5”</p>	<p>Q: What other traits can be affected by udder cleft?</p>
<p>22. Fore Udder</p> <p>a. 5-Extremely Loose</p> <p>b. 25-Intermediate</p> <p>c. 45-Extremely Strong</p>	<p>Q: Can the fore udder ever be too strong?</p> <p>A: No.</p> <p>Ideally, we do not want to be able to differentiate between the fore udder and the body wall.</p>
<p>23. Teat Length</p> <p>a. 5-Extremely Short                1.25”</p> <p>b. 25-Intermediate                    2.25”</p> <p>c. 45-Extremely Long                3.25”</p>	
<p>24. Udder Tilt</p> <p>a. 5-Extreme Rearward Tilt        2.5”</p> <p>b. 25-Nearly Level</p> <p>c. 45-Extreme Forward Tilt        1.5”</p>	<p>The Jersey breed has been known for udder tilt in the past. More recently, the other breeds have also become increasingly aware.</p> <p>We want an udder that is perfectly level. Parallel to the ground.</p>
<p>25. Unified Score Card</p>	<p>This is where it all began. The Purebred Dairy Cattle Association originally developed this model in 1957. Several revisions have taken place since then. The most recent in 1994.</p> <p>Currently their roll has been determining show ring ethics.</p>



Subject Matter Outline/Problem and Solution  
(Application Points lace in throughout lesson) (Modeling,  
Guided Practice, and Content)

Strategy – includes Teacher Activity,  
Student Activity, Questions/Answers  
and Objectives

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Closure: Summary or Conclusion

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Evaluation: (Authentic Forms of Evaluation, Quizzes, Written Exam – something you grade).

<u>Item</u>	<u>Obj. Number</u>
1. Complete the quiz	1-3

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Assignments: (Student Activities involved in lesson/designed to meet objectives but not graded).

<u>Item</u>	<u>Obj. Number</u>
1. Complete the handout	1-3

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Attachments:

1. Quiz
2. Class Handout
3. Power Point
4. Unified Score Card
5. Linear Worksheet