

Cattle Carers - Session 3



How can we redesign dairy living spaces to improve cow wellbeing?

Context:

Learners focus on specific problems related to a cow's health and wellbeing when kept in an indoor environment on dairy farms. They learn about normal behaviours for a cow and think about how indoor environments can be designed to encourage cows to exhibit those behaviours. Learners use information provided, additional research and their own creativity and imagination to design a dairy barn that is the ultimate indoor cow environment.

Engineering focus:

Learners will be working as an engineer by imagining and planning possible solutions to the farmer's problem with taking care of the wellbeing of the dairy cows.

Learning time:

1.5 hours

Suggested age group:

9-11 years old

Keywords

herd
grooming
socialise
behaviour
ethogram
ruminating
conditions
freedom
comfort
enrichment
hygiene
trough
stalls
cow brushes
manure robots

Curriculum links:

Design technology: *Design*

- Using research and design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.
- Generating, developing and communicating ideas through discussion, annotated sketches, cross-sectional and exploded diagrams.

Resources:

- Cattle Carers - Session 3 PPT
- Ethogram templates
- Cattle Carer Problem on a page handout
- Poster paper/flip chart paper
- Post-it notes
- Pens, pencils and rulers
- Squared paper

Optional:

- Laptops/tablets with internet access

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1

What makes a happy cow?

Find out learners prior knowledge about animal wellbeing and their basic needs by challenging them to work in groups to develop a list of things that a dairy farmer would need to think about when planning for the health and wellbeing of their animals. Display a words search which has clues hidden it for learners who are stuck for ideas. (Slides 2-3)

Take time for groups to share their ideas to build up a collective list of the needs of dairy cows on the board - this will be useful later in developing detailed design criteria for the challenge.

Explain the observable clues that indicate that a cow is healthy and happy (slide 4) and allow learners to put this new learning into action by making careful observations of a dairy cow at a country show and considering its health (slide 5).

2

Where do cows spend their time?

Explain that some dairy cows spend spring and summer outdoors and move indoors for the colder seasons, while others are always indoors (slide 6). Ask learners to discuss in pairs:

- Why do you think that dairy cows live in different places in different seasons?
- How might living indoors be different for the cows compared with spending time in the fields?

3

What is normal behaviour for a cow?

Ask learners to consider how we know cows are 'happy' in their environment. Explain to pupils that in order to understand how to develop the best environment for a cow, it is important to spend some time observing their natural behaviour. Explain when scientists and farmers study animal behaviour they use a tool called an ethogram. The information they collect is useful to inform them and others, like engineers, for a variety of purposes (slide 7).

Learners **watch the short video** on slide 8 and complete their own ethogram, making a list of all the behaviours and actions they observe in the cows. Learners can then compare their ethogram with one produced by scientists (slide 9).

Learners can improve their ethogram and then test it by making observations over time of the two videos on slide 10, keeping a tally of the frequencies with which they observe the different cow behaviours.

Behaviour	Description
Walking	Movement from one place to another without the head near the ground
Foraging	Grazing or browsing, taking frequent bits of forage
Standing	Standing still, no movement to another place
Resting	Cow is lying down and chewing the cud
Drinking	Drinking water from a trough
Grooming	Cleaning or scratching body
Social	Interaction with other cows (e.g. grooming, meeting)



Imagine and plan the ultimate indoor cow environment.

Understanding normal cow behaviours can help farmers and engineers to work together to design environments for cows that keep them happy and healthy. Learners collaborate to imagine and plan possible solutions to the farmer's problem in the Happy Cow challenge. Provide groups with the Problem on a page: Happy Cow Challenge handout to support them in their problem solving (slide 11).

Encourage learners to collaboratively plan their barn layout using post-it notes so they can move elements around until they are happy with the layout. Each group should have access to a laptop of table to research aspects of their design. Encourage learners to justify their different design choices and layout.



Learners independently create a 2D scaled floor plan of their barn design, using an A3 sheet of paper and a scale of 1cm per 1m. The dimensions of the barn are 20m x 35m. All areas should be clearly labelled and justified on the plan. Encourage learners to look back to their ethogram to help them justify how their design choices will encourage the cows to exhibit normal healthy behaviour. An example is available (slide 12) to share with learners with need additional guidance.

How well does your design meet the success criteria?

Allow time for learners to reflect on how well their designs meet the design criteria. Learners can pair with someone from another group and take a few minutes to share their design with their partner, taking it in turns. Students can peer assess each other's ideas - identifying strengths and areas for development.

Learners can then self reflect on their own success using the table of the problem on a page layout.

Take it further

- To learn more about how researchers study the behaviour of dairy cows watch this [short film](#).
- To find out more about how farmers monitor the health of their dairy cows watch this [short film](#).

Make your own ethogram

Behaviour	Description



Ethogram of cow behaviour



Behaviour	Description
Walking	Movement from one place to another without the head near the ground.
Foraging	Grazing or browsing, taking frequent bits of forage.
Standing	Standing still, no movement to another place.
Ruminating	Cow is lying down and chewing the cud.
Drinking	Drinking water from a trough
Grooming	Cleaning or scratching itself.
Social	Interaction with other cows (e.g. grooming, mounting)



What are typical behaviours for happy cows?

Behaviour	Tally	Total
Sleeping/resting		
Moving around		
Eating		
Foraging		
Drinking		
Grooming		
Social (playing & interacting)		

