Measuring Outcomes

GETTING MORE MILK

ESSENTIAL QUESTION

Why don't farmer's milk their cows by hand?

WHAT ARE WE LEARNING?

- Innovation helps to improve productivity
- How to make comparisons
- How robotic machines can make tasks easier and more time efficient

TRY THIS WITH

- Years 1-5
- Students who have an interest in experimenting with different methods
- Students who work best when their learning is reinforced by actions

FIND

Observe
How
Demonstrate
Find
Repeat
Match

Review the previous lesson 'How to Milk a Cow'. Discuss the different facts and review the fact sheet 'How to Milk a Cow' if necessary. Were there any relevant tweets sourced?

Discuss 'which was the best way of milking? What is meant by best?' Is this the fastest, does it get the most milk, is it best for the cow?

Complete a Venn Diagram comparing the different milking methods.

Compare with a peer and explain any differences or similarities that occur.

Explain that you are going to experience the hand milking process in the classroom and in teams you will complete a milking challenge.

APPLY

Apply
Manipulate
Simplify
Identify
Focus
Discover

Use two gloves per group to represent a cow's udders.

The gloves will need to have four fingers filled with liquid and then a tiny pin sized hole made in each finger.

Aim to get as much liquid out of the cow's udder (glove) as is possible. On 'go,' each team member takes a turn to milk their cow into the supplied bucket.

Stop the teams after an appropriate timeframe and compare buckets.

Which team has the most milk? What was their technique?

Ask what the students thought: Was it frustrating, easy, difficult, what happens if...? Would hand milking be a productive way of doing this?

PRODUCE

Invent
Choose
Create
Experiment
Speculate
Justify

Reinforce the learning by playing the 'Go Milking Game' again and talking about why the milking machine and the robot make the milking faster.

Think about a herd of cows that needs milking and the fact that this needs to happen at least once a day.

Extend the thinking from this challenge by designing a milking robot. What type of factors would need to be considered? What would a milking robot help? What would the robot need to do to save the farmer time? How would you ensure that the robot was safe to use on a cow? How could you make the robot environmentally friendly?

SUCCESS CRITERIA

Students can check they have completed the task successfully by:

- Describing situations when hand milking would be the only way of getting milk from a cow
- Evaluating what the core elements were to get the most milk in the shortest time
- Applying the above factors in a milking robot design

PRINCIPLES	VALUES	KEY COMPETENCIES	LEARNING AREAS	WORD BANK	RESOURCES REQUIRED
Inclusion Community engagement Future focus	Innovation, inquiry, and curiosity Diversity Community and participation.	Thinking Relating to others Participating and contributing	Technology Mathematics and statistics CREST	Hand milking Productivity Robotic Comparison	Go Milking Game How to Milk a Cow Factsheet