Cow-culate the methane

When cows digest grass, they produce methane which is a powerful greenhouse gas. But what if they ate something else?

INTRODUCTION

What you will make
You will make a game where you help the cow choose what to eat to limit its impact on the planet.

What you will need

HARDWARE
A computer capable of running Scratch 3

SOFTWARE
Scratch 3:
either online
http://rpf.io/scratchon
or offline
http://rpf.io/scratchoff

DOWNLOADS
Offline starter project
bit.ly/CCAcow

What you will learn

• You’ll learn how to tell a story using Scratch.
• You’ll learn how to use if/then statements to offer options.

Additional notes for educators

Here is a link to the completed project
https://scratch.mit.edu/projects/410252271/

Code Club Australia recognises the Traditional Custodians of the land across Australia and their continuing connection to land, cultures, and communities. Australia’s traditional owners are the world’s first innovators.
1. OH WOW! A TALKING COW!

Let’s get started with our game and set up our cow to tell us some facts about her diet.

- Open the starter project here: bit.ly/CCAcow
- You should see three sprites. Make sure that the cow is selected.

- Our cow is hungry, when the flag is clicked, she should let the player know.
  - Add this code.
  - Click the green flag to test your code.

- Next, we want our cow to teach us about the methane that she produces when she eats grass.
  - Add another block under your code.

- Test your code.
- She should say both lines. But she talks really fast! How can we fix that?
- Change the seconds to a higher number so it doesn’t dissapear as quickly.
Now, add another block so the cow can tell us that when she eats seaweed, she produces less methane.

- **Challenge:** Right now your cow exists in a white void. Cows don’t like white voids very much. Can you change the backdrop to something more interesting?

### 2. ASKING THE BIG QUESTIONS

Now it’s time to ask our player a question so they can make a choice about what to feed our cow.

- Our cow needs to ask the player a question.
  - Add a blue `ask` block underneath the code you already have.
  - Add the question ‘What should I eat?’.
  - Test your code.

- If the player answers “grass” we want to let the player know that they’ve made the wrong choice. How will we let them know? With the power of farts!
  - Add this code.
• Now, we need to put something in our if then block.
  • If the player answers ‘grass’, we should make our cow fart.
  • We can do this with the switch costume block.

• Our cow is polite, and she always excuses herself when she farts.

• Add a say block after your switch costume block.

• Test your code by pressing the green flag.
  • Type the answer “grass”. Your cow should now fart!
  • What happens if you start pressing the green flag again?
    • Your cow starts off farting! Oh no!

• We can fix our perpetually farting cow by adding a switch costume block directly under our when green flag clicked block.

• Test your code again. Does that fix the problem?

• Most of the methane that cows release actually comes from burps, not farts (but farts are funnier!).

• We can make Scratch choose between the two costumes randomly with the pick random block.

Don’t miss a step. Make sure you tick the green circle as you go.
We’ve given our player a choice, but so far they’re unable to make the eco choice!

- We currently have an if block, but since we’ve got more than one choice, we really want to convert it to an if then else block. To do this takes a bit of dragging and dropping.

- First, let’s drop an if then else block into our code window, but not attached to our existing code.

- Next, we want to drag the code from the old if then block to the new if then else block.

- It should look like this.

- Delete your old if then block.

- Now that we’ve changed our existing code, we can start adding new code. We need another if then block inside our else block.
• This block will be similar to our other `answer = grass` block, but this time the answer will be seaweed.

• Add this code.

```plaintext
else
    if answer = seaweed then
        say Yay! for 2 seconds
        say Every time I choose seaweed I emit less methane (and less farts!) for 2 seconds
```

4. ADDING SOME FLARE

Scratch is great for telling visual stories, let’s add some visual flare to our game.

• We want to help our player with the answer.

• Click on the seaweed sprite.

• Add code to grow and shrink the seaweed.

• We want it to grow and shrink forever.

• Test your code.

• Add the same code to your grass sprite.
Challenges:
Add some extra challenges to your game!

Less shrinking?
At the moment your seaweed and grass grow and shrink continuously. Can you change the code so that it only changes when our cow is talking about it?

Incorrect answer
What happens if the player answers something other than “grass” or “seaweed”? Nothing! That’s pretty boring.

Can you make something happen if the player answers something else? Hint: You will need to convert your second if then block into another if then else block.

You can’t have your grass and eat it too!
When the player chooses something for the cow to eat, nothing happens to the sprite. Can you make it disappear when the cow eats it?

Hint: You might need to reset the sprite when the game is played again, or it will start off disappeared!

Find out more...

One of the biggest contributors to climate change is the increasing amount of methane in the atmosphere. Some of this comes from animals on farms, including cows and sheep. Cows produce methane in their rumen (stomach) which is then released as farts and burps.

The CSIRO has discovered that supplementing some of a cow’s diet with seaweed will virtually eliminate their methane production! And only 1% of their diet needs to be substituted!

If you want to find out more about beef and methane production head to our blog for more info - medium.com/code-club-australia.

And don’t miss the other coding resources available on our website. There are videos, interview and more lessons all about Agriculture and other topics!

codeclubau.org/projects/topics/agriculture/