

Session 2 consists of Challenges 2, 3, 4

Challenge 2 – this is an alternative Environmental Impact Analyser (or Boop!) to analyse your current environmental data

1. Go to the link <https://boop.freshleafdigital.com>.
2. Review challenges 2 – 4 shown, and click the 'Let's Go!' button!

Step 1 Welcome!

Welcome to your friendly neighbourhood school carbon calculator! Or as we like to call it, BOOP!

Together, Grover the Rover and BOOP! are going to do the heavy lifting to make it easier for you to understand the environmental data!

What you'll do:

Challenge 1: Upload the template, write/complete, test and debug the program in your VEXcode VR environment

Challenge 2: Run VEXcode with your school's *current* environmental impact data

Challenge 3: Run VEXcode with your *ambition* for your school's environmental impact

Challenge 4: Compare the results and see how much CO₂ you can save!



Energy Usage - Power consumption vs. solar power production



Transportation - Cars and buses coming to school



Green Spaces - Trees and grass that absorb CO₂

Let's Go! 🚀

3. Follow the instructions for the 'Current Situation'

Step 2 Current Situation

Challenge 2: Analyse Your Current Impact

1. Run VEXcode with input settings for your school's **current** environmental impact
2. Save the data monitor information into `current.csv`
3. Upload `current.csv` below and click BOOP!
4. See your current calculations and think about how your school is doing...

Choose CSV File

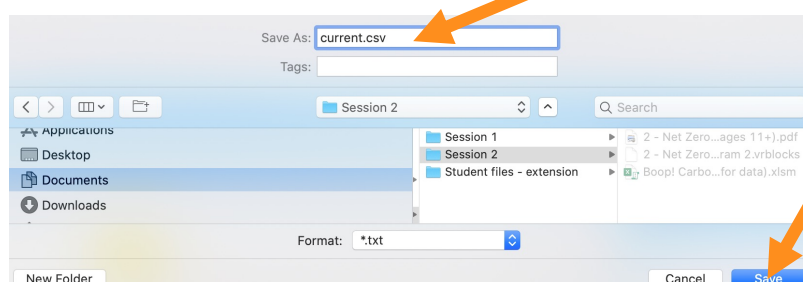
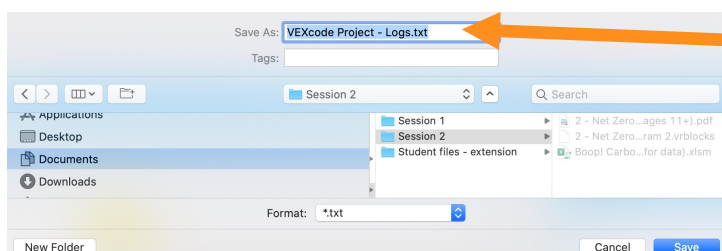
Challenge 2 (cont) – this is an alternative Environmental Impact Analyser (or Boop!) to analyse your current environmental data

4. As listed above in the 'Current Situation' steps, run Grover, and save the data using the 'save' button in the data monitor.



5. Save the file into your downloads folder (or where you have been told to put it)
Change the file name to 'current.csv' (the system may double check this is the name you want)

(example images below – yours may look different)



Challenge 2 (cont) – this is an alternative Environmental Impact Analyser (or Boop!) to analyse your current environmental data

6. Click the 'Choose csv file' button in your 'Current Situation' section to get the data from Grover, and then click BOOP!:

5	4	0.50	acres
5	5	0.50	acres
5	6	0.50	acres
5	7	0.50	acres
5	8	0.50	acres
5	9	0.50	acres

current.csv

BOOP!

7. Write the values shown into the spaces in the table (or elsewhere). These are an approximation of your school's current carbon footprint!:

Your Current Carbon Footprint

Energy needed: _____ kWh per year which would cost £ _____

⚡ **Energy Consumed** _____ tonnes CO₂ emitted

☀️ **Solar Power** _____ ; CO₂ avoided

🚗 **Cars** _____ tonnes CO₂ emitted

🚌 **Buses** _____ tonnes CO₂ emitted

🌳 **Green Space** _____ tonnes CO₂ absorbed

Net emissions: _____ tonnes CO₂ per year

Challenge 3 – agree your ambition for the school you are working on, re-run the program and analyse the new data

8. Click 'Continue to Ambition'
9. As a whole group, in small groups, or individually, agree on an ambition for the school
10. Follow the 'Define Your Ambition' section (similar to the steps before, but calling your output ambition.csv)

Step 3 Your Ambition

Challenge 3: Define Your Ambition

1. Head back to VEXcode VR, close the school and open it again to change to your **ambition** settings
2. Run VEXcode with input settings for how you'd like your school to be
3. Save the data monitor information into `ambition.csv`
4. Upload `ambition.csv` below and click BOOP!
5. Can you easily tell how much of a difference these changes would make?

Choose CSV File

11. Review your new ambition data and click BOOP! again!

station	day	value	unit of measure
5	1	20.00	acres
5	2	20.00	acres
5	3	20.00	acres
5	4	20.00	acres
5	5	20.00	acres
5	6	20.00	acres
5	7	20.00	acres
5	8	20.00	acres
5	9	20.00	acres

ambition.csv

BOOP!

Challenge 3 (cont) – agree your ambition for the school you are working on, re-run the program and analyse the new data

12. Write down the new values shown in the spaces below (or elsewhere), which are an approximation of your ambition for your school's carbon footprint:

Your Future Carbon Footprint

Energy needed: _____ kWh per year which would cost £ _____

 **Energy Consumed** _____ tonnes CO₂ emitted

 **Solar Power** _____ tonnes CO₂ avoided

 **Cars** _____ tonnes CO₂ emitted

 **Buses** _____ tonnes CO₂ emitted

 **Green Space** _____ tonnes CO₂ absorbed

Net emissions: _____ tonnes CO₂ per year

13. Review your net emissions in tonnes of CO₂ and then choose 'See Your Impact!'

Net emissions: 38.10 tonnes CO₂ per year

See Your Impact! →

Start Over

Challenge 4 – compare the results and see how much CO₂ you can save!

13. In the spaces below (or elsewhere), write down the weight of the carbon dioxide saved measured in tonnes, number of sharks, number of horses or number of guinea pigs!

Excellent Progress!

Carbon Dioxide SAVED:

_____ tonnes CO₂ per year

_____ tonnes is roughly equivalent to _____
great white sharks, _____ horses or _____
guinea pigs!

Before
After



This is the same as the amount of Carbon Dioxide absorbed each year by _____ **trees!**

OR



This amount is the equivalent to the amount of methane produced by _____ **cows** happily burping for 1 year!

Annual Energy Cost SAVED:

14. Then look at the improvement in terms of environmental impact. Review this in terms of either the number of trees needed to be able to offset the same amount of carbon dioxide, or the number cows that would burp the equivalent amount of methane in a year!

See how much money could you save for your school, and note it down.

Challenge 4 extension – you’ve made a big difference with your ideas for improving the environmental impact of your school. Now it’s time to get creative and use your data persuasively!

Draw or create a poster or PowerPoint to show your findings, and write a covering email, persuading the school leaders to make changes!

You might want to plan this out together, or work in small groups using the questions below.

15. You can answer the questions below to help you decide what to write and include the answers in your email and your poster/PowerPoint:

- **What are carbon emissions?** _____

- **What is net zero** _____

16. Information about the current carbon emission situation in your school (the input values you put first into the sliders)

- **Do you have solar panels?** _____
- **Does the insulation need improvement?** _____
- **Do many people use electric vehicles coming to the school?** _____
- **Do you have much greenery around the school?** _____
- **What was the output of your first run of Grover? (the current situation – you wrote this in step 7)**
 - **What is the total amount of carbon/CO₂ emissions estimated for your school currently?** _____
 - **What are the costs?** _____

Challenge 4 extension (cont)

17. Information about your ambitions for your school (the input values you put later into the sliders)

- Would you like more solar panels? _____
- Would you like more insulation? _____
- Can you encourage more electric vehicle usage?

- Do you have space to plant more greenery/trees?

- What was the output of your final run of Grover? (the ambition data – you wrote this in step 12)
 - What is the total amount of carbon/CO₂ emissions estimated for your ambition? _____
 - What are the new costs? _____

18. In the final screen you could see the different between the first two sets of data (the current and the ambition)

- What was the weight of carbon emissions saved, measured
 - in tonnes? _____
 - in great white sharks? _____
 - in horses? _____
 - in guinea pigs? _____
- Which do you plan to use in your PowerPoint / poster / email ? _____
- The amount of carbon emission improvement was then shown compared to trees and cows
 - _____ tonnes of carbon saved (answer to 18) is the same as
 - _____ trees absorbing CO₂ over 1 year, or
 - the equivalent of _____ cows happily burping CO₂ over 1 year!

19. Use this information to create a PowerPoint / poster / email !