



ENERGY & CHANGE

Grade 7

NAME OF PRESENTER

Job Title: CapeNature

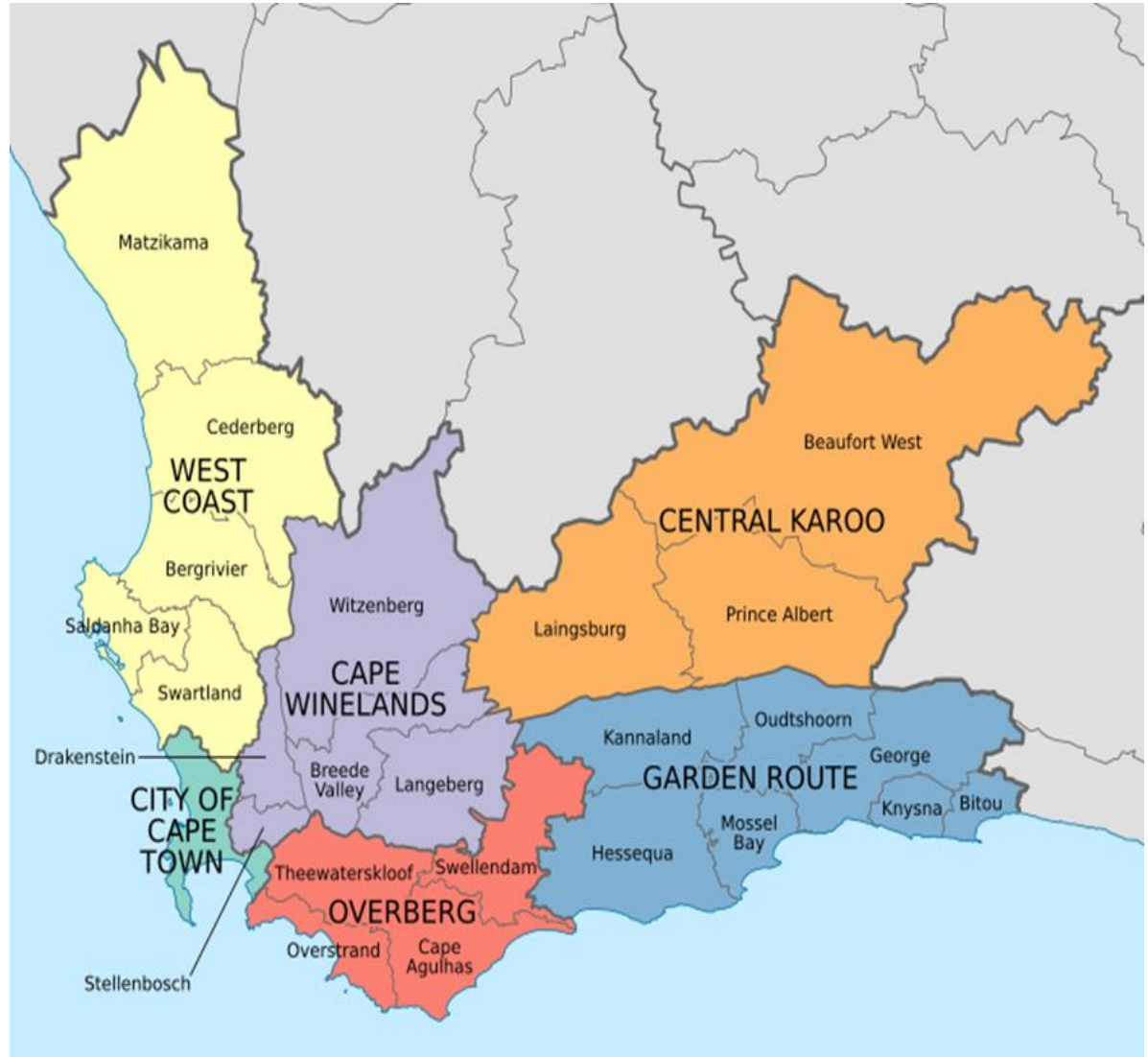
Introduction



Who are we?

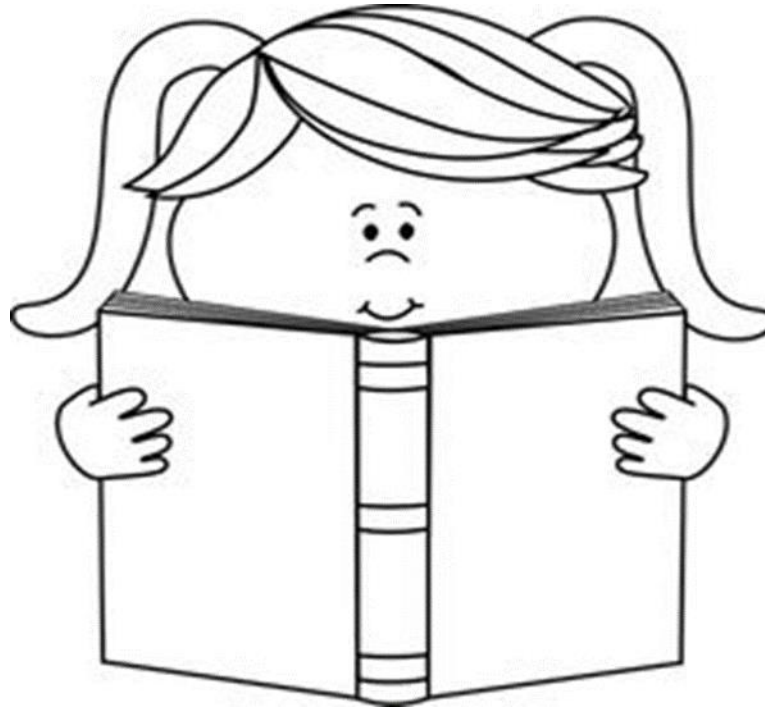


CapeNature is the part of government that protects natural occurring plant and animal life (biodiversity) in the Western Cape.



What are we going to do today?

- Learn about renewable and non-renewable energy sources
- What insulation is
- How to save electricity at home
- Make a pledge for saving electricity at home



What are the rules for today?



Have fun!

Listen to the speaker

Respect your teacher and classmates



RULES OF ENGAGEMENT

Take part in all the activities!

Be safe



What else?



Tuning in



Icebreaker/tuning in

Close your eyes.

Can you think of everything you did this morning until you arrived at school that involved energy?

Did anything you did from when you woke up until you arrived here rely on coal, oil, gas?

Did you switch on a light? Did you cook breakfast? Did you drive to get here?

Think for a minute. Open your eyes.....can a few of you tell us what you used energy for?

Energy is needed to make everything work. There are two types of energy

Non-renewable sources of energy cannot be replenished.

Renewable sources of energy are continually replenished. of each type.

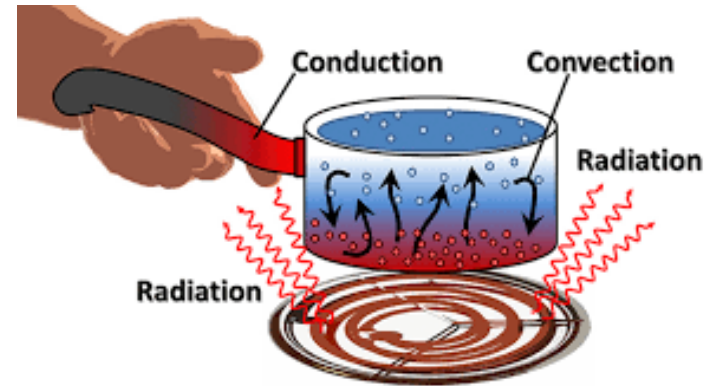


ACTIVITY!!

Can you sort out the renewable from the non-renewable energy sources??



Insulation (part I)



Heat can be lost through

- Conduction
- Convection and,
- Radiation from our bodies and objects such as electric geysers.

Heat can also be gained through these e.g. solar water heaters. People use insulating material to minimize heat loss in winter or gain heat in summer. Insulating materials slow down the transfer of heat.



How do you think a cooler box or flask works?

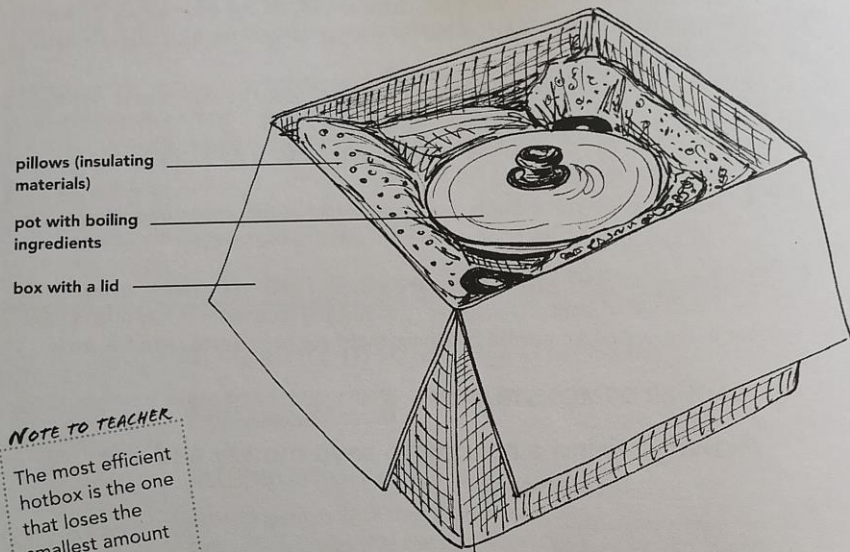


ACTIVITY!!

Can you make a hotbox ?

Divide into groups. Each team must make a hotbox using different insulating materials e.g. Newspaper, sawdust, duvet, polystyrene. Add some rice to a pot in hot water and leave till the end of the lesson)

Setting up a hotbox



NOTE TO TEACHER

The most efficient hotbox is the one that loses the smallest amount of heat.

Method

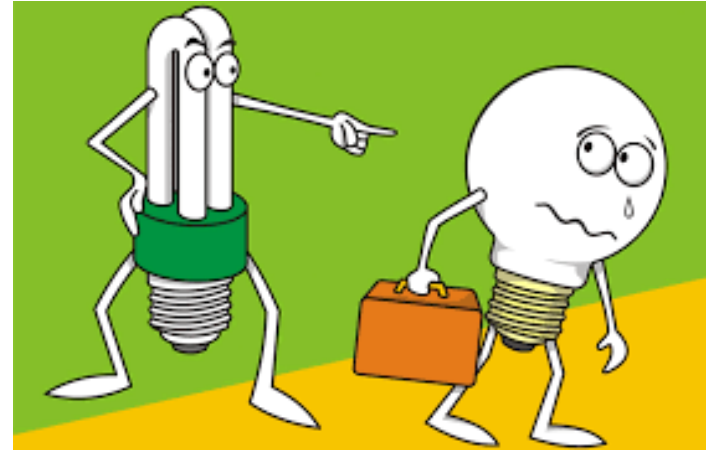
1. Heat a pot of food on a stove until it is boiling vigorously.
2. Let it boil vigorously for at least 5 minutes. If you are using samp and beans or meat, boil it for 15 minutes.
3. Put the pot of hot food into the hotbox. Then place a pillow on top and close it up.
4. Wrap the sides and top of the pot in a blanket or newspapers and cover with another cushion. This will trap the heat and allow it to cook without using any extra energy.
5. Leave the pot to 'cook' undisturbed for some time before sampling the food. Soup, potatoes and rice will cook in 20 to 30 minutes in the hotbox. Samp and beans will take 3-4 hours or overnight. A meat stew will take about 2-3 hours. The food cannot get ruined if you leave it for a bit longer. It cannot burn or overcook.
6. Open up the hotboxes and show that the food is cooked. Taste the food to make sure.

Questions for discussion

1. Discuss how the hotbox works. *It works by insulating the hot food so that enough heat is retained for long enough to keep cooking the food. Most foods do not have to be kept exactly at boiling point (100°C) to cook properly.*
2. Discuss how a hotbox can save you money.

Conserving electricity at home

We have a limited supply of energy
There are many different ways to use energy wisely and to save at home by turning off lights, using energy saving bulbs, wearing warm clothing.



ACTIVITY!!

Look at the picture on the next page and find all the energy saving devices in the home. Then, think of creative ways to save energy in your home. Write down a few things.

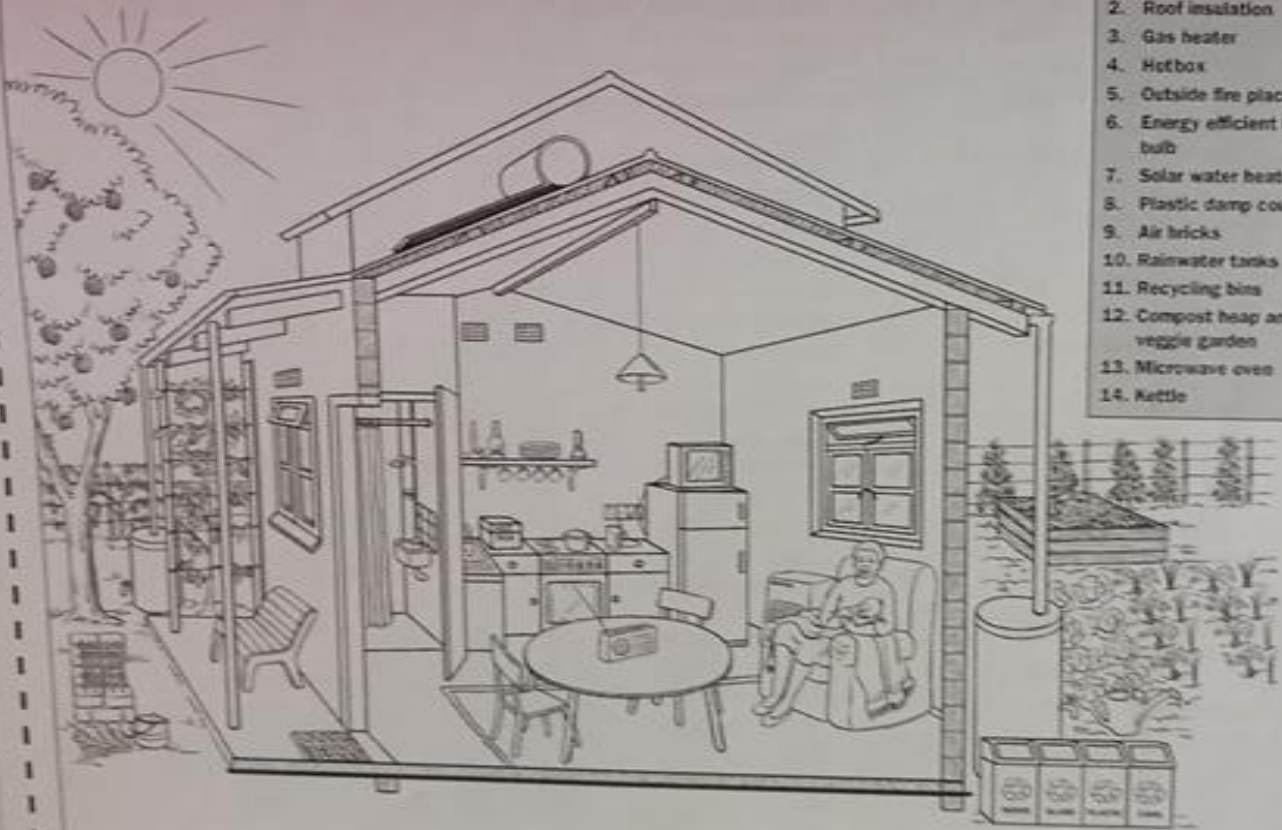
Note: Worksheet to be handed out and creative ideas need to be discussed with learners

Activity: Saving electricity in our homes

1. Look at the picture and find all the energy saving devices in the home. Number them on the picture.
2. Discuss how each item saves energy and electricity.
3. Think of creative ways to conserve electricity in your home or community.
4. Discuss this in your group and then present your group's best idea to the class.

Sustainable Living

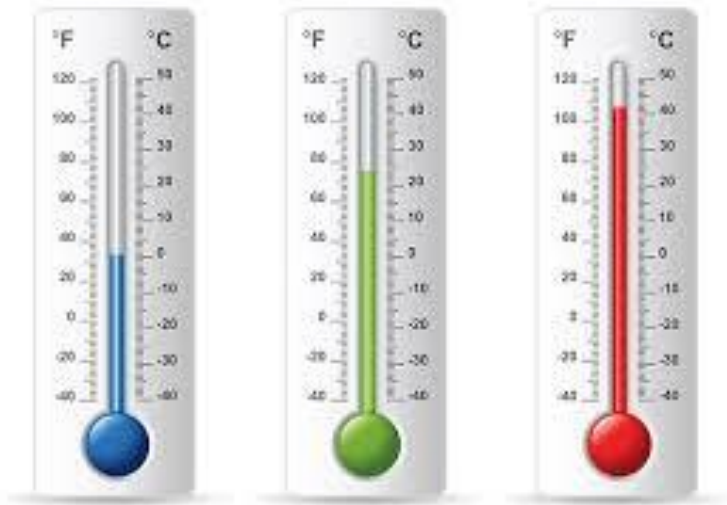
1. Tree for shade
2. Roof insulation
3. Gas heater
4. Hotbox
5. Outside fire place
6. Energy efficient light bulb
7. Solar water heater
8. Plastic damp course
9. Air bricks
10. Rainwater tanks
11. Recycling bins
12. Compost heap and veggie garden
13. Microwave oven
14. Kettle



Insulation (part 2)

Remember to check on your rice!!!!

Each group must take the temperature of their rice and see what material provided the best insulation. They must record all temperatures for different insulators used and then sort them from best to worst insulation material.



Consolidation



PLEDGE FOR SAVING ELECTRICITY

You need to make one pledge on how you will save energy or electricity from now on. Do a drawing that shows us what your pledge is.



THANK YOU.

Reference: Images Primary Science
Programme