

Climate Change Class Book

Lesson Plan developed by FORED BC

Please note we've used double-sided printing to conserve paper!

Activity Information

Grade Appropriate Level: Intermediate Grades 4-7

Duration: 2 to 5 forty-minute class periods

Materials: computer lab or copies of "Hot Earth – Messing Up our Planet" from http://www.oneworld.net/penguin/global_warming/climate_home.html, chart paper, felt pen, (or chalk and chalkboard), worksheets (attached) and rough copy paper for each student, enough good copy paper for book (1 per student) plus title page, etc., pencils, pencil crayons, or felt pens

*optional – use of a laminator and booklet binding machine

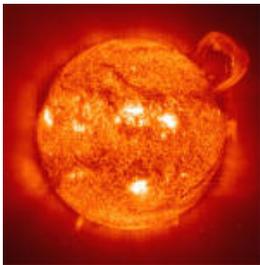
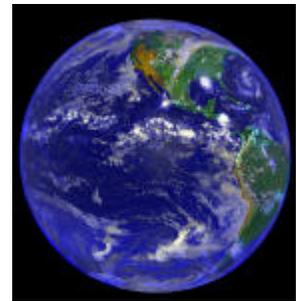
Objective

To raise awareness about the growing problem of climate change and to engage students in critical thinking about how they can help fight against global warming. After brainstorming about climate change and learning more current information, students will create a classroom book.

Prescribed Learning Outcomes

Social Studies, Language Arts, Art, Technology

- demonstrate understanding of sustainability, stewardship, and renewable versus non-renewable natural resources
- analyse how people interact with their environment, in the past and in the present
- compare use of resources and conservation practices in Canada and other countries
- draft ideas for images using feelings, observation, memory, and imagination
- create images that demonstrate the ability to collaborate to develop group displays for particular audiences
- locate, gather, select, and record information for specific purposes



Cross Curricular Links

Technology, Environmental Studies, Language Arts, Art

Vocabulary

<http://www.yen-rej.org/en/>

<http://www.ec.gc.ca/climate/home-e.html>

<http://www.epa.gov/globalwarming/kids/glossary/links.html>

Introductory Activity

- Engage the class in a brainstorming session about *Global Warming*. Record the student ideas in a web on a large piece of chart paper. Some suitable discussion prompts are: What is the first thing you think of when you hear 'global warming'? What does 'global warming' mean to you? Who and what is affected by 'global

warming'? What happens to the earth when the temperature rises? What has gone wrong? What does our future look like? What can we do to help this problem?

- Using the above weblinks as a resource, the teacher can post large vocabulary word tags around the classroom as a reference for students and incorporate them into memory games or spelling lists.



Note: Depending on the age and grade of your students they may not know the answers to many of the above questions. In this case, the teacher should limit the amount of time spent on the brainstorm and revisit the chart to add more ideas once the lesson is complete.

Suggested Instructional Strategies

Lesson One

- Have the students visit the website: http://www.oneworld.net/penguin/global_warming/climate_home.html. Direct them to read the comic story *Hot Earth: Messing up our planet's climate* and then share their thoughts with a partner or small group.



Note: If your class does not have access to a computer lab, the story can be printed in PDF and the students can read from the hard copy version. We've also provided one copy as a blackline master.

- Following the group discussion of the story, distribute a copy of the attached worksheet to each student to complete. Encourage them to work in partners or teams.
- Review the answers together as a class and then have the students hand in their work for the teacher to evaluate.

Lesson Two



- Every student will be responsible for designing a page of the Climate Change book. The teacher can decide whether to create a narrative story or to create a more factual book that explains ways for people to help the climate change problem.

(Refer to the worksheet where they recorded their own ideas.) Either way, the book should be designed as a learning tool, similar to Tiki the Penguin.

- Once a format has been chosen, use chart paper to create a list of class names and determine with the students what page each of them will be responsible for.
- First, have the students plan out their design in rough form.

- Check that their design fits within the guidelines and confirm that the stated information is correct.
- For the good copy, use a class set of uniform paper in a regular book size or an enlarged size, depending on the reader audience.
- Remind students to use bold, neat colouring and easy-to-read printing or medium typed font.
- Choose an appropriate title page for some students to complete and include a bibliography that lists your sources of information.
- Reserve space in the book for an author page and a dedication page.
- If possible, laminate the book and bind it together. Share your findings with the school's Environment Club (if applicable) or invite a climate change expert from government, industry, (try Petro-Canada!) or other organizations to view the student workbook & answer questions in class.
- Email another classroom in a developing country, i.e. Costa Rica to consider a climate change competition between the classrooms with measurable outcomes using a climate change calculator



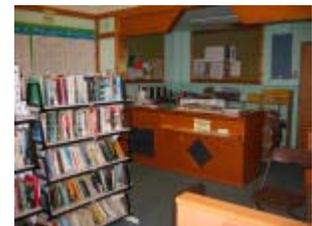
Suggested Assessment Strategies



- Record observations of how students participate in all of the activities. Do they demonstrate a growing understanding of climate change? Are they active participants in discussion and learning groups?
 - Evaluate the worksheets for accuracy and detail.
- Evaluate the pages for the climate change booklet based on:
 - a) The overall finished product
 - b) The accuracy and effectiveness of the message
 - c) How well their message ties in with the book as a whole

Suggested Extension Activities

- Read the book with your own class and present it to your buddy classes or other junior classes during shared reading
- Donate the book to the library to let others sign it out
- Display your book in a high-traffic hallway or at a science fair
- Let local environmental organizations know about your project and they may list it as a highlight on their website
- Use the book as a springboard to do further research and activities about climate change and global warming



Suggested Weblinks

<http://www.yen-rej.org/en/>

<http://www.ec.gc.ca/climate/home-e.html>

<http://www.eecom.org/>

<http://www.eia.doe.gov/oiaf/kyoto/kyotorpt.html>

<http://www.bctf.bc.ca/eepsa/>

<http://www.climcalc.net/>

<http://www.climatechange.gc.ca/english/default.asp>

http://www.panda.org/about_wwf/what_we_do/climate_change/index.cfm

WORKSHEET FOLLOWS...

Lesson plans prepared by Eve Simon
Education Services Coordinator - **FORED BC**

Hot Earth - Messing up our planet's climate

Name _____



Use ideas from the story to help you answer the following questions in complete sentences.

1. What is climate?

2. What would life be like without the sun?

3. List five things that depend upon the sun and the climate.

4. About how old is the sun?

5. What two things does Tiki the Penguin think have caused the earth's climate to heat up too fast?

6. Describe what carbon dioxide is and where it comes from.

7. Why is the earth often described as being inside of a greenhouse?

8. What are some of the problems that occur because of rising temperatures?

9. Who are some of the people who don't believe that global warming is happening?
Why are they denying the truth?

10. What important things took place at the conference in Kyoto, Japan?

Below, list 3 things you could do to help this problem.

1. _____

2. _____

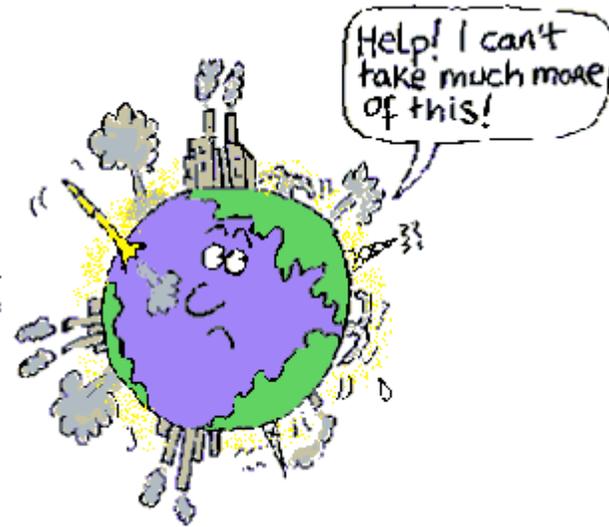
3. _____





[My website map](#)

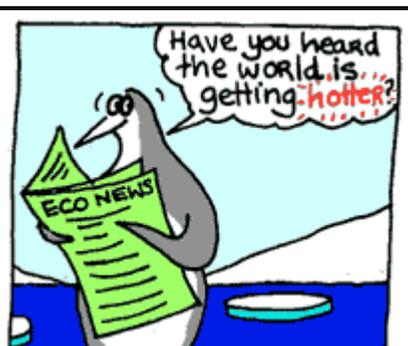
Hot Earth



[click here to navigate](#)

Messing up our planet's climate

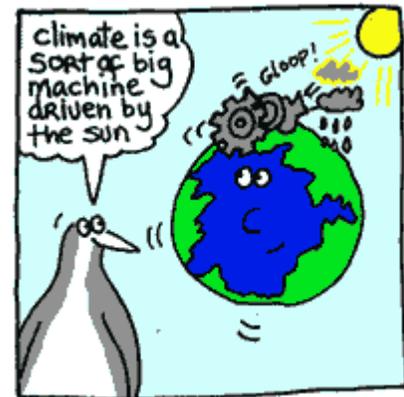
Have you heard about how the world's getting hotter? Some people say it is. Some say it isn't.



Who's right? And does it matter? How will it affect you and your friends? How will it affect penguins? What can we do about it? These are some of the things I wanted to find out about.

What is climate?

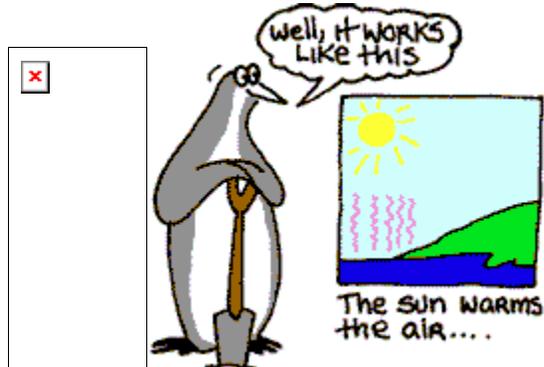
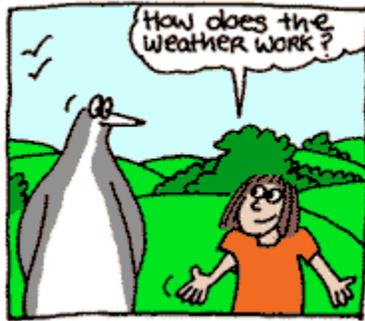
Climate is a sort of huge 'machine'. What's called 'weather' is just a small bit of this machine which you and I notice: you know, a tornado, a blizzard, a hurricane, very hot weather or very cold weather.



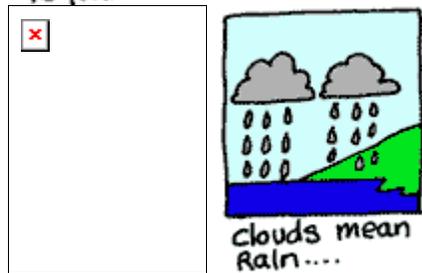
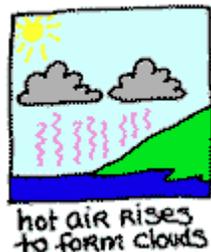
And I bet you know what drives this machine, don't you? Yes, it's the sun. Without the sun, there would be no climate, no weather, no people, no penguins, no life.



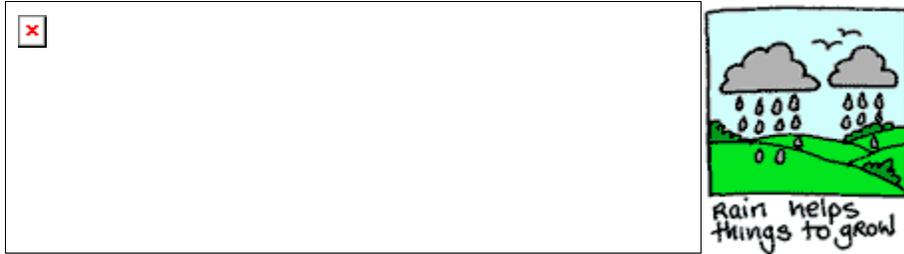
The climate 'machine'



The sun warms the air and hot air rises bringing with it moisture from the sea. As the moist air rises, it expands. This makes it cooler and so any moisture in the air condenses to make clouds.



And, as you know, clouds mean rain.



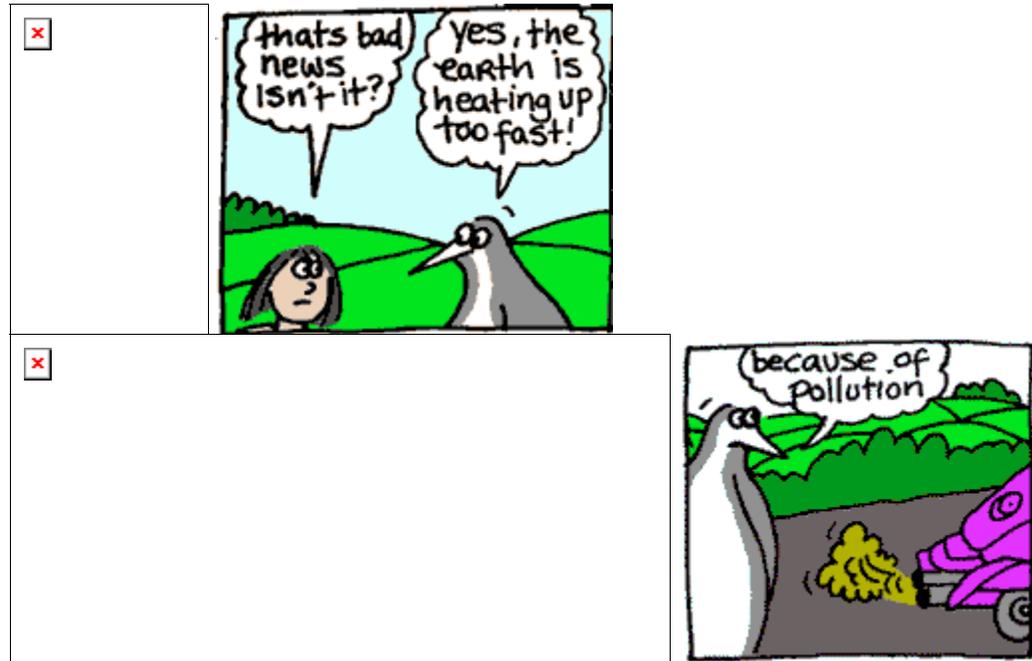
The sun also warms the seas and oceans which makes huge currents of water -- a bit like winds, but inside the ocean. One of these huge currents is called the Gulf Stream in the North Atlantic Ocean. This keeps countries in Northern Europe warm even though they are nearer the North Pole than the equator. Another huge current -- this time a cold current -- affects Chile and Peru in South America. This is called the Humboldt current. It brings lots of food for fish to eat which once made the Peruvian fishing industry the biggest in the world. It also means that many seabirds can live there -- including penguins. All these things -- the oceans, the atmosphere, the hot and the cold parts of the planet, deserts, rainforests -- all depend upon climate and upon the sun.

Hotting up

The sun is getting hotter. It is also incredibly old -- about 5000 million years old! One day it will blow up but that won't be for another 5000 million years or so. But the



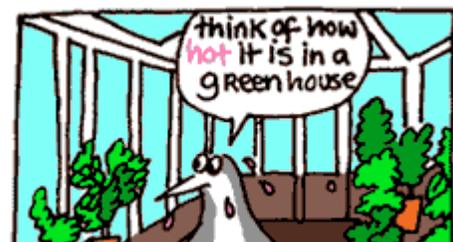
earth's climate seems to be heating up much too fast. And the reason seems to be you people and your machines.



Almost all your machines use oil, gas or coal. All of them produce pollution -- you know, the smelly stuff that comes out of car exhaust pipes and factory chimneys, that sort of thing. Much of this is a gas you can't see called carbon dioxide. It's this gas which seems to be the main cause of the trouble.

Greenhouse Earth

What happens when you go into a greenhouse on a sunny day? It's hot, isn't



it? That's because the glass in the greenhouse traps the heat from the sun. This gas carbon dioxide does the same in the earth's atmosphere. It acts like glass in a greenhouse, doing the same as my feathers do when I'm swimming in the very cold sea: my feathers keep me warm, the glass in the greenhouse keeps the plants inside warm, and the carbon dioxide keeps the planet warm. Without it, we'd freeze. Too much of it means that we boil!



Because people are burning fuels with carbon in (that's oil, gas and coal which you use in cars, aeroplanes, power stations and so on),

all this carbon gets dumped into the air, mixed with the oxygen we all breathe, and so adds to our greenhouse gas problem. And the planet warms some more.

What happens next?



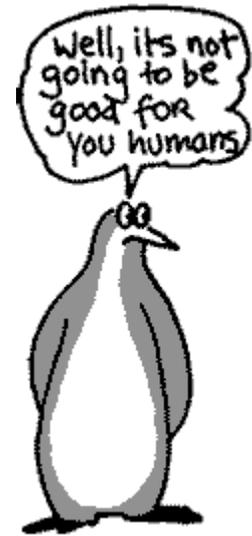
What happens next is not good news for people or penguins. The thing that bothers me is that the ice of the poles is going to start to melt. Some of it already

is melting fast.

As you know, penguins like ice. Without very cold water and ice, we get too hot because, like polar bears, we're designed for cold weather. But for you people, it will be much worse.



For a start, all the ice that melts will start to fill up the oceans and make them overflow on land. And the water itself will take up more space simply because it is warmer (this is called thermal expansion). That will make it overflow even more onto the land.



Good news for fish; bad news for people

More sea and less land is fine for penguins and for fish, but it's no good at all for people and other animals that live on the land. Some of the best land for growing food is also the most low-lying. That means it will be flooded first. It also happens that



some of your biggest cities, like London, New Orleans and Cairo, will get flooded too. Loads of

people will go hungry and many more will have nowhere to live. This is very worrying.

Storms ahead

I'm afraid worse is to come: people who study earth's climate have found that as it warms up, the weather is going to get more violent and unpredictable. Hurricanes will become more common and will be more violent -- a big worry for people living in the south of the United States, in the Pacific or the Indian ocean areas (Bangladesh, the Philippine islands and so on). Deserts will probably increase and places like the Great Plains of America will get drier.

It's not really happening, is it?

It seems to be, but there are some people who say it is not.

Can you think who these might be? You guessed it!

The people who don't think climate change is happening are those who use lots of fuel, who make things like cars that use lots of fuel, or actually get the fuel out of the earth: that's heavy industry, carmakers and the oil, gas and coal companies. This is what people call 'vested interest'.





These are people who depend on other people using lots of fuel if they are to continue making money. It's not surprising that they don't think there is any climate change. But it doesn't make them right!

Yes, climate change is real



Lots of people have studied the climate all around the world. They agreed several years ago that climate change really was happening. As a result, all countries in the world came together in a big conference at Kyoto in Japan. Here they began to try and agree what to do about climate change. Lots of promises were made but countries haven't been very good at carrying them out. Since then, the evidence of



change has become stronger and stronger. The special computer 'models' which scientists had used have become more and more accurate. The ice sheets in both the Arctic and the Antarctic are melting, in some cases very fast. Sea levels are



rising. Temperatures are rising, especially in the Arctic and Antarctic. Glaciers on other mountains of the world are melting very fast -- especially in the Himalayas.

Animals and plants which like warmer conditions are moving further north and south. Yes, it's happening all right. The world is hotting up. And I'm sorry to say it's all people's fault. We other animals are innocent because the only fuel we use is that which we get from our food ... so what are you folks going to do about it?





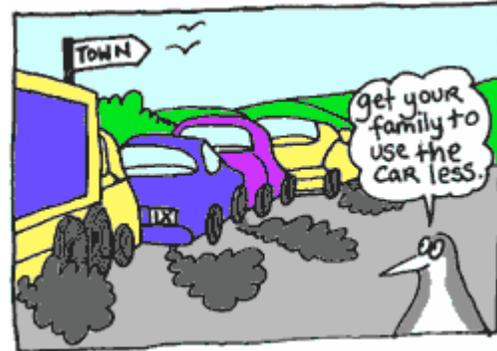
What you can do

- Tell your friends. Talk about it with your teachers
- Find out more by following links. I'll give you some ideas in a minute (below). Remember not to believe all you read or see. Not everybody tells the truth
- You could also write to your country's politicians telling them that you're worried about climate change. Older members of your



family should be able to find out how to do this. And why not see if you can get them to write too

- If your family has a car, get them to use it less. Walk to the shops. Use a bus to travel



- Turn the heating down in winter. If you're cold, wear more clothes! Turn the air conditioning down in summer or use a fan

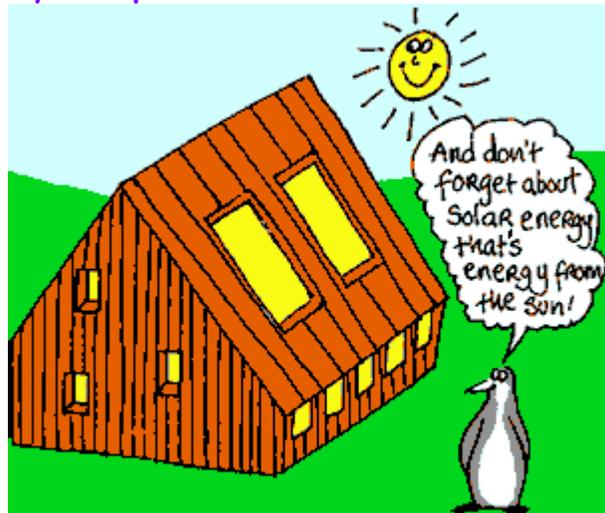


- If you can, buy your food from local farm shops and try and avoid imported goods. Trucks and planes bringing in food and stuff from other countries, or from distant parts of your own country, use huge amounts of fuel
- Don't travel long distances unless you really have to. Particularly try and avoid using aeroplanes and big,



gas-guzzling cars like SUVs. See if your friends and parents could holiday locally

- Join a group which campaigns for traffic reduction, planting trees, public transport -- you name it; there's lots of them
- See if you can get your parents and friends interested in free solar energy -- that's energy from the sun. You can get much of your hot water and heating from the sun and even generate electricity. And it's interesting building all these things.



Ideal

Cycling uses your energy, not fossil fuel. Running and walking are the same. And swimming, of course. I love swimming. Which reminds me, I'm hungry: I'm off

down to the sea to look for a nice fat fish to eat.

So you see there's no need to despair. There's plenty you can do.

Remember: how you choose to use energy affects all life on Earth.

The more energy you use, the more warming happens. So please **think** before you act... and turn off that light. Every little thing helps; yes, it really does!

Want to find out more? Well visit my global warming links page by clicking [here](#). Oh, and if you haven't seen my [Energy Guide](#), now's the time to look.

Recommend
this Site

Bye!

Love from Tiki

