

## Workshop Plan - ESL

Teacher name:	
School:	Kilsyth Secondary College
Presentation Title:	Changing climate, changing weather
Name of Mentor	
Describe your presentation	We hear about climate change all the time but what does it mean and how does it work? The planet's climate has always fluctuated and we will investigate how humans have recently contributed to these changes. Find out how humans compare with volcanoes when it comes to releasing carbon dioxide emissions into the atmosphere, how tornadoes work and how weather patterns are changing as result of climate change.
Type of Presentation (Please circle/highlight those being used)	<p>PowerPoint      Song                  Dance                  <b>Quiz Show</b></p> <p>Debate            <b>Experiment</b>                  Craft                  Interview</p> <p>Models            Cooking                  Physical Game            <b>Drama</b></p> <p>Role play        Poem                      <b>Game</b></p> <p>Other, please specify:</p>
Please describe how you would use the above presentation types in your interactive presentation:	<p><b>Introduction:</b> Presenting students do a TV news report drama with news on extreme weather events linked to climate change. Here the relationship between human carbon dioxide emissions and climate change can be explored.</p> <p><b>Activity 1</b> Students use flash cards to play weather bingo. Students then create stories using the flash cards focussing on environmental changes due to climate change. <i>Resources:</i> Use season, nature and weather flash cards <a href="http://www.eslflashcards.com/preview.php?id=1">http://www.eslflashcards.com/preview.php?id=1</a> <a href="http://www.kids-pages.com/flashcards5.htm">http://www.kids-pages.com/flashcards5.htm</a></p> <p><b>Activity 2</b> Tornado races. Students make their own tornadoes and then discuss the impacts of tornadoes on the environment and communities. Students can race their tornadoes to see which goes for the longest period time. <i>Resources:</i> Tornado experiment below</p>

	<p><b>Activity 3</b> Volcanoes and carbon dioxide. Carbon dioxide is a colourless and odourless gas that composes 0.4% of the atmosphere. Carbon dioxide, which plays an important role in climate change, can be released into the atmosphere by human and natural processes. Students can investigate these processes by making their own volcanoes and comparing volcanic carbon emissions with human carbon emissions.</p> <p><i>Resources</i> <i>Volcano experiment below</i> <i>Volcano and carbon dioxide information</i></p> <p><b>Conclude</b> Climate change quiz and reflections.</p>
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<b>Workshop Aims / What do we want our audience to learn?:</b>	
As the planet's climate changes so does the weather. Climate change can be altered by human and natural causes. We can all take actions to reduce our carbon dioxide emissions.	
<b>How will we share the things we've learnt about the topic?</b>	
Present to whole school and classes from neighbouring schools. Invite parents and local council representatives to our workshop.	
<b>What will we need for our workshop? (MENTOR?, Props, models, pictures, computers, tables, cleaning products)</b>	
Costumes for drama, Tornado experiment: two large plastic soft-drink bottles, glue, a nail or drill, water, food colouring, glitter, Volcano experiment: bicarbonate of soda, vinegar, red food dye, small soft drink bottle, sand., quiz questions	
<b>What similar presentations have we done that may help? (public speaking, drama, talking at assembly)</b>	
Inter school conferences and assemblies	
<b>What roles do each of us (presenters) have in our presentation? (time keeper, MC, researcher, multimedia manager)</b>	
All delegates preparing and presenting own activity.	

## Changing climate, changing weather

### Activity 2 - Tornado in a Bottle

Follow these instructions to make your own bottled tornado and learn about how tornadoes are formed.

A major tornado strikes Australia every couple of years, but you don't have to wait for a natural occurrence - you can make one of your own at home. Tornadoes are twisting funnels of wind that are larger than dust-devils (sometimes also called willy-willies) but smaller and more short-lived than tropical cyclones. In the United States, tornadoes are referred to as twisters, but in Australia we call them willy-willies. You might have seen one in a film such as Twister or The Wizard of Oz.

#### What you need

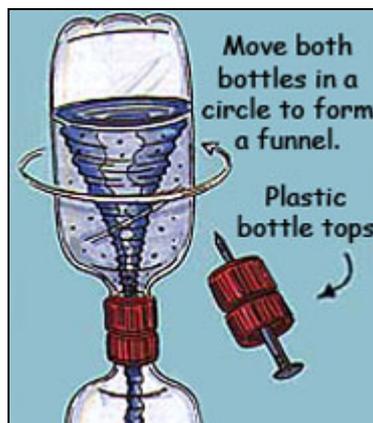
To do this activity you will need:

- two large plastic soft-drink bottles
- glue
- a nail or drill
- water
- food colouring
- glitter

#### What to do

The hole in the bottle lids is the key.

1. Remove the lids from the soft-drink bottles.
2. Stick the tops of the lids together with a strong glue then punch a large hole through the middle of the lids using a nail or drill. Experiment to find the best width (a hole the size of a drinking straw is ideal).
3. Fill one of the bottles with water. Add some food colouring and glitter to make the water currents easier to see.
4. Screw the lids onto the full bottle, and screw the empty bottle on top. Make sure that the seal is tight and waterproof!
5. Turn the bottles upside down, so that the bottle full of water is on the top. Spin them so that the water starts to rotate inside. As the water twists down into the empty bottle, the air will rise up through the water in the top bottle, and look just like a tornado. Where have you seen this shape before? (Hint: think of the bath.)



#### What's happening?

If the water is spun, a vortex forms. When water is moving in a circle, forces called centripetal forces are acting on the water. Centripetal force is a centre-seeking force and it is pulling the water towards the centre of the vortex. Without this force, the water would simply move in a straight line.

Things tend to want to keep going in the same direction as they started. To make an object move in a circle it has to constantly change direction and to do this there has to be a force applied - in this case, a centripetal force.

The water at the narrow part of the vortex is moving faster than the top. At the narrow part of the bottle, water is closer to the centre and, just like an ice skater with their arms pulled in, it does not have a great distance to cover, and will move faster.

This vortex drains rapidly into the bottle below as the hole in the vortex allows air to move through easily and the water can drain smoothly. Try turning the bottles over without spinning them. Does the water drain from the top bottle as quickly?

Source: <http://www.csiro.au/resources/bottled-tornado-activity.html>

## ***Changing climate, changing weather***

### Activity 3 – Making a volcano

#### **What you need**

- Bicarbonate of soda
- Vinegar
- Red food dye
- Small soft drink bottle
- Sand

#### **What to do**

1. Put a table spoon of bicarbonate of soda into a small plastic bottle
2. Place sand around the bottle to form a mountain shape
3. Put food colouring and ½ a cup of vinegar in a container and stir
4. Pour the vinegar and food dye mixture into the bottle
5. Wait and watch as the volcano erupts with frothy red lava

#### **What's happening?**

Red 'lava' flows out of the volcano. This happens because of the baking soda and vinegar mixture. Mixing baking soda and vinegar produces a chemical reaction in which carbon dioxide gas is created - the same gas that bubbles in a real volcano. The gas bubbles build in the bottle, forcing the liquid 'lava' mixture of the bottle and down the sides of your volcano.

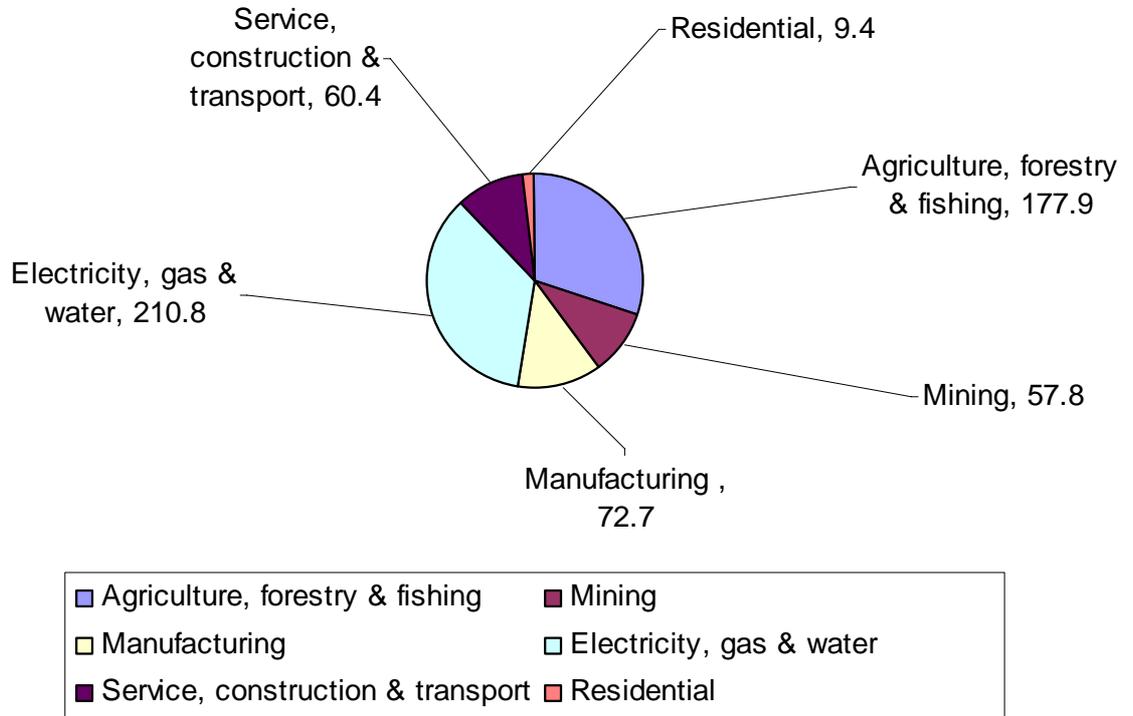
### **Additional info on volcano and carbon dioxide emissions**

Volcanoes release more than 130 million tonnes of CO<sub>2</sub> into the atmosphere every year. This colorless, odorless gas usually does not pose a direct hazard to life because it typically becomes diluted to low concentrations very quickly whether it is released continuously from the ground or during episodic eruptions. But in certain circumstances, CO<sub>2</sub> may become concentrated at levels lethal to people and animals. Carbon dioxide gas is heavier than air and the gas can flow into in low-lying areas; breathing air with more than 30% CO<sub>2</sub> can quickly induce unconsciousness and cause death. In volcanic or other areas where CO<sub>2</sub> emissions occur, it is important to avoid small depressions and low areas that might be CO<sub>2</sub> traps. The boundary between air and lethal gas can be extremely sharp; even a single step upslope may be adequate to escape death.

When a burning piece of cloth is lowered into a hole that has a high concentration of CO<sub>2</sub>, the fire goes out. Such a condition can be lethal to people and animals. Air with 5% CO<sub>2</sub> causes perceptible increased respiration; 6-10% results in shortness of breath, headaches, dizziness, sweating, and general restlessness; 10-15% causes impaired coordination and abrupt muscle contractions; 20-30% causes loss of consciousness and convulsions; over 30% can cause death.

Source: <http://volcanoes.usgs.gov/hazards/gas/index.php>

## 2008 Australian carbon dioxide emissions in the atmosphere (million metric tonnes)



<http://www.climatechange.gov.au/climate-change/~//media/ED8FAE30275B4119BECC9CD387E6CAE3.ashx>