Lesson Plan 6 **Earth and space sciences (The changing Earth)**

Year Level: 5/6 **Key learning area:** Science

Measuring Pressure

Objectives

By the end of this lesson the student will:

- have made a simple aneroid barometer

- measured the air pressure changes over a week

- understand how an aneroid barometer works.

Background

Air has weight. It exerts pressure on us and on everything around us. The pressure of the atmosphere on our body would crush us if it were not counterbalanced by the equal internal pressure of the fluids inside our body.

Air pressure at sea level fluctuates around 1,013 hectopascals (hPa). It can drop to 970 hPa during severe storms. In a high pressure system it can reach 1040 hPa.

As air pressure rises, it forces the balloon down into the jar, making the end of the straw rise. The jar works on the same principle as an aneroid barometer (see: http://www.bom.gov.au/info/aneroid/aneroid.shtml), which contains a sealed box with most of its air removed. Any change in pressure will make the box shrink or expand. Levers magnify these changes, causing a pointer to move on a dial.

Read through the High and Low Pressure Systems web page for extra information: http://www.bom.gov.au/lam/Students_Teachers/pressure.shtml. It contains **animations** (approx. 200 KB in total size) which will download automatically.

Please note

Movement in the straw (needle of the student's barometer) may be due to either air pressure or temperature. The main point of this activity is to highlight the structure and function of the barometer which only measures air pressure.

Resources and actions

Print off the student's worksheet and photocopy one for each student:
http://www.bom.gov.au/lam/Students_Teachers/Worksheet6.shtml

Ask the students to carry out the activity from the worksheet. They will need to have access to their barometers at the same time each day for a week. You could investigate the difference caused by having wide and narrow mouthed jars on the magnification of the changes. The length of the straw and distance from ruler will also

affect the magnification of changes observed.

Solutions

1. The ruler's "zero" measurement should be at the bottom.
2. Students should have created a table and recorded their daily pressure readings.
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4. As air pressure rises, it forces the balloon down into the jar, making the end of the straw rise. As external air pressure falls, the balloon is pushed out by the air pressure inside the jar and the end of the straw drops due to the curvature of the expanding balloon.

Time

Approximately 20 minutes for the construction of the barometer and a week for the collection of daily readings.

Assessment Task

Q3 & 4.