**Activity: Finding south using the stars**

**Learning intention:**

* Use star charts to identify stars.
* Learn how to use the Southern Cross to find south.
* Appreciation of the night sky.
* Develop numeracy, observational, and problem solving skills.

**Description:**

* Show students how to use a star chart or Google sky (<http://www.google.com/sky/>), before going outside.
* Ask students to find the following:
* Southern Cross. In what way does it differ from the False Cross?
* Beta Centauri and Alpha Centauri (these are the pointers). Please note: Alpha Centauri is Earth’s nearest neighbour – it is four light years away.
* Achernar
* Peacock
* Canopus
* Betelgeuse
* Stars “twinkle” and planets don’t. Get students to identify which of the above are stars and which are planets.
* Stars are different colours. Their colours relate to their temperatures. Which is the hotter star, yellow Alpha Centauri or white Canopus?
* When outside get students to identify the various stars and planets in the night sky.

**Finding south using the Southern Cross:**

* Find the Southern Cross and the two pointers
* Draw a line following the direction given by the tail of the long axis of the Southern Cross (Line 1)
* Draw a line between the two pointers (Line 2)
* Line 3 is the perpendicular bisector of Line 2. Extend this line out across the sky until intersects with Line 1.
* From this intersection draw a line directly down to the horizon (Line 4). Find a physical feature (hill, tree, building) which can be used as a marker. This is south.
* Where are north, east and west in relation to where you are standing?

**Safety considerations:**

* Dress warmly.
* Have enough torches to share amongst the group.
* Establish clear boundaries.
* Establish a buddy system.

**Equipment:**

* Star charts to share (one between two).
* Enough torches for the group to move to an appropriate location.

**Location:**

* Clear night sky

**Time:**

* Under an hour

**Student processing/reflection:**

* The mathematical concepts needed to find south?
* General observations about the night sky?

**Possible Adaptations:**

* Take sleeping bags and mats outside. Lie down and observe how the night sky changes over an hour. How much do the stars move? What causes them to appear to move? How far do they ‘travel’ in an hour (about 15 degrees – this can be measured by holding your arm out straight, your hand up-right but relaxed. The gap between your thumb and hand is about 15 degrees). How many satellites are seen in an hour?
* Find out about the importance of the stars and heavens to Maori for navigation, fishing, planting etc.

***Acknowledgements:***

Reference: Adapted from:

*McConnell, B. & Law, B. (1994). Education outside the classroom: Science and the environment. Christchurch College of*

*Education*

*Hillary Commission. (1995). Kiwi Outdoors.*