a WOW Lab BLUEPRINT

The Human Sundial

Achievements and Competencies

Learning Outcomes

K-Grade 3	Grades 4-6
Daily and seasonal changes	Light

Achievements and Competencies are based on the Common Framework of Science Learning Outcomes (K-12) set by the Canadian Council of Ministers of Education (1997).

Specific Expectations

Grade 1

EARTH AND SPACE SCIENCE

Daily and seasonal changes

> 100-14 Describe changes in heat and light from the sun (e.g., measure and compare outdoor temperatures and other weather conditions on cloudy and sunny days. Measure and describe outdoor temperature changes at different times of the day, observe and describe how the position of the sun influences the length and position of shadows).

As a class, students will create a human sundial by tracing the outline of a classmate's shadow, which changes according to the position of the sun throughout the day.

> 101-6 Describe ways of measuring and recording environmental changes that occur in daily and seasonal cycles (e.g., investigate and describe ways of measuring daily and seasonal changes in light and temperature, observe and describe changes that occur in a cyclic pattern and relate these changes to the passage of time).

The students will have the opportunity to learn how a sundial is created and how it is used as an accurate time telling device. Students will learn that the Earth rotates around its axis, causing the cycles of day and night. They will also learn that the sun rises in the east, sets in the west and is at its highest point in the sky at noon.

a WOW Lab BLUEPRINT

The Human Sundial - Achievements and Competencies

Grade 4

PHYSICAL SCIENCE

Light

205-5 Make observations and collect information that is relevant to a given question or problem (e.g., draw diagrams showing the position of the light source and location of the shadow).

Using a hula hoop, chalk, and a student volunteer, the class will trace the outline of the student's shadow, and observe how the position of the sun changes throughout the day.

303-1 Identify sources of natural and artificial light in the environment.

Creating a human sundial allows the students to identify the sun as a natural source of light in the environment.

303-4 Investigate how a beam of light interacts with a variety of objects, in order to determine whether the objects cast shadows, allow light to pass, or reflect light.

A student will be used to create a human sundial, and classmates will determine the time of day based on where the student's shadow is being cast and the position of the sun.

303-5 Predict the location, shape and size of a shadow when a light source is placed in a given location relative to an object.

After creating a human sundial for the hours of 9 a.m., 12 p.m. and 3 p.m., the students will have the opportunity to predict the location of the shadows at other times of day, e.g. 8 a.m.,10 a.m.,11 a.m.,1 p.m., 2 p.m. Using the hula hoop circle, students will mark the spots where they predict the shadows will intersect with the sundial.