Paper ID: 13081
student

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Ignition - Primary Space Education (1)

Author: Mrs. Marina Pitts
The University of Western Australia, Australia

WALK TO THE EDGE OF THE SOLAR SYSTEM AT THE GRAVITY DISCOVERY CENTRE

Abstract

Teaching abstract scientific concepts regarding the Solar System can be beyond the mental scope of Year 6 and 7 students, in terms of the vastness of space. While students may be familiar with the names of the planets and pictures of the Solar System, they may not be able to grasp the scale of astronomical distances. To this end, a programme has been developed to allow students to learn experientially by participating in a walk to the edge of the Solar System, at the Gravity Discovery Centre (GDC). The GDC is an independent non-profit facility, providing educational resources to complement the Australian International Gravitational Observatory (AIGO) Research Centre, located 80 km north of Perth, in Western Australia. The GDC is a centre that focuses on modern physics and astronomy. School students have access to science facilities and can conduct experiments there. A one kilometre scale model of the Solar System has been constructed at the GDC and the general public has access to it. To enhance this resource, a programme has been developed to examine students' prior and post-excursion understanding of astronomical concepts. The methodology includes students making mathematical predictions, stepping out the Solar System while wearing pedometers and gathering data about the planets, their moons and other objects in space, in order to gain a concrete picture of the dimensions of space and the relationship of the planets to each other. The impact of this programme will be further evaluated after final data collection next month. Astronomy is an effective vehicle for engaging students in science. Learning experiences outside the classroom are often the most memorable. Being outside the classroom exposes students to new experiences, helps them to learn in different ways and motivates them to learn more and feel positive about learning, as well as encouraging working collaboratively, fostering decision making and team work. A similar program teaching Year 6 students curved space and other quantum physics concepts was conducted in 2011 at the GDC. They were exposed to abstract concepts through experiential learning with the various exhibits and conducted experiments from the top of the 'Leaning Tower of Gingin'. Results confirmed that the students were able to grasp ideas about Einstein's physics. Interestingly, research studies have revealed that university students have difficulty grasping these abstract concepts as they contradict the Newtonian paradigm that they were taught in high school.