

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)

Lift Off - Secondary Space Education (2)

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BENEFITS OF THE CANSAT PROGRAM IN THE AUSTRALIAN SECONDARY SCHOOL SYSTEM

Abstract

Since the first CanSat challenge at the Japan-US Science, Technology, and Space Applications Program (JUSTSAP) conference in 1998, universities have used CanSat to stimulate interest in space engineering and applications, and develop skills in electronics, mechatronics, programming and remote sensing. The Victorian Space Science Education Centre (VSSEC) and The King David School (KDS) have adopted the CanSat concept and developed a program that can be delivered within the formal secondary education system to inspire and educate the next generation of scientists and engineers.

In 2011 Australia competed in the international CanSat France competition, in Biscarrosse, France. The VSSEC-KDS team consisted of high school students from years 9 through 12 and university mentors from Aerospace Engineering and Mechatronics Engineering. This team was the only team to include secondary school students and in their first year they were one of five teams out of sixteen to qualify for the finals. VSSEC developed a simplified CanSat, the OzESat, to provide an appropriate platform for secondary students. CanSat related activities were embedded within Mathematics, Science, and Media Information Technology subjects. Media students were responsible for designing team logos, chronicling the progress of the team and building content on the team's website. Information Technology students programmed the primary (OzESat) and secondary (arduino microcontroller) missions; as well as interfacing the hardware and software components of the CanSat. The remaining facets of the CanSat project which included: mathematical modelling of the parachute system and hygrometry data; calibration of OzESat sensors; and the design and construction of the airbag and RF antenna deployment systems was undertaken by the Mathematics and Science students.

The success of the CanSat program was clearly evident amongst the high school students and their university mentors. Participation in the CanSat program influenced the subject and course selection of both groups. Students previously unsure of what tertiary courses to nominate at the conclusion of Year 12 included engineering amongst their top preferences and one of the university students is now determined to contribute to the design of the next generation of space probes. One year on, the size of the CanSat team has increased significantly. Students and mentors report being attracted by the opportunity to work on 'real-world' engineering problems. This paper presents the secondary school CanSat program, feedback from participating students, mentors and teachers, and how this program is being expanded to other schools.