

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
On Track - Undergraduate Space Education (3)

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STARS - SPACE TECHNOLOGY ASTRONOMY RESEARCH STUDENT PROGRAM

**Abstract**

Immersive-learning has been demonstrated as an effective methodology for increasing student engagement, improving student achievement, developing critical thinking and analytical skills, and connecting students with potential study and career paths. It is particularly effective for engaging students with Science, Technology, Engineering and Mathematics (STEM) and other careers where students have limited personal exposure. It is also effective for developing the technical skills needed to excel in these disciplines.

The CSIRO Canberra Deep Space Communication Complex (CDSCC), the ANU Research School of Astronomy and Astrophysics (RSAA) and the ACT Education and Training Directorate, with the support of the ACT Economic Development Directorate, established the STARS (Space Technology Astronomy Research Student) Program to provide contextually relevant education programs for secondary school students and research opportunities for undergraduate and postgraduate students in science and engineering.

The project uses the re-commissioning of DSS-46, the 26m dish antenna at the CDSCC that received the first images from the Apollo 11 Moon landing, as the focus of activity. The antenna and control room represent a valuable asset with historical significance that is currently idle. Under the supervision of CDSCC and ANU staff, undergraduate and postgraduate students are evaluating potential new research applications for the antenna and the upgrades that would be necessary to restore the antenna to a working condition. This helps train industry-ready graduates and reduces the engineering costs associated with the re-commissioning of the antenna.

During the evaluation phase, the existing control room was refurbished to create a mission control environment for secondary school students. In this mission control, students can access the NASA GAVRT (Goldstone Apple Valley Radio Telescope) program, the CSIRO PULSE@Parkes program, the VSSEC Robotic Mission to Mars program, and other immersive education programs. This supports the immediate delivery of effective education programs and provides teacher professional development in the use of immersive-learning.

The project facilitates collaboration between the secondary and tertiary sectors with an industry focus. It enables secondary and tertiary level students to access the facilities, and the expertise of the project partners, and provides real, industry-based, science and engineering projects. It engages and inspires students and highlights pathways for careers in radio astronomy, engineering, mathematics, computer science and more.