SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Enabling the Future - Developing the Space Workforce (5)

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INSPIRING THE NEXT GENERATION: THE INTERNATIONAL SPACE STATION EDUCATION ACCOMPLISHMENTS

Abstract

The International Space Station (ISS) has a unique ability to capture the imagination of both students and teachers worldwide. Since 2000, the presence of humans onboard ISS has provided a foundation for numerous educational activities aimed at capturing that interest and motivating study in the sciences, technology, engineering and mathematics (STEM). Over 43 million students around the world have participated in ISS-related educational activities. Projects such as YouTube Space Lab, Sally Ride Earth Knowledge-based Acquired by Middle Schools (EarthKAM), SPHERES Zero-Robotics, Tomatosphere, and MAI-75 events among others have allowed for global student, teacher and public access to space through student classroom investigations and real-time audio and video contacts with crewmembers. Educational activities are not limited to STEM but encompass all aspects of the human condition. This is well illustrated in the Uchu Renshi project, a chain poem initiated by an astronaut while in space and

continued and completed by people on Earth. With ISS operations now extended to 2024, projects like these and their accompanying educational materials are available to more students around the world.

From very early on in the program's history, students have been provided with a unique opportunity to get involved and participate in science and engineering projects. Many of these projects support inquiry-based learning that allows students to ask questions, develop hypothesis-derived experiments, obtain supporting evidence and identify solutions or explanations. This approach to learning is well-published as one of the most effective ways to inspire students to pursue careers in scientific and technology fields.

Ever since the first space station element was launched, a wide range of student experiments and educational activities have been performed, both individually and collaboratively, by all the international partner agencies, National Aeronautics and Space Administration (NASA), Canadian Space Agency (CSA), European Space Agency (ESA), Japan Aerospace Exploration Agency (JAXA) and Russian Federal Space Agency (Roscosmos), and a number of non-participating countries, some under commercial agreements. Many of these programs still continue, and others are being developed and added to the stations tasks on a regular basis. These diverse student experiments and programs fall into one of the following categories: student-developed experiments; students performing classroom versions of ISS experiments; students participating in ISS investigator experiments; students participating in ISS Engineering Education; Education Demonstrations and Cultural Activities.

This paper summarizes some of the main student experiments and educational activities that have been conducted on the space station.