IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Space for All: Promoting Inclusive Practices in Space Exploration (2)

Author: Dr. Srimathy Kesan
India

Dr. Kshitij Mall
United States
Dr. Prathamesh Prabhu
Iowa State University, United States
Dr. Akash Pandey
University of Cambridge, United Kingdom
Ms. Sukruti Narayanan
Space Kidz India, Australia

MISSION SHAKTHISAT: A 108-NATION COLLABORATIVE STEM INITIATIVE FOR LUNAR EXPLORATION

Abstract

Mission ShakthiSAT represents an unprecedented effort in global collaboration, uniting over 108 nations, primarily from the developing world, in a joint lunar exploration and STEM education initiative. Scheduled for launch in September 2026 aboard the Indian Space Research Organization's (ISRO) PSLV, the mission integrates online education, hands-on spacecraft development, and diplomatic engagement, fostering international cooperation at both student and governmental levels.

At its core, ShakthiSAT is a transformative educational program aimed at training 12,000 girls, aged 14 to 18, from diverse backgrounds in space technology and satellite engineering. Participants will be directly involved in designing, building, and testing operational satellites and scientific payloads, which will be transported to lunar orbit aboard the Economical Transfer Vehicle (ETV), an innovative transport and operational platform developed by industry specialists, Meridian Space Command (UK).

Following an eight-day transfer, the ETV will enter a highly eccentric lunar orbit, where satellite and scientific payload commissioning will commence. This phase will provide students with a hands-on understanding of orbital dynamics, mission operations, and payload deployment in deep space environments. Additionally, in collaboration with Space Kidz India (SKI) and Meridian Space Command, the mission will execute a semi-hard lunar landing, deploying a micro landing system (¡6U) to the Moon's Atlas Crater. This ambitious endeavor will introduce students to the complexities of lunar surface operations, expanding their knowledge beyond Earth orbit and reinforcing international cooperation in planetary exploration.

Coordinating 108+ countries presents unique diplomatic, technical, and logistical challenges, including regulatory compliance, language barriers, and multi-regional collaboration. Successfully managing such a large and diverse consortium requires innovative approaches to international cooperation, standardized technical frameworks, and adaptive communication strategies. This paper explores the strategies and solutions implemented to ensure seamless participation, setting a blueprint for large-scale international space collaboration that could be applied to future multinational space initiatives.

With a total mission duration of approximately three months, ShakthiSAT is not just an education initiative—it is a gateway for developing nations to participate in deep-space exploration. The program equips students with practical engineering experience, engages governments in multinational space collaboration, and establishes a scalable model for future global STEM initiatives. By democratizing access to

lunar science and satellite development, Mission ShakthiSAT represents a global step forward in inclusive space exploration, bridging gaps between emerging and established space nations while inspiring the next generation of women in STEM.