

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Interactive Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (IP)

Author: Mr. Sourabh Kaushal
SMARTCIRCUITS INNOVATION Private Limited, India

Mr. Raghav Sharma
SMARTCIRCUITS INNOVATION Private Limited, India

Mr. Sachin Sharma
SMARTCIRCUITS INNOVATION Private Limited, India

ENHANCING SPACE AND STEAM EDUCATION THROUGH HANDS-ON EXPERIENTIAL
LEARNING ACTIVITIES

Abstract

Hands-on SPACE and STEAM education and outreach represent a potent methodology for introducing and teaching space concepts alongside Science, Technology, Engineering, Arts, and Math (STEAM) principles to young learners. Experiential learning stands as a cornerstone in fostering analytical skills and nurturing a scientific mindset.

This presentation unveils a plethora of STEM and Space-based DIY activities meticulously designed to elucidate fundamental space science concepts, encompassing constellations, eclipses, force and pressure, gravity, and Newton's laws, among others. Notably, all activities are facile to assemble and adeptly cater to diverse learning styles, accompanied by clearly defined learning outcomes. Moreover, these activities facilitate extended exploration, fostering a robust foundation for future research endeavors. Developed with cost-effectiveness in mind, these activities ensure accessibility, extending the reach of space science education even to underprivileged regions. Priced at an average of *1peractivity, theyof feraneconomicalsolutionforclassroomsa basedlearningenvironmentsalike.*

Drawing from a vast pool of experience, with over 50,000 participants engaged, the efficacy of these activities is substantiated by feedback indicating enthusiastic reception and enhanced comprehension among both students and educators. Through rigorous assessment methods encompassing pre and post-activity evaluations, encompassing multiple-choice questions, subjective assessments, and interviews, tangible evidence of the positive impact on learning outcomes is demonstrated.

Within the SEOC session, a selection of these activities will be showcased, including Solar and Lunar Eclipse simulations, Force and Pressure experiments, Newton's law demonstrations, and Centrifugal force explorations. Each activity exemplifies hands-on engagement, ensuring seamless integration with the audience, who will readily sample the presented work. As do-it-yourself endeavors, these activities empower learners to take charge of their educational journey, fostering a deeper understanding of fundamental space science and physics principles.

This presentation encapsulates the synergy between hands-on experiential learning and space education, offering a unique and innovative approach poised to enrich the international space community. By sharing insights gleaned from extensive research and practical application, this work contributes valuable lessons learned and recommendations, serving as a beacon for educators and practitioners alike seeking to enhance space education through immersive, hands-on experiences.