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Author: Mr. Luis Fernando Gomez Monroy
Mexico

Mr. Luis Angel Garcia Sanchez
Mexico

Mr. Alberto Garcia Sanchez
Mexico

EN EL TULE AEROESPACIAL: FOSTERING STEAM EDUCATION THROUGH SUSTAINABLE
EXPERIMENTAL ROCKETRY OUTREACH.

Abstract

En El Tule Aeroespacial is a pioneering STEAM initiative in Mexico led by three passionate aeronautical engineers. Our mission is to ignite a love for science among children between 8 and 14 years old through engaging and sustainable experimental rocketry activities. Spanning over two years, our outreach program has transcended geographical boundaries, born in the small state of Hidalgo, it has reached schools across Mexico from Queretaro to Tijuana.

Aligned with the session's focus on space outreach, our project seeks to bridge the gap between theoretical knowledge and hands-on experience in aerospace science. Through interactive workshops, we elucidate fundamental rocketry principles, including distinctions between airplane and rocket flight, stability, and Newton's third law. Our outreach sessions offer three core activities tailored to diverse age groups and skill levels. Participants construct and launch paper rockets with air cannons, create water rockets from recycled materials, and design parachutes for rice ball payloads. These activities deepen understanding of physics while promoting sustainability.

Integral to our approach is evaluating outreach efficacy through qualitative and quantitative methods. Participant surveys and observational data inform continuous activity refinement. Additionally, we train teachers to utilize and build our tools, extending our impact beyond direct engagement.

Our work offers insights into effective outreach strategies for inspiring future scientists and engineers. By sharing experiences and recommendations, we empower educators to adopt innovative approaches in their initiatives.

En El Tule Aeroespacial democratizes STEM education through experiential rocketry learning. Our commitment to sustainability and fostering scientific passion underscores our relevance within the international space community.