

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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Author: Mr. Christian Andres Acajabon Rivera
Universidad de San Carlos de Guatemala, USAC/CUNOC, Guatemala

Mr. Jaime Pineda
Universidad de San Carlos de Guatemala, USAC/CUNOC, Guatemala

EXPLORING SPACE WITH PORTABLE RADIO: ENCOURAGING SPATIAL CURIOSITY AND
EDUCATION IN ELEMENTARY AND SECONDARY STUDENTS THROUGH THE DESIGN OF
ACCESSIBLE HANDMADE ANTENNAS

Abstract

In an effort to encourage space exploration and STEM education from an early age, this project focuses on the design and development of affordable portable radios and antennas, using easily accessible materials, with the goal of allowing primary and secondary school students to explore satellite communications. The initiative seeks to not only provide a practical tool for learning about the space industry, but also inspire young people to consider careers related to science, technology, engineering and mathematics.

The design of the portable radio has been simplified to match the level of understanding of students, while maintaining the functionality necessary to receive satellite signals. Inexpensive and easily acquired electronic components have been selected, allowing students to build their own devices with proper guidance. The antenna, essential for the reception of satellite signals, has been designed so that its construction is accessible and understood by students without prior engineering experience.

The project not only focuses on building the devices, but also on understanding the concepts behind satellite communications. Supplementary educational material is provided that explains the fundamental principles of signal transmission and reception, as well as the operation of satellites in orbit. This combination of theory and practice allows students to not only build their own radios and antennas, but also understand how and why they work.

The hands-on experience of building and using radios and antennas for satellite communications can spark students' interest in fields such as aerospace engineering, astronomy, physics, and information technology. By providing them with the opportunity to explore these topics in a tangible and fun way, this project aims to inspire the next generation of scientists, engineers and space explorers.