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STARS

Space Technologies and Research for Schools

01 EXECUTIVE SUMMARY

The Space Technologies and Research for Schools (STaRS) Project aims to bridge the gap in STEAM education within under-resourced schools in Colombia by integrating aerospace sciences into school curricula. Through hands-on learning experiences and engagement with NASA professionals, the STaRS Project seeks to inspire 300 students across 15 schools, fostering an interest in STEM careers, particularly in aerospace and space exploration. Additionally, 60 teachers will be trained to deliver the curriculum, enabling sustainable and scalable educational outcomes.

The project is built on four key pillars: curriculum development, teacher training, student engagement, and community outreach. These pillars align with NASA's mission to build the next generation of explorers and innovators by exposing students to cutting-edge science and technology, fostering curiosity, critical thinking, and problem-solving skills. The STaRS Project will also help address educational inequities by focusing on marginalized communities, creating opportunities for young people who have been historically underrepresented in STEM fields.

Over the course of the program, the project will engage students in building model rockets, designing satellites, and participating in NASA-inspired space missions. The program will also include mentorship opportunities, allowing students to connect with NASA professionals and aerospace experts, further strengthening their interest in STEM education.

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SECURITY, AND PROSPERITY.**

02 INTRODUCTION

Colombian schools in marginalized areas face significant challenges in providing high-quality STEAM education due to a lack of resources, teacher training, and access to modern technologies. These challenges contribute to lower academic performance and limited opportunities for students to pursue STEM careers. The STaRS Project is designed to address these gaps by bringing space and aerospace sciences into classrooms through a hands-on, inquiry-based curriculum.

By integrating real-world NASA missions and themes into the classroom, the project aims to inspire students, particularly those in underserved communities, to explore career pathways in science, technology, engineering, and mathematics (STEM). This project not only addresses an educational need but also aligns with broader global trends in promoting diversity and inclusion in STEM fields.

The STaRS Project provides a unique opportunity to bring NASA's missions and expertise into the classroom, empowering students and teachers with the knowledge and tools needed to actively engage with modern science and technology.

03 GOALS AND OBJECTIVES

Primary Goal: To inspire and engage 300 students in STEAM education through practical applications in aerospace sciences, fostering a pathway toward future STEM careers.

Specific Objectives:

- Engage 300 students from 15 under-resourced schools in hands-on STEAM learning focused on aerospace and space technologies.
- Train 60 teachers to implement the STEAM aerospace curriculum effectively.
- Increase STEAM subject proficiency by 20% among participating students over 2 years.
- Develop long-term partnerships with NASA centers and local aerospace industries to support mentorship and real-world exposure.

04 IMPLEMENTATION PLAN

Phase 1: Program Development (Months 1-6)

- Develop the aerospace-focused curriculum, working with NASA experts to integrate real-world space exploration themes.
- Establish partnerships with local schools and NASA centers.
- Acquire necessary materials such as aerospace kits, model rockets, and satellite simulators.

Phase 2: Teacher Training (Months 4-8)

- Conduct workshops for 60 teachers, equipping them with the skills to deliver the STEAM aerospace curriculum.
- Provide teachers with instructional materials and feedback mechanisms to ensure curriculum quality and alignment with NASA's objectives.

Phase 3: Student Engagement (Months 7-24)

- Implement the curriculum in classrooms, engaging 300 students in hands-on projects related to aerospace science.
- Facilitate student participation in NASA mentorship programs, where they will interact with aerospace professionals.
- Include space exploration-themed activities such as building model rockets and simulating satellite missions.

Phase 4: Evaluation and Scaling (Months 18-24)

- Collect data on student performance and teacher effectiveness, using both qualitative and quantitative evaluation methods.
- Use findings to refine the curriculum and plan for the project's expansion to additional schools.

05 EDUCATIONAL INNOVATION

The STaRS Project innovates by incorporating NASA's space missions into the classroom through hands-on projects. By engaging students in real-world applications of aerospace sciences, the curriculum fosters creativity, critical thinking, and a deeper understanding of space technology. Students will participate in activities such as rocket building, satellite design simulations, and space mission planning, all linked to NASA's ongoing projects.

06 COMMUNITY ENGAGEMENT AND OUTREACH

- Conduct workshops and outreach events for parents, local leaders, and other stakeholders to generate support and awareness.
- Engage the community through social media and local events to raise awareness of the program's importance in promoting STEM education.
- Collaborate with local institutions to ensure long-term community support and sustainability.

07 SCALABILITY AND SUSTAINABILITY

- The program will start with 15 schools and is designed to scale to 100 schools within 5-10 years, impacting 10,000 students across Colombia and potentially other Latin American countries.
- Sustainability will be ensured by training local teachers to deliver the curriculum independently and building partnerships with both the public and private sectors for continued support.

The STaRS Project aligns directly with NASA's Next Gen STEM initiative, which aims to inspire and prepare the next generation of space explorers and professionals. By focusing on aerospace sciences, the project connects students with NASA's missions, such as the Artemis program, and provides opportunities for mentorship and engagement with NASA experts. This exposure not only supports NASA's goal of fostering a diverse STEM workforce but also helps address educational inequities by targeting underserved communities. The project will integrate key NASA missions into the curriculum, inspiring students to explore careers in space exploration and aeronautics.

The STaRS Project seeks to engage and inspire the next generation of space explorers through its Next Gen STEM initiative. By integrating real-world aerospace and space exploration themes into classrooms, the project provides students with an authentic experience of what it means to work in science and technology fields.

