

Bringing Suborbital Science to the Next Generation: Students – from College to Elementary School

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Abstract

Beginning in 2023, suborbital space science and research is poised to become one of the fastest growing sectors of space science due to the array of options coming on line for reaching suborbital space with experiments, technology, and even suborbital astronauts. These new options mean suborbital science and research will grow in both extent and speed, not only will there be exponentially more suborbital science and research projects happening, they will be happening faster and on shorter timelines as the options for reaching suborbital space continue to develop and become available.

Here we provide information about and options for sharing this burgeoning industry with students from the college level down to elementary school students.

Translating to Education

The speed at which suborbital science and research is about to grow brings with it the potential for an immediate downside – a lag in time before this exciting industry is fully explained and integrated into educational classrooms and labs.

America's educational system is not known for its speed of adaptation to new industries or technologies – a disadvantage to the students.

This opens an exciting opportunity for the companies, organizations, and even scientists themselves involved in this industry to ignite students' interest through engagement in the upcoming suborbital science and research boom.

Personal experience over the past five years engaging 500+ students in launching experiments under high altitude weather balloons is evidence that engagement works with students of all ages.

A new National Focus on STEM

STEM, still big in education, just received a boost from the White House, which announced a new STEM Equity and Excellence effort aimed at “dramatically expanding access and opportunities and bolstering America’s global competitiveness” across “America’s science, technology, engineering, mathematics, and medicine (STEMM) ecosystem.”

Engagement connects Students (and Teachers)

Immersive engagement has long been considered the most effective teaching tool, “if you want someone to learn something, have them do it.” A student of literature will learn Shakespeare exponentially faster attending a live performance.

Science is THE “hands on” subject in the American education system. From elementary school projects in basic science concepts to college students building and flying satellites (or a dust collector on New Horizons), science education benefits greatly from students' hands on engagement.

Concurrently, student involvement in space is a public interest story which generates goodwill and support for all involved.

Conclusions

Suborbital science and research, and even the methods the industry is developing to get to suborbital space (balloons, rockets, spaceships, etc.) will all benefit from an immediate and rapid sharing of the growth in suborbital science, as well as the design and offering of fully immersive educational experiences which connect students (and their teachers) directly to the suborbital science industry.



Figure Insert: Zack and Zoey Adventures flying student experiments, and two STEM to Bloom covers. STEM to Bloom is a 100% Space & STEM magazine for kids published by Zack and Zoey Adventures. *Left to right: all Zoey Gonyea (age 10) pre-launch; Zoey (age 7) during balloon fill; Zoey (age 9) retrieval.*