

Bridging the Gap: Promoting Commercial Space Flight Research in School STEM Education & Outreach

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Abstract

Developing a workforce literate in the basics of the business practices and the science of commercial space flight is fundamental for the advancement this growing corporate aerospace sector. Equally important as technical education is building favorable and realistic public sentiments for the commercialization of space flight. The growth of commercial space flight is making careers in aerospace, particularly in piloting and crewing space vehicles, more attainable to civilians.

This presentation will demonstrate an emerging model for networking corporations that serve the commercial space flight, national science education professional organizations, and schools to promote commercial space flight. It is planned that the collaborations will produce STEM (Science, Technology, Engineering, and Mathematics) commercial space flight resources for schools and clubs.

Background of This Project

The post-Sputnik era produced a host of now outdated aerospace science and technology focused curriculum materials that had little lasting impact on science education. However, the materials did successfully foster a positive public perception of crewed space flight and space exploration. The National Aeronautics and Space Administration built upon that early model to promote astronomy and space travel educational materials for K-12 schools. NASA continues to produce their own educational materials which they promote to teachers through national science teaching professional organizations. Their teaching materials have not completely integrated the full spectrum of careers in commercial space flight.

This project will use the success strategies of NASA's educational approach and expand it to network commercial space flight industries and agencies with national science education professional organizations to promote the workforce skills needs of commercial space flight. The proposed outcomes are standards-based teaching resources for school teachers and 2-year college

faculty, after-school and commercial aerospace school club resources, and web resources for public education.

Structure of This Project

The developer of this project produced a similar strategic endeavor for the National Association of Biology Teachers and the Biotechnology Industries Organization as a way of promoting biotechnology education and positive public awareness. The project reached thousands of teachers for the 15 years it was funded. Its effectiveness is evident in the formation of many extant public school and 2-year college biotechnology courses and programs. The commercial space flight project is in its infancy and is being field tested at Quest Early College High School which has a primarily minority and lower-income population of students from the Greater Houston Metropolitan Area.

The field test is currently being funded by a college mini-grant and includes working with a career-focused school astronomy club. A commercial space flight component is being added to the club which includes student design contests related to commercial space flight. Commercial space flight components are also being integrated into relevant science classes. Currently, the club is partnering with the North Houston Astronomy Club and the Insperty Observatory in Humble, Texas to develop commercial space flight public programs.

Conclusions and Potential Merits

Based on current student and teacher participation, it is anticipated that this project would be applicable in other schools and is at the point of soliciting partners from all aspects of the commercial space flight sector. Student are already showing an interest in applying their chemistry, computer science, engineering, and physics interests for commercial space flight careers. With sustainable funding and resources, this project can become a long-term national model driven by commercial space flight agencies and industries. It can also encourage the establishment and expansion of commercial space flight courses and programs at high schools and 2-year colleges.